The Impact of Fair Value Disclosure on Audit Fees of Jordanian Listed firms

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Abstract

The ever-increasing use of Fair Value Accounting (FVA) is preferable in promoting such benefits as relevant financial information and improving transparency of financial reporting compared to traditional accounting methods (McDonough et al. 2020). At the same time, the passage of FVA introduces substantial difficulties from the audit perspective in obtaining and confirming fair value inputs (Bradley & Sun 2021; Griffith 2020). Given the rising use of complex estimates of FVA, the problem of management bias can lead to demands for high-quality audit services. Consequently, more audit effort and time are required from auditors to provide assurance in financial reporting which eventually leads to higher audit fees (Sangchan et al. 2020). This study's primary motivation is driven by the limited and inconclusive research on the monitoring costs resulting from Fair Value Disclosure (FVD) (Miah 2019). Therefore, it aims to examine the relationship between FVD and audit fees paid by Jordanian firms from 2005 through to 2018. It explores the relationship between the presence of FVD and audit fees and looks closely at the relationship between the proportion of fair-valued assets and audit fees.

Due to the uniqueness of this study's institutional environment characteristics, the impact of a number of ownership structure factors (including family, government and financial institutional ownership) on the association between the proportion of fair-valued assets and audit fees is examined. The moderating role of the major two auditor industry expertise attributes: market share (MS) and portfolio share (PS) on the link between the proportion fair-valued assets and audit fees is also investigated. This study, moreover, considers further factors of the auditees' industry type, such as whether the entity is in the financial or non-financial sector. An analysis is also conducted to produce new empirical evidence on the effect of the Global Financial Crisis (GFC) on the association between the proportion of fair-valued assets and audit pricing.

This study is based on the publicly available secondary data from a sample of annual reports published by Jordanian firms listed on the Amman Stock Exchange (ASE). This analysis employs an Ordinary Least Squares (OLS) regression to test the developed hypotheses. A number of additional analyses and sensitivity tests are also conducted to ensure that the main regression results are robust to different measurements and estimators. The regression analysis finds that a greater level of FVD (and proportion of fair-valued assets) is the major driver of higher audit fees. The results are more pronounced for firms with larger ratios of the subjective FVDs (Level 3 assets). Further, a significant and positive difference in the association between the proportion of fair-valued assets and audit fees is evident for finance industry vs. non-finance industry. Specifically, the moderating impact of industry type is significantly positive (negative) in relation to Level 2 (Level 1) assets but not significant for Level 3 assets. A significantly negative (positive) impact of the pre-crisis (post-crisis) period on the association between the proportion of fair-

valued assets and audit fees is confirmed. The regression findings, moreover, confirm a negative impact of the moderating pre-crisis over fair value inputs, whereas a positive impact of post-crisis is documented only for Level 1 assets. These findings are in line with the agency and stakeholder theories as the conjunction between the different types of users and the likelihood of material misstatements, and managers' fraud following the application of FVA have led to abuse of power. Shareholders have potentially been misled simply to serve managements personal interests.

The current study's results are consistent with agency and stakeholder theories, and indicate that family ownership leads to a weaker relationship between the proportion of fair-valued assets and audit fees. Conversely, the analysis confirms the opposite for both governmental and financial institutional ownership factors. This is also consistent with signalling theory. The regression, moreover, confirms that the nature of the impact of moderating family ownership on the association between Level 1 assets and audit fees is significantly negative (not for Level 2 and Level 3 assets). The analysis confirms that state ownership in the case of the subjective fair values (Level 3 assets) leads to expensive audit fees being charged. The regression, moreover, confirms that the association between the highly uncertain fair values (Level 3 assets) and audit fees is strengthened when financial institution ownership exists. In line with the signalling theory, the analysis suggests that the association between the proportion of fair-valued assets and audit fees is strengthened when the client hires industry specialist auditors identified by MS. Conversely, industry specialists identified by the PS approach are not significantly moderating the relationship between the proportion of fair-valued assets and audit fees. With respect to fair value hierarchy level inputs, Level 1 was the only level found to be moderated by both scenarios with positive (negative) sign under the product differentiation scenario (shared efficiency scenario). The results furthermore support the agency and stakeholder theories.

This study pioneers the topic by examining post-FVA transformation consequences in a developing country, Jordan (Abdullatif 2016). It is the first attempt of its kind to examine the integration of the agency, signalling and stakeholder theories with fair value proxies to establish and evaluate the nature of the relationship between FVD and audit fees (Samaha & Khlif 2016). Results of this study provide policymakers and standard setters with updated empirical evidence originating from a non-Western setting about the post-implementation costs of IFRS/FVA. The findings also benefit regulatory authorities on monitoring and governing the audit profession, which could lead to considering the challenges of auditing the less verifiable fair values. This research assists Jordan's government in providing more specific guidelines and recommendations that simplify and guarantee best practices of FVA. This contribution makes the findings of the study more relevant to wider settings. Arguably, the findings from Jordan as a study site can reasonably be generalised to other countries in the ME, especially to those that have not yet applied or recently have applied fair value model.

Declaration

“I, Esraa Esam Alharasis, declare that the PhD thesis entitled ‘The Impact of Fair Value Disclosure on Audit Fees of Jordanian Listed firms’ is no more than 80,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work”.

“I have conducted my research in alignment with the Australian Code for the Responsible Conduct of Research and Victoria University’s Higher Degree by Research Policy and Procedures.

Signature [redacted]

Date 21/05/ 2021

List of Publications and Awards from this Thesis

International Journal Articles

1. Alharasis, AEE, Prokofieva, M, Alqatamin, RM & Clark, C 2020, 'Fair Value Accounting and Implications for the Auditing Profession: Historical Overview', *Accounting and Finance Research*, vol. 9, no. 3.

Refereed Conference Participation

1. The 2020 ISLIC HDR Student Conference, Victoria University, 3rd December 2020.
2. The 6th International Conference on Accounting, Business and Economics 2020, Universiti Malaysia Terengganu, Malaysia, 16th - 17th December 2020. Conference full proceeding can be reviewed in the following link:

   https://fbesd.umt.edu.my/wp-content/uploads/sites/11/2021/01/FULL-PROCEEDING.pdf
3. The Scientific Forum of the College of Business Studies for Finance and Business, Kuwait, 21st November 2020. Conference full proceeding can be reviewed in the following link:

   https://paaetwp.paaet.edu.kw/research_cbs/wp-content/uploads/2020/11/Tejari-Moltaqa-Agenda-1.pdf
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Awards received for work based on this thesis

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   Alharasis, E.E., Prokofieva, M. and Clark, C. 'Fair value accounting and audit fees: the moderating effect of the Global Financial Crisis in Jordan', In *Proceeding Sustainable Business Innovation: New Normal Going Forward The 6th International Conference of Accounting, Business, and Economics (ICABEC 2020)* (p. 9).

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List of Abbreviations

AICPA	*Auditing Standards Board of the American Institute of Certified Public Accountants*
AFS	*Available for Sale*
AFT	*Available for Trading*
ASE	*Amman Stock Exchange*
BC	*Basel Committee*
CBJ	*Central Bank of Jordan*
CCD	*Companies Control Department*
EU	*European Union*
FASB	*Financial Accounting Standards Board*
FVA	*Fair Value Accounting*
FVE	*Fair Value Estimates*
FVD	*Fair Value Disclosure*
FVM	*Fair Value Measurement*
FVO	*Fair Value Option*
GAAP	*Generally Accepted Accounting Principles*
GCC	*Gulf Cooperation Council*
GFC	*Global Financial Crisis*
HC	*Historical Cost*
HCA	*Historical Cost Accounting*
IAS	*International Accounting Standards*
IAAS	*International Accounting and Auditing Standards*
IASC	*International Accounting Standards Committee*
IAASB	*International Auditing and Assurance Standards Board*
IASB	*International Accounting Standards Board*
IFAC	*International Federation of Accountants*
ISA	*International Standards on Auditing*
IFRS	*International Financial Reporting Standards*
IFA	*International Federation of Accountants*
IMF	*International Monetary Fund*
IOSC	*International Organisation of Securities Commissions*
JACC	*Jordanian Anti-Corruption Commission*
JACPA	*Jordan Association of Certified Public Accountants*
JIC	*Jordan Investment Commission*
JSC	*Jordan Securities Commission*
ME	*Middle East*
MENA	*Middle East and North Africa*
MS	*Market Share-based*
OLS	*Ordinary Least Squares*
PCAOB	*Public Company Accounting Oversight Board*
SAS	*Statements on Auditing Standards*
SPSS	*Statistical Package for the Social Sciences*
Stata	*Statistical Analysis Package*
PS	*Client Portfolio Share-based*
WB	*World Bank*
WTO	*World Trade Organization*

List of the International Accounting and Auditing Standards addressed in this thesis

***IAS 16**— Property, Plant and Equipment*

***IAS 30**— Disclosures in the Financial Statements of Banks and Similar Financial Institutions*

***IAS 32**— Financial Instruments: Presentation*

***IAS 36**— Impairment of Assets*

***IAS 38**— Intangible Assets*

***IAS 39**— Financial Instruments: Recognition and Measurement*

***IFRS 13**— Fair Value Measurement*

***IAS 40**— Investment Property*

***IAS 41**— Agriculture*

***IFRS 2**— Share-based Payment*

***IFRS 3**— Business Combinations*

***IFRS 4**— Insurance Contracts*

***IFRS 5**—Non-current assets held-for-sale and discontinued operations*

***IFRS 7**— Financial Instruments: Disclosures*

***IFRS 9**— Financial Instruments*

***IFRS 10**—Consolidated Financial Statements*

***IFRS 13**— Fair Value Measurement*

***SFAS 115**— Accounting for Certain Investments in Debt and Equity Securities*

***SFAS 133**— Accounting for Derivative Instruments and Hedging Activities*

***SFAS 12**— Accounting for Certain Marketable Securities*

***SFAS 107**— Disclosures about Fair Value of Financial Instruments*

***SFAS 157**— Fair Value Measurements*

***SFAS 119**—Disclosure about Derivative Financial Instruments and Fair Value of Financial Instruments*

***SFAS 123**— Accounting for Stock-Based Compensation*

***ASC 820**— Fair Value Measurement*

***ISA 540**— Auditing Accounting Estimates, Including Fair Value Accounting Estimates, and Related Disclosures*

***ISA 540* (Revised)**— *Auditing Accounting Estimates and Related Disclosures*

***ISA 545**— Auditing Fair Value Measurements and Disclosures*

CHAPTER ONE: INTRODUCTION

1.1. Introduction

This chapter introduces the research topic. It begins with an overview in section 1.1. Section 1.2. covers the background of the study's context and why Jordan was chosen. Section 1.3 discusses the study motivations and rationale. Section 1.4 explains the study's aim and objectives. Section 1.5 discusses the contribution to knowledge and significance of this thesis. Section 1.6 explains the structure of the thesis, and the final section, 1.7 concludes the chapter.

1.2. Identification of Research Problem

Fair Value Accounting (FVA) was introduced and included in the International Accounting Standards Board (IASB) agenda in 2005 after releasing the amended version of IAS 39 — "*fair value option*", while Fair Value Measurement (FVM) reflects the current economic conditions and thus provides up-to-date assumptions about future events (IAS Plus 2005). However, the passage of the fair value model has put the audit profession under additional scrutiny due to external auditors providing services for their clients (Griffith 2020). FVA which has operated in Jordan since 2005 has increased the level of complexity and risk linked with the rising use of uncertain estimates (Siam & Abdullatif 2011). More effort is required from auditors to provide assurance on financial reporting which may eventually lead to more expensive audit costs (Abdullatif & Al-Rahahleh 2020). The adoption of Fair Value Disclosure (FVD) requirements as well as the need to meet stakeholders' expectations necessitate high-quality audit services (Abdullatif 2016). Audit fees, in this case, are deemed to be a monitoring cost which is charged to ensure the quality of prepared fair values (Sangchan et al. 2020). Audit prices, therefore, are signals of managers' behaviour sent to relevant stakeholders to assist them in making decisions (Huang et al. 2020).

The aim of the current study is to explain the factors influencing audit fees and investigate the potential influence of FVD on audit fees in Jordan. Empirical evidence is generated here on the impact of such disclosures on the audit profession with reference to audit pricing. This study is one of only a few to combine both schools of literature to investigate fair value reporting, and various salient attributes of how it is measured and audited, affect the pricing of audit services—a major monitoring cost. It resembles other studies which have discussed this issue in developed countries, for instance Ettredge et al. (2014a), Goncharov et al. (2014), Yao et al. (2015), Alexeyeva and Mejia-Likosova (2016) and Sangchan et al. (2020). Prior research has used data from developed countries, such as the US, EU, and Australia, where the auditing industry is larger compared to small, developing countries, like Jordan, focusing on a different accounting framework (GAAP vs IFRS), and only on the finance industry (banking, real estate, etc); however, there is no other research documented so far from the context of developing countries, ME and Jordan, in particular. Some research reported a positive association between FVD and audit fees (Ettredge et al. 2014a); however, some found the opposite or no real significant correlation (Sangchan et al. 2020; Goncharov et al. 2014; Alexeyeva & Mejia-Likosova 2016). Therefore, the mixed results accompanying the impacts of FVD on audit fees in the prior research have encouraged this thesis to provide additional evidence on the nature of this relationship in Jordan and discuss the difference in this relationship among different industry sectors for the first time.

This study distinguishes itself in the following ways. First, it fills the gap in the existing knowledge by investigating the relationship between FVD and audit fees, over a long period of time over 14-years (pooled 2005 – 2018) which provides a large-scale analysis of the topic. Second, it examines the impact of ownership structure and auditor industry specialisation[1] on the relationship between the proportion of fair-valued assets and audit fees following the application of FVA, for the first time. Third, it further investigates the impact of corporate industry type (financial versus non-financial) on the relationship between the proportion of fair-valued assets and audit fees. Unlike previous studies, this thesis uses data from financial and non-financial industries, whereas other research focused on a single industry (see Abernathy et al. 2019). Interestingly, this study adds the first evidence on the non-financial industry on the association between fair value and audit fees.

Finally, since the GFC of 2008-9, there is now much more emphasis on the need for detailed clarification about how FVMs have been acquired (Xu et al. 2013). The current study documents new empirical evidence on the impact of the GFC on audit fees, specifically its far-reaching influence on the connection between the proportion of fair-valued assets and audit fees. This investigation creates empirical evidence for stock market authorities concerning the role of audit fees structure as a monitoring tool to improve the quality of financial reporting. Regulatory authorities must understand the conditions auditors face when auditing Fair Value Estimates (FVE). This leads to improved monitoring of fair value by evaluators and modifying audit fee levels. Thus, the evidence generated here contributes to ensuring stakeholders' protection and assists policymakers to develop robust regulations on fair value practices. The findings can benefit other countries in the Middle East (ME) that share the same accounting and auditing practices.

1.3. Overview of Context Choices

1.3.1. The Country's Profile

Jordan is a constitutional monarchy and one of the fastest developing Arab countries of the ME region. Jordan is classified by the World Bank (WB) as an upper middle-income country (The

[1] Throughout the thesis, the terms "industry specialisation/or expertise" and "specialist auditors" both refer to the "auditor industry expertise" concept.

World Bank 2021). According to the Index of Economic Freedom in 2021, Jordan is the 5th freest economy of 14 economies in the Middle East and North Africa (MENA) region and the 66th freest economy in the world (Index of Economic Freedom 2021). The legal system in Jordan is tightly enforced and market participants' rights or obligations are respected (Haddad et al. 2017). Economic changes in Jordan have necessitated financial market reforms and issuing new regulations; this is required to open up the country's economy to international trade through improving its financial reporting framework (Al-Akra et al. 2009). The most important reform implemented is the International Financial Reporting Standards (IFRS)/International Accounting Standards (IAS) to develop Jordan's economy through encouraging foreign investment (Al-Htaybat 2018; Boolaky et al. 2018).

1.3.2. IFRS Fair Value Accounting Implementation: Challenge for Jordan

The adoption of IFRS/ IAS in 1997 was required of Jordanian firms following the "*Companies Law No.22*" which refers to public listed shareholding firms regulated by the Jordan Securities Commission (JSC). Financial firms are regulated by the Central Bank of Jordan (CBJ) while insurance firms are overseen by the Jordan Investment Commission (JIC). Such requirements seek to increase the amount of disclosures in firms' annual reports, subsequently improving the quality of their financial reporting duties. Conversely, the introduction of IFRS/IAS has implications for accounting and auditing practices and relevant institutions globally (Barth & Landsman 2018). This is particularly because the main focus of IFRS is the adoption of FVA which requires frequent revaluations of assets and liabilities based on exit price (Samaha & Khlif 2016). Although the purpose of implementing FVA is to provide relevant information, fair value offers relevant information only when prepared based on liquid markets; otherwise, it may cause substantial manipulation of capital markets (Huang et al. 2020).

Embracing high-quality accounting and auditing standards (i.e., IFRS/IAS) significantly improve the soundness and comparability of companies' financial statements internationally (Barth & Landsman 2018; Houqe 2018). For an emerging market economy such as Jordan, these standards are essential as a high level of transparency is to be achieved and financial information can be compared. This, in turn, will promote international trade between the Arab region and the rest of the world (Al-Akra et al. 2009; He et al. 2012; Masoud 2017). Arguably, the adoption of FVA in Jordan has encouraged opening the country's capital market to foreign investors, in order to increase foreign investment upon which the Jordanian economy increasingly relies. Accordingly, FVA offers a relevant and trustworthy economic environment for shareholders and other stock market users. This creates the opportunity for Jordan to join the World Trade Organization (WTO) (Alqashi & Al Abadi 2009; Zehri & Abdelbaki 2013).

Despite the important role of FVA in providing high-quality disclosures, it has resulted in more complex financial reporting by Jordanian firms. The opportunity of material misstatement is increased especially due to the lack of sufficient knowledge and expertise by both preparers and auditors. Implementing IFRS followed by higher level of disclosure than prior Generally Accepted Accounting Principles (GAAP), has, in turn, led to additional requirements for auditors to review more financial information, which includes managers' subjective forecasts (i.e., detailed disclosures of fair value inputs) (Abu Risheh & Al-Saeed 2014). The adoption of IFRS and the International Standards on Auditing (ISA) has increased accountants' and auditors' need for information about FVEs. This is often unavailable in the Jordanian market and is sometimes unclear due to the weak trading that occurs in the market (Abdullatif 2016). To put this more emphatically, the increasing use of FVEs following the adoption of IAS 39 greatly affected stock market prices in Amman Stock Exchange (ASE). In 2005, Jordan's banks and some other finance businesses for the first time were required to use FVMs under IAS 39, and the common financial assets measured based on fair value are Available for both Trading (AFT) and Sale assets (AFS). The income/loss gained from fair valuation for the holding for trading assets should be recognised in the income statement; however, the income/loss gained from fair valuation held for sale assets should be recognised in the owners' equity statement (Siam & Abdullatif 2011).

The sharpest consequences following the adoption of FVA were witnessed in Jordanian firms' annual reports which resulted in a major boom in share prices in the capital market. The major increase in share prices resulted from the fair valuation of shares and not real economic performance (Al-Khadash & Abdullatif 2009). Rising share prices led to a large number of naïve investors entering the market, but they later bore large financial losses due to a sharp downturn in share prices (Siam & Abdullatif 2011). Financial statements produced by Jordanian firms' in the following year, 2006, revealed the negative effects of this scenario, in turn, generating greater volatility in share prices and thus affecting banks' net profits. Implementing FVA resulted in the reported income of financial instruments being hugely volatile. In general, the adoption of FVA has caused some problems for Jordan's economy, such as volatility in share prices and ultimately poor investment decisions being made by investors (Al-Yaseen & Al-Khadash 2011). The growing reliance of Jordan's economy on external exports has increased the use of financial assets and liabilities by domestic companies which eventually led to media reports about financial instruments losses (Tahat et al. 2016). Therefore, the problem of implementing FVA has escalated due to the need for disclosures regarding fair value of financial assets. Such events forced the government to take steps through the JSC to overcome the problems caused by fair value adoption on Jordan's stock market (Tahat et al. 2018).

In February 2008, the "*New Fair Value Regulations —Instructions on the Mandatory Policies and Standards for Re-Evaluation of Fair Value and for Disposal of Re-Evaluation Surplus" —*

were enacted by the JSC to overcome volatility in the market. These regulations required the following. First, the gains that were caused by the FVMs of trading securities must be disclosed as unrealised gains in firms' retained earnings statements. However, firms cannot distribute the unrealised profits as dividends to shareholders. Second, Historical Cost Accounting (HCA) should serve as an alternative measurement basis to FVA for investment properties under IAS 40 and disclosing the fair values of these investments in the notes to financial statements. Finally, HCs for property, plant and equipment are to be used as per the requirements of IAS 16. The main purpose of such instructions and rules is to restrict the use of optional FVMs. The exception to this is what is required by IFRS, such as: firstly, fair value unrealised gains/losses of trading securities in the income statement; and secondly, fair value unrealised gains/losses of available for sale securities in the owners' equity. It does not, however, allow recognition of fair value adjustments that are optional in the body of financial statements. Such reforms are expected to mitigate volatility in public listed companies' reported results (Abdullatif 2016; Abdullatif & Al-Rahahleh 2020).

A few more changes were made during 2011 to the "*Fair Value Regulations —Instructions on Reporting Value and Dealing With Revaluation Surplus"*— which required unrealised holding gains from securities trading and biological assets to be transparently disclosed as a part of retained earnings (Abdullatif 2016; Ahmad & Aladwan 2015). The main purpose of such instructions and rules is to limit the use of optional FVMs (Haddad et al. 2017). Such instructions aimed to enhance transparency of financial information and thus, enhance the protection for users by providing a fair reflection of the individual firm's financial situation (Haddad et al. 2017). So, these reforms were expected to mitigate the volatility in public listed companies' reported results and thus restrict the practices of auditors and their clients regarding FVD (Al-Khadash & Abdullatif 2009).

1.3.3. The Effect of the Global Financial Crisis in Jordan

Prior to the GFC, Jordan witnessed the establishment of many new firms which began to invest heavily, particularly in real estate and investment securities (Alzoubi 2018; JSC 2008). In spite of the enacted fair value instructions by the JSC since 2008, the lack of clear guidance on fair value application and the lack of required information for measuring fair values resulted in widespread abuse and fair value fraud (Al-Khadash & Abdullatif 2009). During the GFC a large number of Jordanian firms failed and left the market, and this period witnessed a sharp decline in assets prices which eventually led to huge impairment losses of these assets being reported (Matar & Nauimat 2014).

Additional instructions and requirements were issued by the Jordanian government through the CBJ during and after the GFC. These instruction and requirements functioned to overcome the crisis effects in Jordan's economy and the main concern of the instructions related to the use of FVA. Some of them required necessary reforms in the commercial banks' structure and activities. The main purpose was to keep Jordanian banks operating, to maintain their role in the financial markets and eventually prepare reliable and high-quality financial reports that protect local and foreign investors. The other corrective action issued by the Jordanian government was the rule promulgated at the end of 2007 and subsequently revised in 2011. While the Jordanian authorities made necessary changes in terms of FVEs, they have limited authority in restricting the practices of auditors and their clients as it would violate the IFRS (Abdullatif & Al-Khadash 2010).

Subsequently, the Jordanian government responded by issuing some instructions and put more pressure on the country's audit profession. A new regulation was enacted by JSC in 2014, known as the —*"Instructions on Standards and Conditions to be Met by Auditors Qualified to Audit Parties Under the Control and Supervision of the Jordan Securities Commission and Registering Them in the Related Register"*. This law requires auditors of Jordanian listed firms to be registered with the JSC and employ as a minimum two auditors holding the Jordanian audit licence. These instructions required the audit firms to rotate the head of the audit team at least once every four years (Abdullatif 2016). Based on these instructions, the licenced auditor who has relatives on the listed firm's board of directors, executive managers or if those relatives own a large proportion of shares should be prohibited from auditing. These instructions include penalties for auditors who violate the laws, such as temporary or permanent prevention from auditing listed firms. The main purpose of these instructions is to improve the quality of audit services provided to Jordanian listed firms by restricting the number of auditors and specifying audit requirements to those who are qualified to provide such services. Ultimately, such regulations have dramatically increased the level of supervision imposed on external auditors in Jordan (Al-Khadash & Abdullatif 2009). Like other economies throughout the world that were affected by the GFC, Jordan's capital market experienced a serious crisis. In response to it, Jordan's government worked hard to protect the exchange rate of the Jordanian Dinar and financial investments in the economy. The government issued many instructions and requirements through the CBJ during and after the GFC (Ahmad & Aladwan 2015). To ameliorate the effects of the crisis, the CBJ increased the liquidity ratio to 6.8% in 2009 and the local banks increased their local deposits by 8.9%. In addition, the CBJ required the local banks to increase their local credit by 9% and reduced the credit interest rate by 30 points. These instructions, in turn, set out to minimise as much as possible the GFC's effects and distortions in the Jordanian capital market.

In 2015, Jordan's government commenced a ten-year plan known as "*Jordan 2025: A National Vision and Strategy to enhance GDP growth, reducing public debt, and revitalize the economy by ending poverty, unemployment and fiscal deficit*" (see Table 1.1). This plan focused on an export-oriented economic strategy through boosting trade with other countries in the region and especially the Gulf Cooperation Council (GCC) states (Al-Htaybat et al. 2011). This, in turn, makes Jordan a gateway to regional markets that takes advantage of free trade agreements (Jordan Embassy 2018). During the recent decades of globalisation, Jordan has attracted much foreign investment. Users of financial information include foreign investors, authorities in Jordan, creditors, and other users of financial information who rely on external auditors' reports prepared in accordance with the ISA. Auditors' reports are expected to provide more credible and essential disclosures about financial information which, in turn, encourages foreign investment in the region and thus achieves economic prosperity (Abdullatif & Al-Rahahleh 2020). Based on Jordanian laws and regulations, external auditors and shareholders must comply with ISA. Using ISA other than the local auditing standards enhances the consistency of financial statements to help users make decisions; especially, foreign investors who are concerned with such information due to their knowledge of ISA more than the local Jordanian standards (Al-Awaqleh 2010).

Table 1.1. Key Performance Indicators- Macroeconomic Stability (2014-2025)

Indicator	Baseline 2014	2017	2021	2025
GDP real growth rate	3.1	4.9	6.9	7.5
Ratio of local revenues to current expenses	86.4	100.1	114.0	130.0
Budget deficit as a percentage of GDP (after grants)	(3.5)	(1.2)	(0.8)	0.0
Budget deficit as a percentage of GDP (before grants)	(8.1)	(4.0)	(1.0)	0.0
Government units' deficit rate	(5.0)	(2.0)	0.0	0.0
Consolidated budget deficit rate after grants	(8.5)	(3.2)	(0.8)	0.0
Ration of total public debt (as a percentage of GDP)	3.1	4.9	6.9	7.5
Ration of total public debt (as a percentage of GDP)	82.3	76.0	57.0	47.4

Source: Jordan Embassy (2018)

1.3.4. Auditing Environment in Jordan

In the 1920s, no audit firms existed in Jordan due to the primitive state of its economy. Accounting and auditing work were undertaken by auditors who worked for Western Banks. In 1944, the first Jordanian audit firm was George, Kader and Co., followed by Saba and Co. which moved from Jerusalem to Jordan/Amman in 1948. These two firms dominated the Jordanian audit market until the early 1950s (Al-Farah et al. 2015). The remarkable improvements in the accounting and auditing profession in Jordan met the needs of economic growth in the 1950s as the number of large enterprises grew (Abdullatif & Al-Khadash 2010; Al-Rai & Dahmash 1998). Subsequently, the demand for high-quality accounting and auditing services rose. By 1975, the number of audit firms rose to 20 (Al-Farah et al. 2015). In 1961, the first law regulating the audit profession was the "*Auditing Profession Practice Law No. 10*." Based on this law, external auditors had the right to practice if they had two years' experience in Jordan regardless of their academic qualifications

(Al-Anani 2009; Al-Shattarat et al. 2013; Haddad et al. 2015). Law No. 10 was replaced by the "*Auditing Profession Practice Law No. 12*" (1964), which stated that all accounts for listed firms must be audited without exceptions (Abdullah 1982). In 1985, the "*Auditing Profession Practice Law No. 32*" came into effect to meet modern business requirements. It required external auditors to have as a minimum a college degree in accounting and passing the "*High Council of the Accounting Profession's Exam*" (Abdullatif & Al-Khadash 2010). This was in addition to the major contribution to this law, Article 18 which established the Jordan Association of Certified Public Accountants (JACPA) - the main body responsible for monitoring audit firms (Atmeh 2016).

Jordan required public shareholding companies to follow the International Accounting and Auditing Standards (IAAS) (i.e., IFRS/IAS- ISA) in 1989 based on the laws of companies (i.e., law No. 22/1997) and in accordance with the economic and political environment. This adaptation found JACPA complying with the International Federation of Accountants (IFAC) membership agreements, followed by the JACPA becoming a member of the International Accounting Standards Committee (IASC) in 1988. The requirement plays an essential role in enhancing the quality of Jordanian firms' annual reports and enhancing investors' confidence in accounting disclosures (Noronha et al. 2008). Accounting bodies in Jordan including JACPA depend entirely on the ISA. The ISA are a guideline for external auditors and users of financial information (Abdullatif & Al-Rahahleh 2020). Following Law No. 22/1997 Article 21, an external auditor is responsible for protecting stakeholders' needs and interests (JSC 1997). This was followed by several pieces of legislation which required Jordanian auditors to comply with the IAAS, and especially checking firms' financial statement items and expressing the final opinion. Auditors have to comply with the "*Companies Law No. 22*/1997" and "*Law of Accounting Career No. 73*/2003" (2003) (Abdullatif & Al-Khadash 2010). Currently and based on the latter law, to be an auditor in Jordan, applicants must have a "*Professional Practice License*".

With reference to the audit environment in Jordan, there are about 300 audit firms and the big auditing international companies (Big4 including PWC, KPMG, Deloitte, and E&Y) also operate there (Abdullatif 2013). Jordan's licensed accountants and auditors have a representative body called the JACPA (Abdullatif & Al-Khadash 2010). JACPA determines the minimum audit fees for external auditors[2] to restrict any conflict between auditors and their clients and maintaining an acceptable level of audit quality (JACPA 2010). The government's regulatory authorities monitoring the external audit profession are the Anti-Corruption Commission (JACC), Companies Control Department (CCD) and Jordan Securities Commission (JSC). Since the launch of the governance system, Jordanian companies are required to establish audit

[2] The minimum audit fee for a public listed Jordanian company is JD 7500. In 2015, this minimum level requirement was later removed by the Jordanian government (Abdullatif & Al-Rahahleh 2020; JACPA 2010).

committees (Abdullatif 2013). Despite using international regulations in financial reporting and auditing, the extent of accurate auditing largely depends on the nature of the clients. In general, the business scenario in Jordan is dominated by family businesses even in the case of public listed companies and financial institutions (Abdullatif 2016; Abdullatif & Al-Rahahleh 2020). Undue power in the hands of company management has often affected or compromised the ability of auditors in producing a clear picture about the state of affairs of a company (Rhianon et al. 2010). The existence of such situations has restricted the demand for high-audit quality which might affect audit prices which is the main purpose of the current study (Atmeh 2016; Hanini & Abdullatif 2013).

1.3.5. The Rationale Behind the Context

Since the recent introduction of Jordan's ten-year plan, known as "Jordan 2025", pressure on accounting and auditing professions to boost compliance with the IFRS/ FVD requirements and the quality of Jordanian firms' financial reports has increased. To address this issue, the current research, explores the main consequences of the application of FVA on auditing profession in Jordan. Therefore, this study's focus is on the ME region and particularly Jordan, which is traditionally characterised by high usage of fair values. Jordan is different from other ME economies as Jordan does not rely on oil, rather on the service sector. It pioneers the literature by investigating the association between FVD and audit fees in a developing country, for the first time.

There are a number of national and cultural characteristics of Jordan which need to be acknowledged. First, Jordan enjoys a sense of political stability in a historically turbulent region. Jordan has an increasingly free market economy (Al-Htaybat 2018). Second, Jordan is part of an open economy policy with both Arab and non-Arab countries which are permitted to invest in Jordan's capital market (Al-Htaybat et al. 2011). Third, the remarkable reforms in Jordan's economy make it an attractive setting for developing countries research, such as the liberal market privatisation programme that began in the 1990s and signing a number of international economic agreements with the European Union (EU) and the WTO (Tahat et al. 2016). Fourth, unlike other Arab-Gulf countries, Jordan is one of the first ME countries to implement IFRS and ISA (Al-Htaybat 2018). In fact, IAS/IFRS and ISA have been adopted by Jordanian firms since the early 1990s. A large number of international auditing firms established branches in the Jordanian auditing market. Fifth, Jordan is the only Arab country which requires listed companies to disclose the amounts of audit fees in their annual reports as a legal requirement (ALshbiel & Tahat 2014). Sixth, the increasing use of financial instruments by Jordanian companies as well as the publicity about financial instruments losses reported in the media further motivates this study to concentrate on FVA of financial assets in Jordan (Siam & Abdullatif 2011; Tahat et al. 2016). According to Tahat et al. (2016), Jordanian listed firms comply well with IFRS/FVD requirements of financial assets (the attention of FVMs for financial assets and compliance to IFRSs by the Jordanian capital market make this market particularly suitable for this research). This adds additional motivation for the current investigation, and that is to concentrate on FVD of financial assets in Jordan[3].

1.4. Research Motivations

This study is motivated by agency theory which contends that managers make decisions on behalf of the owners and their interests and/or needs (Jensen & Meckling 1976). However, due to the distinction between ownership and management, the interests of the principals might not be respected. This can potentially lead to abuse and fraud by the management and consequently material misstatements in the reported information (Davidson III et al. 2004; Jiraporn et al. 2008). In this way, managers provide incomplete, misleading and fragmented information about financial performance of the firm to disadvantage the stakeholders (Healy & Wahlen 1999). It is plausible that the changes already implemented in the IAS/IFRS to date, influence audit risk and subsequently the audit fees.

Audit fees are an important type of agency cost (Glover et al. 2019; Griffith 2020; Habib 2011). Auditors are responsible for ensuring whether managers are behaving according to stakeholders' interests and expectations. Based on this and comparing it with the regular auditing process, when the agency problem exists auditors need more effort and time to ensure managers' evaluations regarding FVEs are correct. This, in turn, leads to higher audit prices to meet owners' needs for high-quality financial information. So that, audit fees are considered as a form of monitoring tool which assists the shareholders and other stakeholders to minimise the problem of asymmetric information. One way that could reduce agency conflict between managers and shareholders is to provide transparent and reliable financial reports audited by a third party, i.e., the external auditor. Adopting FVA complicates auditing and has a negative effect on the quality of auditing as well (Bratten et al. 2013; Christensen et al. 2012). FVM is associated with a greater estimation uncertainty which is caused by the high subjectivity of the assets' valuation (Bell & Griffin 2012). In the case of the unobservable market prices, managers are obligated to use the required models and follow complex valuation procedures which include known and unknown factors, ultimately leading to measurement uncertainty (Bratten et al. 2013).

Therefore, this research is motivated by the IASB (IASB 2017), which has called for further analysis of the influences of post-IFRS 13 on accounting and auditing practices. This analysis documents the missing link between FVD and monitoring costs following the introduction of

[3] As for the financial liabilities, it has been suggested by Fiechter and Novotny-Farkas (2017) that kind of account does not exist in Jordan.

FVD requirements through IFRSs since 2005 in IAS 39 and more importantly the recent hierarchy disclosure requirements since 2013 requested by IFRS 13 (Abdullatif 2016). The focus on financial assets as the first requirement on FVA disclosure requirement was connected to financial instruments resulting from releasing IAS 39 which later had aggressive consequences for the Jordanian market. The ever-increasing requirements for disclosures on fair value for financial assets necessitate an in-depth analysis of the possible link between FVD for financial assets and audit fees. Therefore, this analysis bridges the missing link between the proportion of fair-valued assets (by input Level and in total) and audit fees paid by Jordanian firms. Overall, this investigation is motivated by the expectations, as well as concerns about the changes when the IFRSs were enacted.

This study is primarily motivated by the limited number of studies on post-implementation costs of FVD and influences on the auditing profession, in general. Jordan is chosen as a case study to help fill in the gap on this subject, especially after the initial adoption of IFRS requirements regarding disclosing the detailed amounts of fair valued assets in firms' annual reports, IAS 39 and the amended IFRS 7 as examples. Results in this stream of research derive mostly from larger and more developed economies, such as US, EU nations and Australia (i.e., Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a; Goncharov et al. 2014; Sangchan et al. 2020; Yao et al. 2015) where the audit market is larger compared to small, developing countries like Jordan. It is noted that institutional affiliations and differences in fundamental characteristics lead to different conclusions regarding the sufficiency of audit evidence supporting fair value verifications (Glover et al. 2019). Therefore, given the characteristics of Jordan's market setting, the current study's findings supply alternative implications of FVD on audit pricing. Given the differences in nature and risk between the developed and developing economies, the effect of the full fair value application for financial assets on audit fees is worth investigating.

Accordingly, this study is motivated by the widespread adoption of IFRS in emerging economies, which is a result of the pressure of a number of financial, political and technological factors that occurred in recent decades (Al-Htaybat 2018; Uzma 2016). Given the need for examining the impact of IFRS/FVA on accounting practices, this thesis is also motivated by answering various scholars' calls for such an investigation.

First, despite many audit fees determinants studies being done in developed and developing countries, examining the impact of FVA on the contracting function of financial reporting is largely missing in the literature (Goncharov et al. 2014). Empirical studies on audit fee determinants in ME countries have primarily focused on the specific determinants based on the client's and auditor's perspective, specific number of characteristics, dimensions or attributes of audit clients and auditors. For this reason, the relationship between FVD and audit fees is not as well-understood in developing countries as it is in the developed world (Abdullatif 2016; Al-

Htaybat 2018; Brown & Tarca 2012; Cannon & Bedard 2017; Khlif & Achek 2016; Sangchan et al. 2020).

Second, while the beneficial effects of adopting IFRS including FVA have been extensively examined, little has been done on the cost-side of IFRS adoption and its impact on users of financial information (Al-Htaybat 2018; Brown & Tarca 2012; De George et al. 2013; Yang et al. 2018). Al-Htaybat (2018) stated that there are new issues following IFRS adoption which need to be addressed, such as the subsequent cost of this adaptation.

Third, part of the motivations for this study is to explore the role of ownership structure (Khlif & Achek 2016) and auditor industry specialisation (Hay 2013) on audit fees in developing countries. Prior research reveals a need to test the influence of ownership structure on the association between IFRS/FVA and audit fees (Khlif & Achek 2016). Therefore, this study contributes to the knowledge in examining the impact of the ownership structure on audit fees and its moderating role on the association between FVS and audit fees for the first time. Moreover, the association between FVM and audit fees moderated by auditor industry specialisation factors is largely unknown, as noted by various scholars, such as Al-Harshani (2008) and Wang et al. (2014) who expressed concern about the dearth of auditing research on auditor industry specialisation. Similarly, Abdullatif (2016) stressed the importance of this crucial topic in Jordan. Thus, the impact of auditor industry specialisation is examined through this study and especially the relationship between FVD and audit fees.

Finally, the objective of this study is to broaden the existing knowledge of the impact of the GFC on audit fees as requested by a number of scholars (Groff et al. 2017; Krishnan & Zhang 2014). Groff et al. (2017) and Krishnan and Zhang (2014) stated that future research could profitably investigate the impact of the credit crises on audit fees in different sectors of the audit market to enable a comparison between these industrial segments (financial vs non-financial in the current study), taking into account the recent improvements in ISA/IFRS regarding the detailed disclosure of fair values of financial assets.

1.5. Research Aim and Objectives

This study basically aims to "find the relationship between fair value disclosure and audit fees in Jordanian listed firms". To fulfil this aim, the objectives are to identify:

1- The relationship between the presence of fair-valued assets and audit fees among Jordanian listed firms.
2- The relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.
3- The impact of ownership structure on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.

4- The impact of auditor industry specialisation on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.
5- The impact of corporate industry type (financial versus non-financial) on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.
6- The impact of the Global Financial Crisis on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.

1.6. Contribution and Statement of Significance

1.6.1. Contribution and Introduction to Theoretical Foundation of the Study

The study contributes to theory and practice. In relation to theory, the study employs agency, signalling and stakeholder theories. Triangulating these theories is achieved using the following. Agency theory is consistent with signalling theory in terms of considering information asymmetry and seeks to explain how shareholders are affected (Leventis & Caramanis 2005). In addition, agency theory expresses the conflict between shareholders and managers which is also reviewed in stakeholder theory which looks at stakeholder groups (Guay et al. 1996). Unlike prior literature on FVD and audit fees (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a; Goncharov et al. 2014; Sangchan et al. 2020), this study introduces signalling and stakeholder theories in relation to Jordan to complement agency theory. The rationale for combining these three theories is based on the need to investigate the impact of FVD on audit fees by linking the above theories to different parts of the theoretical framework. In the framework, corporate disclosure is defined using agency theory (Samkin & Schneider 2010). Signalling and stakeholder theories are used to explain the communication aspect of the FVD and interaction between users. While the overall aim of disclosure is captured by the stakeholder theory, signalling theory suggests a motivation for subjective judgements in fair value assessment. Signalling theory introduces additional motivation for FVD as a credibility mechanism and monitoring tool (Khlif & Achek 2016). Based on the stakeholder theory, higher audit fees express lower levels of earnings management and provide greater earnings quality which subsequently add credibility to firms' financial reports. Regarding, signalling theory, external auditors are considered to be a signal about the firm's disclosure quality (Sangchan et al. 2020). Corporates may appoint higher quality auditors to send positive signals to stakeholders in the stock market which leads to higher audit fees being paid (Huang et al. 2020).

The theoretical framework explains the purpose behind disclosing fair values of financial assets by Jordanian firms' annual reports and their link to audit fees. The framework shows the inherent reason for striving to obtain assurance on the quality of financial reports published by those entities from an independent party (i.e., external auditor). According to De George et al. (2013), Marden and Brackney (2009) and Abu Risheh and Al-Saeed (2014), audit fees are considered a crucial tool to ensure firms' compliance with IFRS. Similarly, in the context of developing countries, various scholars (Abu Risheh & Al-Saeed 2014; Ahmed & Karim 2005; Al Mutawaa & Hewaidy 2010; Al-Akra et al. 2010; Samaha & Stapleton 2008) have shown evidence for the positive effect of auditing and the level of compliance with IFRS in those regions. The risk and complexity are linked with FVA and additional disclosure related to fair valuation (Khlif & Achek 2016). In auditing theory, higher audit fees are considered to be compensation for the effort and time (auditor working hours) in the auditing process (Simunic 1980). High levels of compliance with FVA force external auditor to spend additional time and effort due to the high uncertainties surrounding FVA. Auditors become essential to protect stakeholders' rights and interests, resolve the agency problem between owners and managers and ensure adequate compliance (Griffith et al. 2015). Audit fees are a monitoring tool and an indicator of firms' compliance with FVD requirements (Samaha & Khlif 2016). Signalling theory has not been tested in developing countries regarding compliance with IFRS/FVD (Samaha & Khlif 2016); more examination is needed to fill this gap in the emerging economies literature. Therefore, this study strives to fill this theoretical gap.

Further, the study contributes to knowing more about Jordan. FVA was first implemented by Jordanian firms in 2005 with IAS 39, and subsequently many problems emerged from this practice in the Jordanian capital market. Therefore, higher risk and uncertainty of fair values understanding and meeting the regulatory requirements and expectations in Jordan are all factors that encouraged external auditors in Jordan to concentrate on delivering high-quality audits. Some Jordanian institutions sought to mitigate the information asymmetry problem and protect stakeholders by getting assurance about companies' financial information from high-quality audit firms. Charging higher audit fees indicates auditor client complexity and risk, and subsequently the quality of financial reports (Alhababsah 2019). Credible and transparent financial reports convey positive signals to firms' stakeholders (Nawaiseh et al. 2019).

1.6.2. Academic Contribution of the Study

This study is linked to the broad field of studies on monitoring costs (especially auditing FVA), and in particular to the recent concurring evidence provided by Ettredge et al. (2014a) and Alexeyeva and Mejia-Likosova (2016). It provides a more informed instrument to investigate the auditor-client connection emphasising audit fees determinants, which are a function of the client's financial reporting system. It does this by testing the unexperienced effect of FVMs factor on determining the amount of audit fees (Simunic 1980).

Academic research on the impact of FVD on audit fees is limited even in developed countries (Ettredge et al. 2014a). Five main studies discussed this phenomenon in developed countries, namely Alexeyeva and Mejia-Likosova (2016), Ettredge et al. (2014a), Goncharov et al. (2014), Sangchan et al. (2020) and Yao et al. (2015); while, the researcher is not aware of any published work on this area of research in the context of developing countries, Jordan in particular. Therefore, this thesis introduces new empirical evidence on how audit fees are determined and how the adoption of the FVA affects audit fees in Jordan.

First, the study introduces new factors related to FVD. The presence of fair value factor is proposed to examine how the magnitude of audit fees can differ among firms using fair value versus depreciated cost as the basic measurement model for their financial assets for the first time. Developing such factors is done in relation to the context's uniqueness as Jordanian's firms were required to use FVMs for the first time in 2005 (Siam & Abdullatif 2011). Jordan as an emerging economy with insufficient capital markets faced serious problems in implementing fair values (Abdullatif 2016). The "new fair value regulations" have been enacted by the government through the JSC in 2008 and revised in 2011. Such regulations require the inclusion of FVDs in companies' annual reports. These reforms aimed to minimise the issue of agency cost and maintain the stability of market share prices (Abdullatif & Al-Rahahleh 2020). The current research provides, for the first time, empirical evidence on the determinants of audit fees in Jordan following the first application of FVD requirements using different proxies of FVD, such as the presence of FVD, the proportion of fair-valued assets and the proportion of fair-valued assets by input levels: Level 1, Level 2, and Level 3 (see Abdullatif 2016; Al-Htaybat 2018; Brown & Tarca 2012; Cannon & Bedard 2016; Yang et al. 2018).

Second, since the majority of external auditor clients in Jordan are considered to have family-business models (Abdullatif & Al-Rahahleh 2020), the uniqueness of the ownership structure characteristics of Jordanian firms should be explained (Alhababsah 2019). The study considers the ownership structure variables (i.e., family, institutional and government ownership) following Khlif and Achek (2016) who promoted the need to examine the effect of ownership structure factors on the association between IFRS/FVA and audit fees. This study is the first to assess the impact of ownership structure on audit fees and its moderating role on the association between FVD and audit fees.

Third, the auditor industry specialisation variable is tested to examine the impact of auditor industry specialisation on audit fees. As stated by Al-Harshani (2008) a few analyses have been conducted on this area in developed countries, but little is known in developing countries, particularly Jordan. Unlike prior studies, this study looks at the moderating role of auditor industry specialisation on the association between FVD and audit fees following IFRS for the first time as suggested by Abu Risheh and Al-Saeed (2014). It contributes to existing knowledge by applying two competing scenarios of auditor industry specialisation following Audousset-Coulier et al. (2015): firstly, the product differentiation scenario (enhanced fee); and secondly, the shared efficiency scenario (reduced fee)[4]. Unlike previous research, audit fee-based meassures are to be

[4] Throughout the thesis, the term "Market Share-based (MS)" refers to the product differentiation scenario (enhanced fee) and shared efficiency scenario. However, the term "Client Portfolio Share-based (PS)" refers to the shared efficiency (reduced fee) scenario.

employed in the current study to measure the two dimensions of the industry specialisation scenarios. According to Audousset-Coulier et al. (2015), not much research has used audit fee-based measures as a proxy for testing industry specialisation due to the non-availability of audit fees disclosures by corporates. Such measures are the preferred choice since audit fees capture audit effort because audit fees are considered a result of the client size, complexity, and risks.

Fourth, given the importance of the corporate industry type, a new variable is devised to examine the relationship between FVD and audit fees and compare certain industry segments (financial versus non-financial). Ettredge et al. (2014a) and Alhababsah (2019) demonstrated that more research is needed on the determinants of audit fees using a sample from financial institutions. The current study fills the gap in knowledge by investigating the industry-specific differences in audit fees for the first time (Stein et al. 1994).

Fifth and finally, the study's period overlaps with the GFC where the increased uncertainty concerning FVEs led to much debate (Alexeyeva & Svanström 2015). Following Alexeyeva & Svanström (2015), the study develops two variables which look at the impact of FVD on audit fees over two different periods; pre-crisis (2005-2007) and post-crisis (2010-2018), as suggested by Krishnan and Zhang (2014) and Zaman et al. (2017). The present study also is the first attempt of its kind to carry out an examination about the effect of GFC on the association between FVD and audit fees.

1.6.3. Practical Contribution of the Study

This examination is encouraged by the major improvements in FVA legislations to supervise FVA application, and accounting and auditing profession practices in Jordan during 2008 – 2015, such as the "*New Fair Value Regulations*". Given the dramatic changes happening in the ME business environment and according to the stated "Jordan 2025" plan, this analysis contributes to the current and future policy developments by government authorities to create favourable financial reporting conditions. This can be done by integrating and promoting the ME and Jordan into the international business environment. The study's conclusions assist Jordan's government to meet the "Jordan 2025" development plan by emphasising provide more specific guidelines and legislations which simplify and improve compliance with FVD requirements. In doing so, the preparers and auditors will be guided by the government on how to determine audit the fair values. Such legislation could play a vital role in protecting investors through enacting more strict penalties against the auditors who violate the laws, thus providing stakeholders a high level of investor protection. High quality financial reporting helps create an attractive investment environment as wanted by the Jordanian government (Alhababsah 2019). This study's overall results have implications for various policymakers and standards setters by providing updated empirical evidence generated in Jordan concerning the application of the FVA. The findings expect to attract both auditors and clients' attention by updating the current audit pricing models, which can be used in determining auditing costs resulting from the implementation of FVA.

The findings of this study provide policymakers and standard setters with updated empirical evidence originating from a non-Western setting about the implications of adopting the IFRS/IAS. Standard setters assert that FVD can enrich both the decision and contracting usefulness of financial statements. Outcomes of this study assist standard setters in defining the role of FVD in general-purpose financial statements and thus possibly enhance the quality of financial reporting. The findings help academics, the audit profession and government agencies in Jordan responsible for implementing IFRS. This study benefits regulatory authorities that monitor and regulate the external audit profession in Jordan such as, the JSC, the JACPA, CCD and JACC. External auditors are required to enhance audit quality in Jordan, especially since investor protection procedures are not strong enough (Alhababsah 2019).

Outcomes of this study have ramifications for the FVA adoption cost as it affects regulators and auditors. The evidence produced here from Jordan contributes to the current debate on the increased use of FVEs for financial assets. In turn, this helps to improve audit pricing in Jordan and contributes to closing the expectations gap between external auditors and users of financial statements regarding fair value financial reporting (Abdullatif 2016). Knowledge about the audit fee determinants could be useful for auditors and their clients. Audit clients can benefit from being knowledgeable about the factors which influence the cost of auditors' fees and negotiating them, thereby controlling the internal aspects that cause auditing prices. This, in turn, can be useful for auditors in determining the appropriate prices for their services (Gist 1992). According to Hay et al. (2006), the significance of certain factors in determining audit fees changes according to each context's features and period of analysis, so the audit fee models need to be revised periodically.

1.7. The Structure of the Thesis

This thesis consists of seven chapters (see Figure 1.1). The following chapters are structured as follows:

Chapter Two reviews the theoretical and empirical research on FVA and audit fees down to addressing the research gap.

Chapter Three explains the research methodology, conceptual/theoretical framework, the hypotheses development, data selection and variables measurements.

Chapter Four summarises the analysis and findings regarding the association between FVD and audit fees and the difference on this relationship across industry types and the GFC periods.

Chapter Five discusses the main analysis findings on the moderating effect of each ownership structure factor adapted in this study (including family, government and financial institutional ownership) on the association between the proportion of fair-valued assets and audit fees.

Chapter Six outlines the main analysis findings on the moderating effect of each auditor industry expertise scenario adapted in this study (including product differentiation and shared efficiency scenarios) on the association between the proportion of fair-valued assets and audit fees.

Chapter Seven presents the final conclusions, addressing the current study key findings and limitations, and the recommendations for potential avenues of future research on this field of accounting research.

1.8. Summary

This chapter introduced the current research providing a general overview about the study, presented a brief background about the context of the study, the research problem and context justifications. It also explained the motivations, objectives and contribution of the study; theoretical, academic and practical. It finally, described the structure of this thesis.

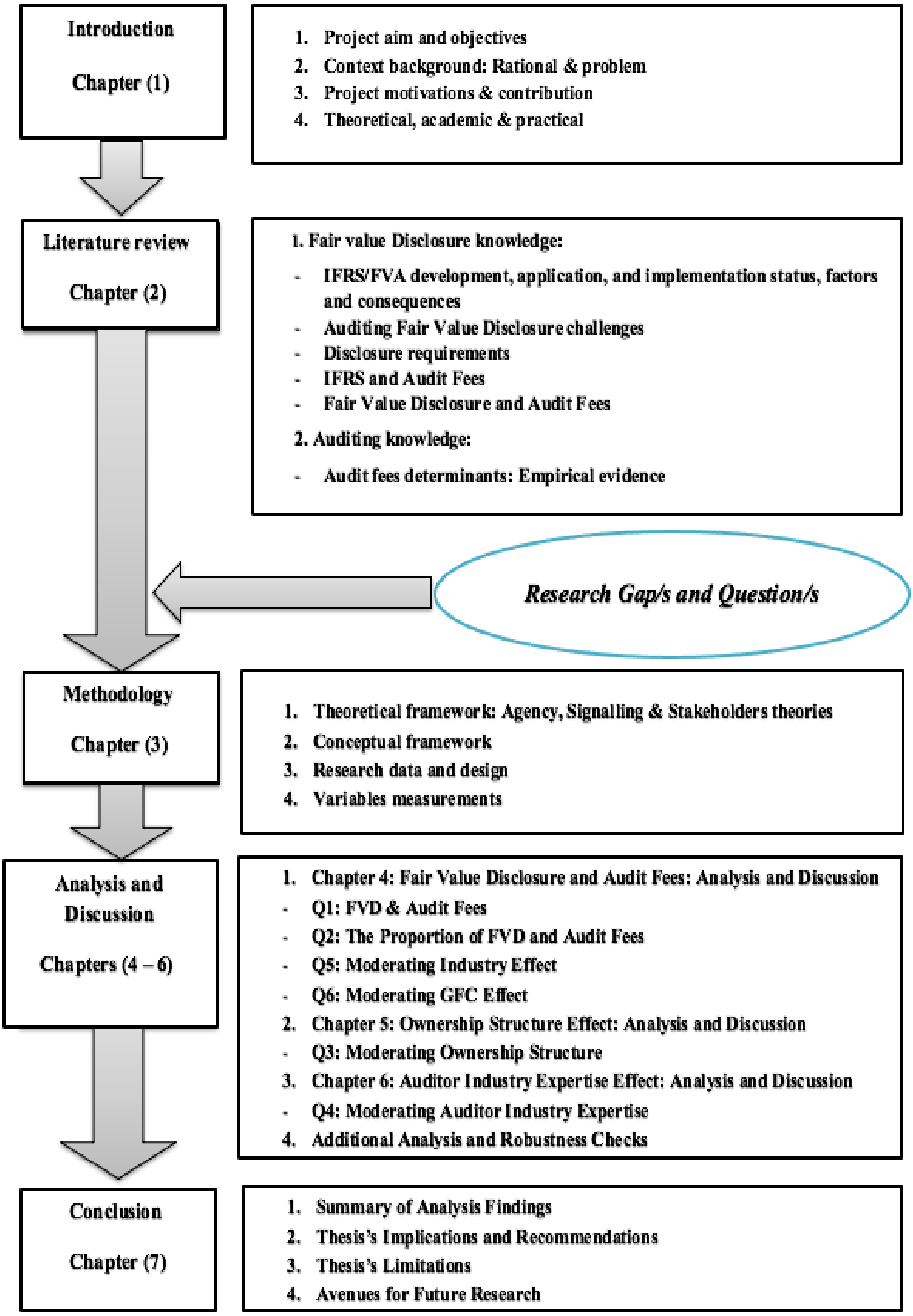

Figure 1.1. Thesis Structure

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

This chapter builds on two aspects of accounting knowledge that examine the determinants of audit fees and effects of FVD. The chapter covers several key areas (see Table C.1 of *Appendix C: Summary of FVA Literature Review*). Section 2.2. provides a historical background about IFRS development and the extent of its application by country, followed by its economic consequences. Section 2.3. introduces the definition and a brief overview about FVA development, the major empirically evidenced differences between fair value and HC. FVM, implementation and disclosure requirements following IFRS are also presented here, followed by the recent debate regarding FVA. Section 2.4 presents the relevant issues that concern auditing FVA. Section 2.5. describes the audit fees definition and the recent audit fees literature on audit fees determinants. Section 2.6. presents the recent literature on the association between IFRS and audit fees. Section 2.7. outlines the recent literature on FVA and audit fees. Section 2.8. concludes the chapter and highlights the research gap and question/s.

2.2. Overview about IFRS Development, and Application Factors and Status

2.2.1. IFRS Development and Application Factors

In an era of globalisation, traditional accounting regulation systems no longer satisfy international stakeholders' expectations and needs. Developing countries are now linked to global commerce and trading realities (Boolaky et al. 2018). Accounting systems and practices are influenced by the dynamics of a nation's accounting needs and the level of economic progress (Nobes 1998). Accounting practices vary due to differences in countries' legal and economic systems, culture, colonial history, etc. (Cieslewicz 2014; Ding et al. 2005). This makes it very hard for users to consider such information and make comparisons between companies in different countries (Prather-Kinsey 2006). Moreover, the need for developing internationally accepted accounting standards that deal with capital market regulations has risen dramatically, especially due to the great interdependence between financial markets. IFRS offers a way to promote secure and stable international regulatory environments (Ball 2016).

In 1971 the International Accounting Standards Committee (IASC) issued the IASs and in 2001, the IASC restructured as the IASB. The IASB adopted IASs and started issuing and publishing new accounting standards, such as IFRSs (De George et al. 2016). The IASC and its successor body (IASB) have played a critical role in issuing internationally acceptable financial reporting standards, which is necessary to provide better quality accounting information to truly reflect a firm's actual economic position (Barth 2018). Importantly, accounting practices' failures have emerged during the last few years. The announcement of bankruptcy of large corporations, such as Enron, WorldCom and Lehman Brothers, have significantly affected the trustworthiness of accounting practices since that time. As a result, a great emphasis has been placed on IFRS implementation to solve these problems (Nobes & Stadler 2015). The acceptance of IFRS by emerging economies seemed to be an opportunity for such regions to solve their accounting practices problems (Kapaya 2000) and provide high-quality financial disclosures which, in turn, would help attract foreign investors. Implementation of IAS gives markets attractive business infrastructure globally, leading to an attractive investment climate to motivate investors, for example by reducing the cost capital (Boolaky et al. 2018; Combs et al. 2013).

The major focus of scholars in this line of literature is the role of institutional pressures (i.e., coercive, mimetic, and normative) on the IFRS adoption decision. Scholars like Tan et al. (2011) used institutional isomorphism pressures to explore the possibility of IFRS adoption in the US at the country level. They found that the convergence with IFRS could be motivated by multi-dimensional isomorphic pressures. These pressures include both internal and external coercive pressures, mimetic, and normative isomorphism. Referring to coercive pressures, this means pressure from another organisation, regulator, or government agency, to act in a specific way (Griffith et al. 2015)[5]. Normative isomorphism includes professional bodies and large accounting firms' recommendations regarding best practice (DiMaggio & Powell 1983). Mimetic isomorphism occurs as a consequence of the uncertainty and outcomes of US financial scandals; therefore, organisations follow other well-established systems in other companies (Mizruchi & Fein 1999).

In developing countries, accounting regulations and practices are designed in a way that improves how they approach their economy’s needs (Samaha & Khlif 2016). Accounting practices are based on human interactions but can be modified and adjusted following changes in human needs and expectations (Carnegie & Napier 2012; Judge et al. 2010). Accounting practices and regulations are more likely to be based on environmental factors in a specific setting at a specific time (Boolaky et al. 2018). Arguably, the ME countries share virtually the same heritage, such as language, beliefs, traditions, religions, and geography that reinforce their cultural, social and economic fabric (Yu & Hassan 2008). Over the past few decades, the widespread adoption of IFRS in the ME is the consequence of political, financial, and technological changes (Alhtaybat et al. 2012).

[5] IFRS acceptance in this regard is supported by various international institutions, such as the Basel Committee (BC), International Organisation of Securities Commissions (IOSC), International Federation of Accountants (IFA), World Bank (WB) and International Monetary Fund (IMF) (IAS Plus 2019a).

A significant body of research regarding IFRS implementation in emerging economies has emphasised the main reasons and motivations behind accounting regulation changes, such as Perera and Baydoun (2007) in Indonesia, Kamal Hassan (2008) and Hassan et al. (2014) in Egypt, Tahat et al. (2018), Al-Akra et al. (2009) and Al-Htaybat (2018) in Jordan, Poudel et al. (2014) in Nepal, Zaman and Shiraz (2005) in Bangladesh, and Hassan et al. (2014) in Iraq. These studies identify the primary environmental factors that encouraged IFRS adoption (i.e., culture, political, legal systems, religion, education, economic, national, and international forces). Using institutional theory, this line of research supports that accounting and auditing development in a region is caused by the three institutional isomorphic pressures: coercive, mimetic, and normative. Coercive isomorphic pressure is created by engagement with the international institutions and capital markets. Initial adoption of IFRS resulted from coercive pressures from international organisations such as the WB and IMF. Additional improvements in the accounting system are more likely to result from normative and mimetic isomorphic pressures. Mimetic isomorphic pressures arise from the tendency to attract multinational businesses, foreign direct investment, and foreign trade partners to the country. Normative isomorphic pressure from the accounting profession aims to improve accounting skills and knowledge through by additional accounting training sessions. In a recent cross-country study by Boolaky et al. (2018), the level of IFRS adoption and developments of accounting practices in the MENA region (i.e., Egypt, Jordan, Libya, and UAE) is explained. The researchers state that the development of accounting practices in these countries and readability of accounting profession play a vital role in compliance with IFRS.

2.2.2. IFRS Application Status

Prior to IFRS adoption, individual countries developed a set of accounting practices appropriate to their environment characteristics. This set of accounting practices is known as the GAAP (Ebaid 2016). By 2005 tens of thousands of companies around the world had switched from local GAAP and embraced IAS/IFRS, for instance the EU, Hong Kong, Australia, and Canada (De George et al. 2016). Although the cost-benefit trade-offs of IFRS adoption were uncertain, the world experienced widespread IFRS adoption by a large number of countries over a short period of time. In recent years, more than 140 countries have required full compliance with IFRS for all or most of their public firms or at least their accounting framework to closely resemble it, while nearly 90 countries have adopted the full version of IFRS as requested by IASB (IFRS Foundation 2019b).

Presently, the adoption of IFRS by various jurisdictions is clearly explained by IASB's systematic review of 166 jurisdictions (IFRS foundation 2020b). It is evident that by 2018, 144 out of 166 jurisdictions were required to adopt IFRS standards by public companies which means 87% of jurisdictions around the world now follow IFRSs requirements. For ME, Europe, and Africa regions the adoption percentage were 100%, 98%, 95% respectively. Followed by Asia Oceania 74% and then the Americas region with 73% (see Figure 2.1). Fifteen out of 20 of the G20 economies require IFRS adoption which represents 75% of the G20. To date, 12 countries permit IFRSs but are not required to have the full version of IFRSs, while 7 countries still operate their own national standards and others are currently moving to IFRSs. Countries such as China, Japan, the USA, India, Indonesia, Egypt and Vietnam use their own local GAAP (IFRS foundation 2020b). In regard to the Arab ME economies, IFRS implementation has progressed rapidly, for the first time in Lebanon in 1996 and then in Jordan in 1998[6]. They were followed by Oman and Iraq and lastly Saudi Arabia in 2017 (Al-Htaybat 2018). Most of the 16 countries in the ME now employ the full version of IFRS (see *Appendix A*). Egypt developed its local GAAP standards which are identical to IFRSs. It is evident that the percentage of IFRS implementation in this region is almost 100%.

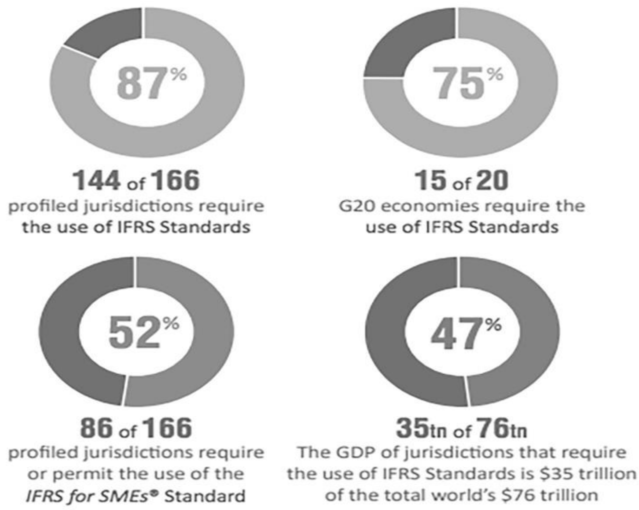

Figure 2.1. IFRS Application Status

Source: IFRS Foundation (2020b)

To this end, IFRSs promised to bring transparency through developing international comparability and thus enhance the quality of accounting information (Ball 2016). This has led to enhancing the ability of market participants, such as investors and other stakeholders in making well-informed business decisions, especially after releasing IFRSs, the IASB emphasised the use of FVA (Terzi et al. 2013). The main concern of IFRS was the implementation of FVA (Khlif & Achek 2016). A number of IASs were issued and required recognition of some assets at fair value on the balance sheet, income statement and in stockholders' equity (Landsman 2007). This is consistent with several joint projects which have been launched by IASB and Financial

[6] In 1989, the JACPA was established as the country's local professional accounting body. In fact, JACPA played a significant role with the IASC and IFAC in facilitating the adoption of the IAAS within Jordan; particularly, by 1990, it recommended that all Jordanian firms should follow IASs. Afterward, in 1997, the "Company Act No. 22" was introduced which stated that Jordanian listed firms' financial statements should be prepared in accordance with IFRS, confirmed by "Securities Act No. 23" of 1997. The law-imposed penalties for non-compliance, such as fines and delisting (Al-Htaybat 2018).

Accounting Standards Board (FASB) to expand the use of FVA. However, the adoption of FVA provides value relevant information when only the fair values are prepared based on the deep and liquid markets, otherwise fair valuation may cause substantial manipulation in countries where the markets are considered illiquid and insufficient (Zyla 2020). Several scholars have highlighted the impact of FVA on accounting practices in general and the auditing profession specifically (Alexeyeva & Mejia-Likosova 2016; Bratten et al. 2013; Cameran & Perotti 2014; Ettredge et al. 2014a; Goncharov et al. 2014; Griffith 2020; Huang et al. 2020; McDonough et al. 2020; Miah 2019; Oyewo 2020; Oyewo et al. 2020; Sangchan et al. 2020). The following sections look at the challenges of preparing fair values and the impact of FVA on accounting and auditing practices, and particularly audit fees.

2.3. Fair Value Accounting

2.3.1. Fair Value Definition and Development Overview

2.3.1.1. Fair Value Definition

The first definition of FVA was provided by Statements of Financial Accounting Standards (SFAS) 157 [7]. SFAS 157 defined fair value as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date" (FASB 2020). By 2005, the amendment to IAS 39 for Fair Value Option (FVO) was released by the IASB. IAS 39 also defined fair value as "the amount for which an asset could be exchanged, or a liability settled between knowledgeable, willing parties, in an arm's length transaction." This was followed by the IASB's definition of fair value in the Exposure Draft (*ED/2009/5: FVA released*) in May 2009, which proposed guidance on how fair value should be measured and its disclosure requirements under the existing international standards (IAS Plus 2009b). The IASB's ED reaffirmed the fair value definition was provided by FAS 157 and the proposed guidance was also identical to US GAAP. The IASB's ED, moreover, defined FVA on the basis of an "exist price". IFRS 13 was issued by IASB on 12 May 2011. IFRS 13 published a more recent definition for FVA on also the basis of an "exit price" and states the fair value hierarchy. Once the FASB and the IASB issued ASC 820 and IFRS 13, they unified the fair value concept. Based on IFRS 13, fair value was defined as "The price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date" (IAS Plus 2020).

2.3.1.2. Fair Value Accounting Development

Specifically, in the early 1970s, FVA was used following the introduction of the SFAS 12 by FASB. Since then, a debate has emerged on the feasibility of using fair value as a measurement

[7] Now known as *Accounting Standards Codification (ASC) 820 — Fair Value Measurement—* in the updated FASB Codification.

basis and whether it is better than the HC principle (Ball 2016). In 1992, fair value application of financial instruments became mandatory under SFAS 107. The following effort towards fair value application was also undertaken by FASB when it released the SFAS 115 which divided financial assets into the categories of "held to maturity", "held for sale" and "held for trading". SFAS 115 was first established by FASB in 1994 and this statement applied to all finance industry firms. SFAS 115 enabled companies to consider their discounted cash flow as their main criterion for "held to maturity" and made it mandatory for firms to use fair value while valuing the assets that fall into the two other categories (FASB 1993). Based on SFAS 115, a new and improved statement with amendments – SFAS 133 – was published in 1998 (FASB 1998; Magnan et al. 2015). According to SFAS 133, derivatives must be carried on the balance sheet using fair value and any changes in their fair value, outside of the changes associated with specific hedging activities, are to be presented in the income report. It is true that fair value principles went through a reinstatement process, but this made the application of these principles in practice more daunting and controversial than ever (Peng & Bewley 2010).

In September 2006, the SFAS 157 was released by the FASB to reduce the level of complexity and controversy of FVMs (FASB 2020). Despite the numerous FASB's standards, such as SFAS 107, 115, and 133 that advice the use of fair value model for financial instruments, there was no specific explanation of the concept 'fair value' or a clear guideline for FVMs which had been issued prior to SFAS 157. Following SFAS 157, IASB released a discussion paper entitled "*Fair value measurements*" in the same year (IAS Plus 2006). Both documents focused on using the fair value in financial reporting. In 2009, the IASB released an exposure draft entitled "*Fair value measurements*", which is mostly the same as SFAS 157 (IAS Plus 2009a).

Not only did the FASB develop standards for insurance accounting and financial instruments; the IASC, which was renamed in 1999 as IASB, made great efforts to achieve uniformity in accounting principles which are utilised by other organisations and industrial institutions on a global scale (Ball 2016). By 2005, the first effort by IASB in fair value application was undertaken. The project on FVA has been added to the IASB's agenda before the GFC through release of IAS 39 (IAS Plus 2005, 2019b, 2019d). The efforts to enhance financial instruments led to the issuance of IAS 39 in 1998 and since then, there have been some amendments to IAS 39 including those specifically for employing FVA[8]. For the most part, the efforts of IASC have been consistent with FASB's and both have financial instruments as their focal point. The Committee put forward two extra initiatives through IAS 41 which require the fair value model to be utilised by all those who undertake agricultural activities and IAS 40, which incorporates FVA into non-financial assets (IAS Plus 2020). In 2010, both accounting bodies, IASB and

[8] A Summary of FVA and Related Auditing Standards Development Timeline is provided by Alharasis et al. (2020) in *Table A.1.* of *Appendix A.*

FASB, started the convergence process to identify a uniform framework for FVA (AICPA 2020). Such a process resulted in releasing new accounting standards and improving existing ones, for example, issuing ASC 820 by FASB which was followed by issuing IFRS 13 by IASB.

2.3.2. Fair Value vs. Historical Cost Accounting: Empirical Evidence

The traditional method of accounting that has been used for decades is HCA. It has been criticised by many scholars (Deegan & Unerman 2006; Riahi-Belkaoui 2004) because it is now obsolete when decisions must be made. Riahi-Belkaoui (2004) and Haswell and Evans (2018) argued that HCA lacks comparability due to the recognition of unrealised gains in assets values. Deegan and Unerman (2006) stated that the drawbacks of HC arise especially during inflationary periods because HC cannot reflect changes in prices. Therefore, the HCA has been modified many times, and in recent years replaced by FVA (Oyewo et al. 2020; McDonough et al. 2020).

FVA is not considered a new approach (Guthrie et al. 2011) and has been employed to correct the problems associated with HCA (Barth 2013; Carroll et al. 2003; Taplin et al. 2014). HCA was criticised because it measured the current value of assets and liabilities based on the acquisition date rather than their actual market value at the measurement date (Linsmeier 2013). FVA seeks to improve the quality of financial reporting through providing relevant, transparent, and comparable financial information for the users (IFRS Foundation 2019a). The initial studies undertaken in the fair value literature focus mainly on value relevance and tried to find whether FVA provides value relevant financial information. The earlier empirical research on this area investigated the reliability and the value relevance of FVA relative to HCA (Dietrich et al. 2000). For example, Barth and Landsman (2010) assert that the fair value model is complicated yet informative. In addition, they state there is an inherent risk related to fair value auditing which renders the fair value method as less effective. They also contend that fair value is not necessarily the right way to measure financial instruments.

Predictability is another crucial factor regarding the discussion of fair value and HC principle by taking into account the factors of relevance and reliability of the information provided in financial reports by which future predictions can be made (Barth et al. 2018; Ball et al. 2015). Barth et al.'s (2018) study suggests that users should use prediction as a tool for responding to rapid changes. The authors also show that under the fair value method, both the relevance and predictability information are more visible. Thus, the fair value model is viewed as the more advanced predictability method in comparison with the HC model. Moreover, Hirst et al. (2004) discuss that historical data is known as a highly significant factor in terms of determining current realities. According to Mirza (2008) the reliability of accounting information is characterised by faithful representation and being free from error or bias. The authors added that reliability is the most problematic characteristic of accounting information due to the uncertainties of the markets.

Therefore, the information is reliable when its sources are verifiable and accurate. Mirza (2008) emphasised the significance of considering economic prominence and market realities. This can be gained through focusing on FVA rather than the HC when measuring assets.

Some researchers, however, stated that producing reliable information needs additional costs and could lead to higher financial risks due to its complexity. Song et al. (2010) asserted that risks could also reflect the fraud inherent in finding reliable information. Following IFRS's conceptual framework, financial information should be free from any material bias and error. However, the faithful representation of financial information is still a controversial issue in auditing FVA. Mirza (2008) stated that to provide correct information it should be developed based on reliable statistics to build confidence among financial information users. Olson (2007) criticised the reliability of FVA as it does not guarantee that there are no material biases and misstatements. Again, in favour of HCA, Landsman (2007) argues HCA is appropriate for calculating firms' cash flows. Furthermore, Landsman (2007) suggests that HCA is deemed to be a foundation for managers and investors in presenting detailed forecasts of future cash flows.

According to Beisland (2009), implementing FVA leads to high-value relevance of the balance sheet compared to use of the HC principle. However, some scholars found evidence that the value relevance of earnings declined in the case of not using the HC principle, compared to using FVA instead. For example, Negakis (2013) explored the impact of employing IFRS on Greek firms, especially the stock returns-earnings association. The study reveals that the relationship between stock returns and earnings is affected negatively following IFRS implementation, especially concerning earnings levels and changes. The study stressed that the leading cause for this adverse effect of IFRS is the introduction of FVA through IFRS's standards as mandatory for Greek firms. Recently, Freeman et al. (2017) stated that the essence of the criticism is that FVA makes financial statements volatile and fair value has such high measurement uncertainty, so that the relevance of financial statement information is undermined. By contrast, Landsman et al. (2012) presented different results and stated that the IFRS/FVA has led to a reasonable expansion on the information content regarding earnings.

In general, the main concern of IFRS is the implementation of FVA (Khlif & Achek 2016). However, the adoption of FVA provides value relevant information when only the fair values are prepared based on active markets, otherwise using fair values may lead to significant manipulation in the capital markets (Dixon & Frolova 2013). Since FVMs based on the exist prices are available in active markets at the measurement date, some types of assets and liabilities could not be evaluated fairly due to the lack of efficient markets to do so. In this case of unavailability of liquid markets, the implementation of FVA comes with higher usage of assumptions which encourages the manipulation and misstatement of financial information increase due to the agency problem (Badia et al. 2017; Huang et al. 2020).

2.3.3. IFRS Fair Value Disclosure Requirements

2.3.3.1. Measuring Fair Value Estimates

It has been suggested by Kimmel et al. (2010) that "accounting is an information system that identifies, records and communicates the economic events of an organization to interested users". Based on this definition, it can be said that financial statements are the only way through which entities convey their accounting information to interested parties (i.e., investors and the stakeholders in general). The importance of these financial statements emerges from the quality of statements' information presented to users (i.e., investors, creditors, managers, and government agencies). Therefore, the selected measurement base used in preparing the financial statements, is considered to be the major problem of accounting. For instance, it can refer to investors interested in identifying the real income earned by a given firm over a given period of time as a basis of their decisions. In accounting, the amount of earned income can be identified based on several methods (including FVA). Consequently, measurement in accounting is the key aspect of financial reporting quality (Kieso et al. 2010; Kimmel et al. 2010).

Following the eruption of the GFC, the IASB realised there was an urgent need to offer additional explanations on how to measure fair values of assets and liabilities, especially in the case of an inefficient market to improve the transparency of FVMs by offering additional disclosures with reference to the measurement uncertainty (IFRS foundation 2020a). The joint effort of the IASB and FASB with the recommendations of G20 organisers resulted in establishing the "Fair Value Expert Advisory Panel" in May 2008 which included a group of auditors, regulators, preparers, and users of financial statements. They reviewed the best practices regarding the valuation techniques and formulated guidance for additional practices on valuation methods (IFRS foundation 2020a). As a consequence, IFRS 13 was established, and fair value hierarchy required disclosures (IAS Plus 2020) about the three levels of fair value inputs (see Figure 2.2).

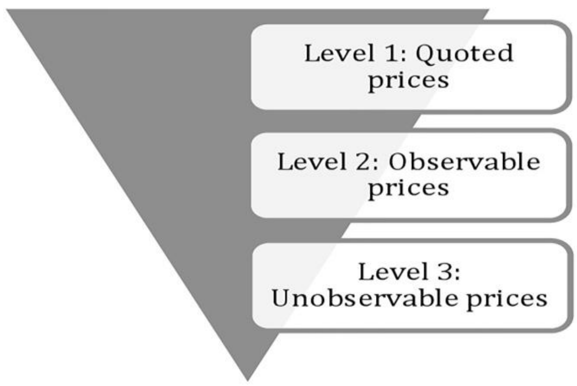

Figure 2.2. Fair Value Hierarchy
Source: (IAS Plus 2019)

Previously, the fair value hierarchy was established by IASB after releasing the modified version of IAS 39 — "*fair value option*" in June 2005, in order to increase the consistency and comparability in fair values. FVM at that time was most commonly used to measure financial assets and liabilities (IAS Plus 2005, 2019c). Fair value Level 1 inputs (market-based) reflect active markets' quoted prices for identical assets or liabilities that the firm can gain at the measurement date. A quoted market price is considered the most reliable evidence of fair value offered by an active market which is used without any adjustments to measure fair values-assets or liabilities. Unlike fair value Level 1 inputs, fair value Level 2 inputs (market-related information) are considered inputs rather than quoted market prices. Inputs of assets and liabilities are observable either directly or indirectly. Finally, fair value Level 3 inputs (mark-to-model) is usually risky and complex. Level 3 fair value inputs depend on unobservable inputs to measure the fair values of assets and liabilities (IAS Plus 2019c, 2020). These unobservable inputs are often irrelevant because of the non-availability of the relevant observable inputs especially in the case where active markets are lacking (Song 2015).

Following the IFRSs requirements regarding fair value hierarchy disclosure, especially for Level 3 inputs, additional disclosures set out to explain the valuation techniques and the inputs used to conduct those measurements. Firms were also required to disclose the effect of these measurements on profit and loss or other comprehensive income for recurring measurement (IAS Plus 2019c, 2020). In addition to these minimum disclosure requirements promulgated by IFRS 13, preparers have to disclose any extra information that might be needed to meet IFRS 13's objectives (IAS Plus 2020). In general, the best evidence of FVA is the quoted market prices in an active market, and it is the preferable way to measure the financial instrument and should be used to the extent possible. In the case of an inefficient or illiquid market (i.e., fair value Level 2 and Level 3 inputs), firms are required to use appropriate valuation techniques to provide accurate assumptions regarding fair values (Freeman et al. 2017).

2.3.3.2. Valuation Techniques

There are three commonly used valuation techniques to measure fair values and these are: the market approach, the cost approach, and the income approach (IAS Plus 2019c). In regard to the market approach, this method uses the prices and other relevant information produced through market transactions including matrix pricing. Matrix pricing is defined as a mathematical technique which is used mainly to compute debt securities' relationship with other benchmark quoted securities (Barlev & Haddad 2004). The income approach converts the future amounts (i.e., cash flows, expenses, and income) to given present discounted amounts. Thus, fair values are determined based on the values generated by current market expectations regarding those future amounts (IFRS foundation 2020b). These valuation models include current value methods, option pricing models which combine current value techniques and indicate both intrinsic and time values of an option; and multi-period excess earnings method which is considered the best measure for the fair value of some intangible assets. Finally, the cost approach reflects the value that would be required presently to substitute the residual capacity of an asset and it is known as the current replacement cost. Based on the seller's perspective, the price that would be gained for the asset depends on the cost to a buyer to purchase or construct an identical asset of comparable utility, customised for obsolescence. The current replacement cost is an approach which can measure the fair value of fixed assets by using an in-use valuation premise. This is due to the lack of the possibility of the market participant paying more for an asset than the value for which it could exchange the service capacity of that asset (Haswell & Evans 2018).

Firms choose the appropriate valuation techniques based on circumstances and for which sufficient data is offered to measure the fair values of assets and liabilities (Georgiou & Jack 2011). The firms must expand the use of observable inputs and decrease the use of unobservable inputs. The valuation techniques to measure fair values should be consistently employed. However, changing valuation techniques is possible where this change would result in a measurement that is more representative of the fair values in those circumstances[9] (IAS Plus 2019a, 2019b; IASB 2009; Penman 2007). Firms will provide substantial additional disclosures because FVMs require significant judgments, in addition to clear and transparent disclosures which are critical to assist investors to understand managers' judgments (Vergauwe & Gaeremynck 2019). Firms using FVA to measure assets and liabilities shall provide sufficient disclosures regarding the methods and inputs used in the measurement process, and to disclose information on the effect of the measurements on a firm's profit or loss or other comprehensive income for the period (McInnis et al. 2018). Further, fair value standards require a revaluation of the fair values in each quarter; thus, errors in the previous valuation should be corrected in a timely and ongoing basis. Since FVEs are market-based measurements rather than entity-based, managers are forced to follow market participants' assumptions when pricing assets or liabilities (Haswell & Evans 2018).

2.3.3.3. Fair Value Disclosure under IFRS

2.3.3.3.1. IFRS Standards for Fair Value Disclosure

IFRS adoption introduced a necessary shift to FVA which is the main concern of this process. The key concern was the subjectivity inherent when preparing fair values of assets and liabilities in the case of non-available market prices (Terzi et al. 2013). Several international accounting standards were issued and required recognition of some assets at fair value on the balance sheet, income statement and in shareholders' equity (Landsman 2007). This is consistent with several

[9] Changing the valuation techniques is most likely used for developing new markets which produces new information. Thus, old information would be no longer available, or the valuation techniques are improved (IASB 2009).

joint projects which were launched by the IASB and the FASB to expand the use of FVA (AICPA 2020). As a result of these efforts, FVMs and disclosures of financial events under IASs/IFRSs and FASBs have been required by IFRS since 2005 (under IAS Plus 2019a, 2019c)[10]. For example: IAS 16, IAS 32, IAS 36, IAS 38, IAS 39, IAS 40, IFRS 2, IFRS 3, IFRS 4, IFRS 5, IFRS 7, IFRS 9, IFRS 10 and IFRS 13. This is in addition to the number of FASs published by FASB, such as SFAS 119, SFAS 107, SFAS 115, SFAS 123 and SFAS 133.

The first application of FVA by IASB accompanied the issuance of IAS 39, since 2005 has greatly affected the banking industry worldwide (Fiechter & Novotny-Farkas 2017). In 2004, IAS 39 was issued to underline the requirements for recognising and measuring financial assets, financial liabilities, and some contracts to buy or sell non-financial items (IAS Plus 2019a). Then the amended IAS 39 for “fair value option” required after 15 June 2005 commenced on 1 January 2006. IAS 39 requires entities to apply FVA following a three-level hierarchy to identify the fair value for financial instruments. IAS 39 requires corporates to recognise most of their financial assets and liabilities on the balance sheet at fair value (IAS Plus 2019a). Based on IAS 39, fair value for financial assets has been categorised into three classifications - AFT, AFS and FVO – which determine how a given financial asset is realised and measured in the financial statements (IAS Plus 2019a). In this way, market participants can easily process and include this information in their valuations. FVD of financial assets has been required by a number of IASs/IFRSs, such as IAS 39, IFRS 7, IFRS 13, and IFRS 9 (IAS Plus 2019a; IFRS foundation 2020b). In 2009, IFRS 9 replaced the previous classification and measurement of financial assets of IAS 39 (IAS Plus 2019f). The issued version partially replaced IAS 39, and there are still more components to be issued on impairment and hedging. IFRS 9 serves to reduce the complexity of financial instruments (IAS Plus 2019a).

Turning back to 2005, the IASB issued IFRS 7 to replace the disclosure provisions of IAS 32 effective in 2007. IFRS 7 also replaced IAS 30. IFRS 7 was issued by IASB in 2005 (IAS Plus 2019e). IFRS 7 requires entities to disclose information regarding their financial instruments under specific classes. IFRS 7 must be applied in either financial or non-financial industries. The financial instruments disclosure requires entities to publish details of all types of such instruments and their associated risks (IAS Plus 2019b). The amended version of IFRS 7 since 2008 requires a clear disclosure of FVMs through three levels of the fair value hierarchy (IAS Plus 2019b). In 2008, amendments to IAS 39 and IFRS 7 required reclassification of financial assets from one category to another. Therefore, under IFRS 7 entities must disclose information about the significance of financial instruments to fairly show the entity’s financial position and

[10] Prior literature on FVA provides numerous definitions and concepts about FVD used over the last few years. However, for the current thesis, FVD requirements discussion is based entirely on FVA as published by IASB through IASs/IFRSs.

performance. This comprises disclosures for each category of: financial assets measured at fair value through profit and loss; outlining separately those held for trading and those designated at initial recognition; held-to-maturity investments; loans and receivables; available-for-sale assets; financial liabilities at fair value through profit and loss; and outlining separately those held for trading and those designated at initial recognition and financial liabilities measured at amortised cost (IAS Plus 2019a).

A decade ago, IASB fair value paradigm was implemented by introducing the IFRS 13. The introduction of FVA by both IFRSs and US GAAP has been blamed for causing the GFC (Goh et al. 2015). During the crisis, market liquidity of many financial instruments simply dried up, which forced firms to use valuation methods based on prices based on a limited number of transactions. This situation led to the problem of valuations and then very low prices that matched the liquidity that was available to the buyers (Allen & Carletti 2008a). IFRS 13 was issued in May 2011 and became effective for annual reports after 1 January 2013, and it is a result of a joint project between the IASB and FASB. IFRS 13 requires firms to present more detailed information regarding the fair value hierarchy. In fact, the concept of fair value hierarchy and the definition of each level is the same as that concerning previous standards (IFRS Foundation 2020b). IFRS 13 is a wider application of IFRS 7 because it extends FVM to non-financial assets and liabilities. The standard is considered a consequent response of IASB following the eruption of the credit crisis in 2008. IFRS 13 represents the principle-based framework guiding entities to measure or disclose the fair value of their assets, liabilities, or equity instruments (IFRS Foundation 2020b).

2.3.3.4. Fair Value Implementation Factors and Application Status

In a global setting, the argument is that investors' ability to process fair value information is likely to be influenced by differences in institutional characteristics across countries (see Table 2.1). The ability of investors to do this may be attenuated due to the variations in the quality and quantity of disclosures associated with financial instruments (Bischof 2009). Understanding why a bank adopts fair value, for instance, is of great importance. If it leads to a reduction in accounting mismatches, further information is useful in terms of what are the reduced risks and how effectively they are hedged (Maffett 2012). Such disclosures are not standardised nor complete in the financial statements of global banks and there are disclosure variations from country to country. Furthermore, when using fair value information, the experience of investors is limited to the trading book in some institutional environments[11].

[11] Denmark is an exception to this because investors are more used to fair values. Sweden and Norway are among those countries which extended FVA in the financial sector way before IFRS was adopted (Gjerde et al. 2011).

The literature presents a small number of studies which solely focus on fair value and take into consideration the cultural and religious issues as well as issues regarding jurisdictional contexts, particularly in underdeveloped countries. He et al. (2012) conducted a study on the unintended consequences resulting from mandatory IFRS adoption. The authors explored FVA in the non-financial market of China. A measurement study with a limited scope was conducted to explore the extent to which fair value could be applied in the financial market of Fiji. The study's results show that FVA information is perceived to be useful, but same users also think that it is overly expensive in terms of decision-making (Prasad et al. 2011). Peng and Bewley (2010) explored application of fair value in accordance with Chinese GAAP. They compared GAAP and IFRS by considering the features of the jurisdiction and regulatory environment. The literature review shows that issues arising in developing markets are not accounted for adequately, yet it is obvious that IFRS or its practices/concepts are being used increasingly around the world for accounting purposes (Pacter 2007). These issues, such as, implementation and audit costs, lack of professional human resources, how reliable market information is, volatility, high corruption rates and weaker governance, can have a negative influence on fair value usage (Huang et al. 2016).

To examine the role of the institutional environment on the value relevance of fair value, Fiechter (2011) classified countries according to the value relevance of fair value in the banking industry, i.e., market-based and bank-based. The market-based one reflects those economies with higher stock market development, higher disclosure standards, and strong information environment. Therefore, in these economies, investors properly priced fair values (Ali & Hwang 2000; Leuz & Verrecchia 2000). However, the bank-based ones are those with weak information environments, less developed stock markets, and weak enforcement mechanisms. So, investors operating in these economies do not receive the necessary information for fair valuation and thus, the extent of measurement errors and bias are higher which ultimately influences the value relevance of fair value (Fiechter & Novotny-Farkas 2017). Fiechter and Novotny-Farkas (2017) explored the extent of fair value of financial instrument implementation in 907 banks operating in 46 developed and developing countries. In their descriptive analysis the average proportion of financial instruments measured under fair value is 23% and comprises the average of fair-valued financial assets 17.1% and the average of fair-valued financial liabilities 5.9%. On average, the highest usage of fair-valued assets is found in Belgium and France which reaches 40% where AFS are mostly used in Belgium and AFT are mostly used by France. The largest use of fair-valued liabilities is found in France and Sweden which reached 27% of total liabilities. Fiechter and Novotny-Farkas (2017) stated that the average proportion of financial instruments measured under fair value is relatively low, but it varies significantly across countries as follows. The lowest percentage of fair-valued financial assets is in Macedonia, Oman, and Romania - not more than 3%. The implementation of fair value option also varies significantly across countries. Fiechter and Novotny-Farkas (2017) found evidence that out of the 46 countries, 12 (i.e., 26.1%) do not use the FVO while another 19 (i.e., 41.3%) do not use fair value for financial liabilities. It is evident that the measurement attribute of fair value is less important than other measurement alternatives, for example amortised cost.

Other international evidence on the implementation of FVA is reported by Siekkinen (2016) based on 1280 listed financial firms operating in 42 countries. The researcher used a sample of 985 financial firms from different 34 countries. He reported that the average fair-valued assets are equal to 40.91% which comprises the three fair value hierarchy inputs; level 1, level 2 and level 3; 20.55%, 13.17%, and 7.19%, respectively. The majority of fair value application is in financial assets rather than financial liabilities, which scored the lowest percentage of fair values. The average fair-valued liabilities are equal to 14.88% which comprises the three fair value hierarchy inputs; Level 1 and Level 2 equal to 11.21% and level 3 is 3.60%. In the US, Freeman et al. (2017) found that the average usage of fair-valued assets by banks is equal to 20.1%. Fair-valued assets through level 2 inputs are found in the majority, which is equal to 93.7% of the average total fair-valued assets. On the other hand, the average of fair-valued assets through Level 1 and Level 3 inputs is not unusual. In the same vein, Badia et al. (2017) in their across-sectors study in the US, documented that the adoption of fair value for financial instruments is higher for financial firms than non-financial ones. Moreover, the ratio of fair-valued assets is larger than fair-valued liabilities and it is over 7 to 1. Other evidence from Europe is reported by Siekkinen (2017) who examines a sample of selected 29 countries using 293 financial firms in the first year of IFRS 13 adoption. Here the average usage of fair-valued assets per share through Level 1, Level 2 and Level 3 equates to 48.93, 35.20 and 9.98 euro, respectively. The aggregate total of fair-valued assets through Level 1 and Level 2 is equal 32.66; while the total is 5.38 for Level 3.

As for the adaptability of fair value for financial instruments in the Arab ME countries, Jordan in particular, the Fiechter and Novotny-Farkas (2017) analysis shows that the proportion of fair-valued assets (liabilities) greatly varies. It is as follows: Bahrain 23.1% (99.8%), Jordan 13.8% (0%), Saudi Arabia 10% (0.8%), Egypt 8.6% (99.8%), Kuwait 6.1% (0.1%) and Oman 2.6% (0.5%). It can be said that the highest application of fair-valued assets is recorded in Bahrain and then in Jordan while the lowest is recorded in Oman. In regard to the usage of fair-valued financial liabilities, the highest ratios are scored in Bahrain and Egypt but there is no noticeable application of such accounts in Jordan. Turning back to Siekkinen’s (2016) analysis on using FVA for financial instruments, out of 4 Arab ME countries, Bahrain is the only one classified under the strong investor protection category followed by Jordan and UAE which are classified under the medium category. They are followed by Kuwait which is in the weak category. Countries under the strong investor protection category where the FVEs are trusted more, the value relevance of FVEs is at the highest levels and Level 3 assets are the highest value relative to Level 1 and Level

2. Meanwhile, in countries under the medium investor protection, the value of Level 1 and Level 2 assets is higher than Level 3. Overall, fair values are value relevant in countries enjoying a robust investor protection system.

By contrast, countries with weak investor protection systems have the lowest value relevance of fair values. The highest value relevance of fair values is recorded for fair values with Level 1 assets; however, Level 2 and Level 3 are significantly subject to management discretion and bias (Joe et al. 2017; Sangchan et al. 2020; He et al. 2020). As a result, the major problem that faces fair values in such regions is the lack of value relevance of fair-valued assets and thus, investors in these countries are more likely to trigger earning figures to analyse firms' financial performance and position. In general, looking at prior literature on the application of fair value around the world, it is noticed that Level 2 assets, and in some cases Level 1 assets, are the majority FVEs used by countries. Interestingly and consistent with Fiechter and Novotny-Farkas's (2017) analysis, Tahat et al.'s (2016) research shows evidence that applying fair valued-assets has been improved dramatically by Jordanian firms following the application of IFRS7. This evidence on the wide usage and expanding of disclosure of fair values increased the need to discuss the main issues; challenges and difficulties following the adoption of fair value in Jordan. Therefore, the next sub-section sheds light on the major consequences of FVD globally and in the current study's setting.

Table 2.1. Systematic Analysis Review of Findings Regrading IFSR/FVA Application Decision Pressures in ME, Jordan through Each Theme, Topic and Sub-Topic

Theme	*Topic*	*Sub-topic*	*Findings*	*Example of authors*
IFSR/FVA application decision pressures in ME, Jordan.	***Theoretical underpinning***	***Institutional theory***	Institutional isomorphism pressures are found to be the main incentives of the FVA adoption decision including coercive, mimetic, and normative pressures. Coercive pressure originates from international institutions and capital markets, including the WB and IMF. The need to obtain necessary funds and advice to assist in economic growth forces additional improvements from normative and mimetic isomorphic pressures. Mimetic isomorphic pressures relate to attracting multinational business, foreign direct investment, and foreign trade partners for local private firms in the country. Normative isomorphic pressure from the accounting bodies, such as the JACPA, encourages further support through the provision of accounting training sessions (i.e., professional universities' courses), and awareness creation activities.	*Joshi et al. (2008), Al-Akra et al. (2010),Uzma (2016), Abdullatif (2016), Abdullatif and Al-Rahahleh (2020), Samaha and Khlif (2016), Al-Htaybat (2018), Tahat et al. (2018).*
		Political theory	Factors encouraging FVA adoption decision are economic growth, economic openness, literacy rates, colonial history, large economic organisations, international donor institutions and government enforcement mechanisms, such as corporate governance and the privatisation programme: economy openness to international funding and trade, and education development.	*Ball et al. (2000), Kamal Hassan (2008), Al-Akra et al. (2009), Alhtaybat et al. (2012), Tahat et al. (2016), Tahat et al. (2018), Khlif and Achek (2016).*

(This Table is continued on the next page)

(Table 2.1. Continued)

Theme	Topic	Sub-topic	Findings	Example of authors
	Local factors	***Family ownership***	- In the context of ME countries, Jordan in particular, are characterised by a high level of ownership concentration, the dominant type of ownership is family ownership. - Family firms in Jordan are more subject to being aligned with FVA requirements as the family owners tend to boast their position in society because in Jordan society family business owners are famous and well known, and therefore they provide higher level of financial performance.	*Joshi and Ramadhan (2002), Al-Akra and Hutchinson (2013), Khan et al. (2015), Al-Htaybat (2018).*
		Foreign investors	- Attracting foreign investors is considered an essential target of governments in the context of the ME, including Jordan, to survive. - The implementation of FVA gives markets attractive business infrastructure globally, which, in turn, leads to creating an attractive investment climate to motivate investors.	*Ball (2006), Assenso-Okofo et al. (2011), Ben Othman and Kossentini (2015), Al-Shattarat (2016), Al-Htaybat (2018).*
		Globalisation	- The convergence with IFRS/FVA disclosure requirements becomes an essential requirement for interacting with the global economy which has been brought with the globalisation. - The advent of globalisation caused a huge compliance with IFRSs including FVA standards due to the increased competition between countries to avoid the non-compliance consequences.	*Boolaky (2006), Haddad et al. (2017, Al-Htaybat (2018).*
	Accounting system development and IFRS adoption		- The major source for shaping accounting systems and accounting standards are the institutionalised beliefs, protocols and rules embedded in governments, professional associations, and general public opinion. - The major developments in accounting and auditing practices in the ME region are explained by understanding the role of economic, political, legal and cultural factors in accounting practices in these countries and the literacy of the profession.	*Al-Awaqleh (2010), Ball (2016).*

***Note:** in order to explain fair value implementation factors, the researcher has conducted a systematic literature review of academic published effort on this area. The literature review covers the published work over the period between 2000 and 2020. The PRISMA (i.e., Preferred Reporting Items for Systematic Reviews and MetaAnalyses) framework was followed. The analysis started with downloading meta-data on selected papers and was independently examined by two researchers. The analysis was on relevance and quality assessment. The results obtained independently were cross checked to triangulate the view and compile the final sample. The final sample included 155 articles.*
Source: Alharasis et al. (forthcoming).

2.3.3.5. Fair Value Disclosure: Empirical Evidence

Prior to 2005, when new FVD requirements issued by IASB emerged on the European stage, the disclosure requirements imposed by FASB fair value have been a driving force in the literature. The importance of FVD, in terms of providing the analysts and investors information regarding FVEs, cannot be underestimated. Providing extra information regarding Level 3 FVEs plays a significant role in minimising the general risks around such estimates and in reducing the uncertainties. The research on the consequences of FVA on financial disclosure is shaped by the quality and the quantity of financial disclosure.

Regarding research on the consequences of FVA on the quantity of financial disclosure, a few scholars investigated disclosure upon the adoption of IFRS 13 in EU-based real estate companies (Feldmann 2017; Mäki et al. 2016). Following the implementation of IFRS 13, the amount of disclosure associated with fair value increased. The fact that enforcement agencies need extra time for exerting their influence and that disclosure depends on a learning curve impact, leads to the conclusion that these outcomes are supposed to be interpreted based on more up-to-date reports prepared by auditors, practitioners, and regulators. The ability of investors to predict the future performance of firms may be influenced by the information covering fair value assets and liabilities estimates.

The literature presents multiple studies covering real estate firms: Feldmann (2017) and Sundgren et al. (2018). These report that the fair value-related disclosure amount since the time IFRS 13 was implemented (2013-2014) slightly increased compared to disclosure under IAS 40. Feldmann (2017) reveal that real estate companies based in the EU provide a substantially greater number of items as disclosure for Level 3 FVM after the implementation of IFRS 13. They also report that the implementation of IFRS 13 had a positive impact in terms of information flow such that real estate firms provide greater quantity of Level 3 FVM information with even higher quality. These changes in the level of disclosure are influenced by factors regarding the institutional environment within the firms such as regulations and the extent of enforcement.

With respect to assessing the quantity and quality of the disclosure, the research on this topic benefits from disclosure indices. For more details about this, Sundgren et al. (2018) employed a sample containing real estate companies based in 11 different EU countries that report under IFRS 13 (n = 85 firm-years). The statistics showed that 46 (54%) of these firms provide more disclosure under IFRS 13 compared to that of under IAS 40. A disclosure index can capture the major assumptions that are applied in calculations of discounted cash flow and the sensitivity of fair values to alterations in unobservable input variables. These include, for example: discount rate utilised in present value fair value calculations of investment properties; estimated vacancy rate; estimated revenues and operating expenditures involved in the present value calculations; and quantitative analysis covering how sensitivity of fair values towards changes in assumptions. In the context of Jordan, Tahat et al. (2016) investigated the development of financial instrument disclosure in a sample of Jordanian listed companies following the 2007 adoption of IFRS 7. Compared here were the disclosures of financial instruments under IFRS 7 with those under IAS 30 and IAS 32. The researchers constructed a disclosure index checklist and found that the FVD increased dramatically following the application of IFRS 7.

In terms of the consequence of FVA on the quality of financial reporting, Feldmann (2017) stated that the quality of FVM disclosures provided by real estate companies based in the Netherlands, Belgium, France and Finland is higher than that of Luxembourg, Sweden, and Greece. The authors also emphasise that disclosure quality slightly declined from 2013 to 2014. Furthermore, the authors analysed the implications of extra FVDs. They could not find a notable association between the capitalisation of real estate companies and FVD after IFRS 13 was implemented. In their research, Cannon and Bedard (2017) state that investors have less risk awareness concerning FVEs when firms provide disclosure in terms of quantitative sensitivity which is part of IFRS 13. Cannon and Bedard (2016) discuss that even during periods where firms show high level management aggressiveness which refers to the decisions of managers in terms of selecting values more aggressively, the results continue to hold even. Majors (2015) reports that the requirement for disclosure of uncertain estimates impedes managers' ability to engage in aggressive reporting. The expectation of managers is that those taking part in the market will unearth their aggressiveness thanks to elaborate disclosure. Lim and Loosemore (2017), who surveyed 704 accounting professionals operating in Singapore reported, there is a significant degree of incredulity for IFRS 13 among professionals. Their argument is that Level 3 FVEs could erode the trust that professionals have towards financial statements.

The study by Laghi et al. (2012) used a sample including foreign and domestic listed banks to assess fair value from an empirical standpoint. These banks adopted fair value hierarchy in accordance with the recommendations of SFAS 157 and IFRSs. The study focuses on determining whether the requirements adopted in these regulations plays a role in enhancing the level of disclosure quality and finding out the extent to which the information provided to investors and users are useful for them. The study employs a large sample containing the S&P 1500 Index covering the first quarters of the fiscal years of 2007-2008. There was no indication of opportunistically selected fair value in financial statements. Chung et al. (2017) investigated if FVDs enhance investors' perceptions of the credibility of FVEs. It emerged they are related to a greater level of market pricing and decreased level of information risk in the case of Level 3 estimates. The conclusion is that voluntary reliability disclosures provided by companies above SFAS 157's Level 3 estimates facilitate investors' scepticism about opaquer FVEs. Conversely, Yao et al. (2015) state there is a relationship between discretionary Level 3 valuation inputs and earnings management.

Several studies, such as Feldmann (2017) and Sundgren et al. (2018) provide evidence that the quantity and quality of FVM disclosure offered by real estate companies based in the EU are marginally influenced by IFRS 13. A high percentage of companies did not consider any modifications in their disclosure practices following its implementation. It is the institutional environment, including laws, enforcement and regulations of a firm that determine the quantity and quality of FVM disclosure. Other evidence in the context of Europe's real estate sector provided by Vergauwe and Gaeremynck (2019) concludes that using FVDs resulted in less information asymmetry for the period 2007-2010. Furthermore, firms with more measurement-related disclosures have the lowest errors and better quality FVEs. These outcomes indicate the risk relative to the estimates can fall through additional disclosures about FVEs. It is possible for managers to transfer information to those who participate in the market, particularly by Level 3 estimates. The kind of financial users heavily influences the value relevance of the content in FVEs.

2.3.4. Fair Value Debate: Empirical Evidence

Following the relatively recent requirements towards FVD following IFRS implementation since 2005, FVA has been widely discussed and even challenged especially after the eruption of the GFC in 2008. Arguably, FVMs and disclosure requirements align and support IFRS's standing as a high-quality set of international accounting standards (Peng & Bewley 2010). The superiority of FVA over HC is accepted by accounting bodies and standard setters (Linsmeier 2013). By contrast, the theoretical evidence also supports this acceptance of IFRS/FVA but in the case of its application in well-functioning capital markets and developed financial reporting environment (Ball 2006; Barlev & Haddad 2007; Penman 2007), views vary (Laux & Leuz 2009). The trade-offs stemming from fair value applications in various economic settings constitute a broad subject that can be further investigated and documented. One argument in support of fair value reporting is that it satisfies the need to deliver more useful financial information whose value becomes even more visible considering that global and innovation-based economy is becoming increasingly complicated (Barth et al. 2006; Zyla 2020). Some authors, on the other hand, assert that utilising fair values on balance sheets leads to controversy. They argue that fair values entail model-based estimates based on expectations and projections of managers as inputs (McCreevy 2008; Penman 2007).

2.3.4.1. Value Relevance of Fair Values

The first stream of research in this respect focused on the issues related to FVM, the value relevance of fair values. The number of studies on this is rather impressive but generates mixed results. For example, Barth (2007) stated that estimates at fair value bring in a greater amount of value relevant information compared to those predicated on historical expenses. Mirza (2008), moreover, emphasise that FVA can provide more relevant information and they show that fair value reflects the realities associated with the existing market situations. This is yet another crucial aspect of making decisions. Magnan (2009) states that liabilities as well as assets estimated at fair value tend to be viewed as value relevant. Barth (2014) indicates that amendments on net income following the implementation of IAS 39 are increasingly value relevant for finance industry companies. At the global level, Müller et al. (2015), using a sample of real estate companies in the EU, show that the relationship between fair values and recognised fair values is stronger than the association between fair values and equity prices. The authors attribute this to the greater use of fair values under IAS 39 than under domestic GAAP. Huffman (2016), likewise, asserted that fair value of biological assets and the related unrealised losses and gains are more useful for making decisions than assets derived from value in-exchange – when they are AFS.

Conversely, many studies question the relevance and reliability of FVEs, particularly in high uncertainty situations (i.e., developing financial markets, low investors protection, and weak governance protocols). Such studies argue that the value relevance of assets and liabilities prepared by fair value depends on several aspects (He et al. 2020). They can be gathered into SFAS 157 and IFRS 13 fair value valuation models, type of assets, efficacy of corporate governance, circumstances of financial market, and the information environment. In this sense, Fiechter and Novotny-Farkas's (2017) findings indicate that assets made AFS and AFT assets have greater value relevance compared to FVO. Their results suggest that the ability of investors in terms of processing fair value information is based on the characteristics of the firm such that firms having a strong information environment demonstrate greater value relevance of fair value options. By contrast, weak country-level information reduces the competence of investors to process fair value information. Furthermore, investors' institutional experience with respect to utilising fair value is a crucial determinant for value relevance of fair value. The authors document there was a bigger discount to FVEs over the course of the GFC. The study argues that FVEs are reliable, particularly in the areas with underdeveloped financial markets.

Some researchers find evidence that measurement error or bias has a negative impact on value relevance. This conclusion is the focus of literature examining value relevance of fair values (Barth 1994; Barth et al. 1996; Eccher et al. 1996; Song et al. 2010). Koonce et al. (2011) outline that fair value is relevant in those cases where the instrument is projected to be settled or sold in the short-term. Koonce et al. (2011) point out that fair values of HTM securities did not find value relevance since investors perceived that unrealised fair value gains and losses are forgone opportunities. Du et al. (2014) contend that the increasing use of FVMs, especially Level 3 inputs, results in lower value relevance of US banks' assets. Ball et al. (2015) show that relevance of accounting numbers regarding debt contracting falls due to fair values. Recently, McInnis et al. (2018) concluded that the value relevance of book value of equity and income under fair value is lower than that under HC. Moreover, and due to the inclusion of unrealised gains and losses in fair value income, the value relevance of fair-valued income is less than that prepared under HC.

There is a dearth of research on determinants outside of measurement issues regarding value relevance of fair values. The predictions and findings reported in Evans et al. (2014) reveal a relationship between the differential pricing of fair value information and measurement error as well as differential forecasting ability of fair values. Several studies (Goh et al. 2015; Song et al. 2010; Tama-Sweet & Zhang 2015) investigate if value relevance of fair values shows a distinction in terms of valuation inputs. According to these studies, Level 1 and Level 2 assets are priced higher in comparison with Level 3. However, this distinction decreases in the long-term as well as during the GFC. This suggests that market conditions with volatile characteristics contribute to the diminished Level 3 assets discounted by investors. Freeman et al. (2017) and Tama-Sweet and Zhang (2015), using a sample of US financial firms, report that on average, Level 2 and Level 3 FVEs are not as value relevant as Level 1 FVEs. Tama-Sweet and Zhang (2015) added that managerial discretion cannot be the only factor determining the differential value relevance for all three fair value levels.

Companies having low quality corporate governance feature greater relevance for assets estimated with Level 3 inputs in comparison with firms having high level, advance corporate governance. Accordingly, Magnan et al. (2015) state that Level 2 estimates can be utilised by managers to communicate practical information to those taking part in the market. Managers tend to take advantage of opportunism and are inclined to exploit their discretion in FVEs, especially Level 3 FVEs. These opportunistic decisions put managers at risk of being subjected to penalties imposed by the market and in trying to avoid such penalties, managers choose to decrease the amount of reported assets in Level 3. Alternatively, they start quietly rectifying their classifications in line with the changes occurring in the market. Focusing on the issues related to value manipulation, Landsman (2007) emphasises that the requirement of managerial estimates for the valuation process of assets and liabilities brings with it the issue of information asymmetry. Moral hazard and affected selection stand out as the two major issues stemming from information asymmetry. Bosch (2012) examined the relevance of fair value as requested by IFRS 7 in his sample of European banks. The author suggests that while all three levels of FVA are considered relevant from the perspective of investors, the reliability of Level 3 is not considered to be as high as the other levels.

Cross-country evidence provided by Siekkinen (2016), who employed a set of companies operating in the financial sector from 34 different countries, reports that Level 2 or Level 3 fair-valued assets have less value relevance relative to Level 1 assets. Similarly, Level 3 fair-valued liabilities have shown lower value relevance than Levels 1 and 2 liabilities but for those countries where there is a weaker investor protection environment, Level 1 assets are those with significant value relevance. In countries where there is a stronger investor protection environment, the distinction between FVEs on Level 1 or Level 3 in terms of value relevance is relatively minor. In this context, both Level 1 and Level 3 FVEs have less value relevance compared to FVEs on Level 2. These outcomes favour the idea of managers utilising FVEs to transfer valuable information to those participating in the market. Siekkinen (2017) using a sample containing European companies operating in the financial industry following the introduction of IFRS 13, confirms that the value relevance of all three levels FVEs is significant. The independence of a company board alongside gender diversity are both contributing factors to making Level 3 FVEs value relevant. Monitoring managers on a higher level plays an important role in decreasing the value relevance distinctions among all levels of FVEs. A recent cross-country evidence based on the EU banking industry undertaken by Yao et al. (2018) for the years 2009-2013 concludes that using fair value Level 3 inputs (i.e., mark-to-model) motivates the fraudulent behaviours of managers and increases earnings management to very high levels. More recent examinations in US and Australia by Bradley and Sun (2021) and He et al. (2020), respectively, confirm the significant correlation between FVDs and managerial bias in preparing FVMs.

Considering the above, value relevance can be used as a tool to reveal whether or not financial reporting covers information that has relevance from the perspective of market investors. Studies focusing on value relevance usually report that the value relevance of Level 1 and Level 2 assets are always clear, however, in the case of Level 3 assets, their value relevance depends on the context. More studies are raising questions about the extent to which FVEs are reliable, particularly in situations where there is a greater level of uncertainty. A lesser degree of protection provided for investors, weaker board monitoring, underdeveloped financial markets, etc., can be given as examples of such situations. These studies, however, can be differentiated based on the root cause leading to differences in value relevance findings. The sample of the institutional environment of companies including laws and regulations, enforcement as well as the governance approach emerges as a major distinction in that regard.

2.3.4.2. Fair Value Accounting and Financial Reporting Quality

The second stream of research on FVA looks at the consequences of FVA on financial reporting quality and the results are mixed. Magnan et al. (2015) suggested that fair value Level 2 provides both public and private information of high quality, whereas the quality provided by Level 3 is significantly poorer. Analysts view estimates predicated on Level 2 inputs constitute useful information, while Level 3 estimates stem from the opportunistic decisions made by managers. Similarly, Lawrence et al. (2015) report that Level 3 FVEs observed in the US investment funds show greater ability in terms of providing information regarding future stock returns and future cash flows in comparison with the inputs of Level 1 and Level 2. Barron et al. (2016) report that errors in analyst earnings forecasts and the level of uncertainty in forecasting have fallen considerably through the implementation of SFAS 157. Badia et al. (2017) concluded that the conditional conservative approach taken by managers towards Level 3 FVM is more robust when the governance system promotes their incentives to report issues conservatively. However, it also results in the earnings management incentives of firms being reduced. Employing a sample containing banks based in the US for 1996–2009, Magnan et al. (2015) focus on the accuracy level of forecasts by analysts and their dispersions. They report that the disclosure of FVEs has a positive effect on the information environment. The study by Hoitash and Hoitash (2017) utilising a sample of firms based in the US over the 2011–2014 (6232 firm-year observations) revealed there is a negative connection between the level of complexity on accounting reporting and financial analysts of a firm.

However, managerial judgement on the assortment of Level 1, 2 and 3 inputs of FVEs can potentially play a role in financial reporting quality. Watts (2003) who provides remarkable space for the choices of managerial discretion, favours the idea that the reliability of financial reporting can be impaired by FVEs. This discretion is worsened due to relying on Level 2 and Level 3 inputs and therefore, it is highly likely that the financial reporting becomes unreliable and biased. Barker and Schulte (2017) investigated FVM in the EU and they revealed that for the most part, managers use their own perspective while preparing Level 3 estimates which contradicts the perspective of those in the market. Authors argue that using fair value does not meet the standards for analytical basis or conceptual support (Bromwich 2007). Similarly, Lin et al. (2017) assess the quality of financial reporting by using accounting restatements as a measure. According to them, the probability of restatements for Level 3 assets estimates is considerably greater compared to Levels 1 and 2. They propose there is a significant relationship between Level 3 assets and a greater number of estimation errors and conscious manipulations by managers. For the most part, the findings are in line with the view that fair value is associated negatively financial reporting quality. Recently, Huang et al. (2020) conclude that fair value through Level 1 and Level 2 are positively correlated with the accounting restatement, while a negative coefficient is documented for Level 3 fair values.

In the same sense, Iselin and Nicoletti (2017) who employed a sample covering the period 2008-2010 provide evidence that public banks attempted to curtail the total share of assets measured with Level 3 inputs after implementing SFAS 157. Goh et al. (2015) support the conjecture that managers may be inclined to manage Level 3 estimates to boost their earnings. The uncertainty regarding whether the motivation towards engaging in earnings and capital management through gains and losses made on AFS investments is affected by other types of comprehensive income recognition, which constitutes yet another problem. Barth et al. (2017) utilised a sample containing both non-listed and listed US commercial banks covering 1996-2011. They report that banks benefit from realised gains and losses on AFS securities in their earnings management efforts. This is also true for situations where gains and losses are involved in another comprehensive income. Whether or not fair value can provide useful information to the users operating in the financial sector, especially from a valuation standpoint, is another issue that tends to be brought up. This issue mostly revolves around the fact that fair value earnings can only mirror ‘shocks’ to value (Barth & Landsman 2018).

While SFAS 157 and IFRS 13 can indicate how FVEs may be conducted, they do not provide any answers to the core question of what can be measured at fair value. Moreover, fair value is predicated on market measurements and not on entity-specific measurement. Plantin and Tirole (2018) investigate the contractual as well as market implications associated with the IFRS 13. The researchers support the notion that primary shortcomings of IFRS 13 are related to the liquidity of the market and corporate governance. The amount of FVEs that utilise market data is significantly lower, and the rest of the estimates benefit from similar transactions and model-based estimates. Apparently, fair value models are predicated on the features of other firms to such an extent that it distorts the focus from the latent capital earnings of the firm. Because of FVEs, the information asymmetry existing between managers (agents) and shareholders (principal) becomes even more convoluted, resulting in moral hazard expenses owing to the challenges of monitoring managers' actions. Managers might utilise their discretion in FVEs to extract personal benefits which undermines the quality of financial information investors want (Hodge & Pronk 2006).

Overall, managers understand that Level 3 FVEs can be perceived by market participants in a negative way. They attempt to diminish the volume of assets reported in Level 3 or make slight adjustments to the estimates following the changes occurring in market conditions (Christensen et al. 2012). The accounting treatment does maintain the least acceptable information quality associated with the measured product, however, there are serious issues with this treatment as with the measurement ability. Among such issues, the relevant participants are directly influenced by the status of accounting and practice regulations. Users of the information predicated on FVM are various groups of stakeholders, which makes it debatable if such a technique will decrease or increase their potential gains.

One of the principal arguments in the debate that works against fair value is the fact that it is not aligned with the theory that covers financial accounting (Biondi 2011). On the other hand, some authors argue that this misunderstanding was simply a result of regulators' actions as the entire process has a deficiency in terms of analytical support and the set of objectives (Bromwich 2007). Some put forward arguments based on extra disclosure requirements, for instance, sensitivity analysis (Bischof 2009), attempts to clarify some of the questions. In any case, if practitioners and regulators take the responsibility to solve the issue area-by-area, the primary understanding and concerns associated with specific risk such as technical problems will be either minimised or maximised according to the conditions (McGregor & Street 2007).

2.3.4.3. Economic Consequences of Fair Value Accounting

The final stream of research on the fair value debate looks at the economic consequences of FVA which have been investigated by a few scholars with mixed results. He et al. (2012) investigated the unintended consequences that emerge because of obligatory IFRS adoption in the non-financial market in China. It emerges that FVA information is considered to be useful for market participants (Prasad et al. 2011). Arouri et al. (2012) concentrated on the importance of FVA using financial instruments disclosure on security valuation and the impact of financial instability. They used a sample of mandatory (i.e., IAS 39 and IFRS 7) companies listed in France. According to their findings, there is a weak association between stock price and its volatility. They conclude that risk relevant information does not exist for the firms in the sample. Huang et al. (2016) reported that FVA for financial instruments has led to high volatility which significantly influences US banks' future profits. Higher inherent risk caused by volatile market prices was the primary source of greater volatility in other comprehensive income streams following fair value application. The 'real' consequence (portfolio balancing behaviour) resulting from FVD is the focus of the study by Reddic et al. (2016) during the period 1996-2013. They provide evidence there is no relationship between the probability of rebalancing towards taxable securities and the amount of fair-valued assets. The results show that insurance company managers dealing with property and casualty cases have different assessment approaches for losses related to operations and investments. In addition, the cross-country study by Daly and Skaife (2016), finds that higher use of FVA leads to greater cost of debt. Recently, Iselin and Nicoletti (2017) stated that US banks during 2006-2009 made substantial amendments to their investment portfolios following FVA in a way that reduced the holding Level 3 assets.

On the other hand, many researchers do not favour FVA owing to its inherent complicated nature (Durocher & Gendron 2014; Georgiou & Jack 2011). Plantin and Tirole (2018) opine that FVEs should merely be considered for the items with very high liquidity and for the remaining items, historical value estimates should suffice. Practitioners are inclined to reject FVA by claiming that it does not contribute to financial statements that better represent commercial phenomena. Instead, FVA forms artificial perceptions of "economic realities". The reason for this is that if the predictions and assumptions determining these estimates are wrong, it means the estimates of fair value may also be wrong. Furthermore, if FVEs are proven to be wrong, this situation would be aggravated thanks to middle-level compromises occurring in auditing and the manipulation of the estimation process which is subjective by nature (Durocher & Gendron 2014). In this respect, Vergauwe and Gaeremynck (2019) examined the impact of the measurements related to FVD on information asymmetry employing a sample of 372 European real estate firms from 2007 to 2010. A negative relationship has been found between the extent of FVD and the bid-ask spread. In addition, no evidence has proved that firms use model estimates to get the best advantage from such additional disclosure.

The use of different inputs in FVMs of assets and liabilities have considerable economic outcomes on firms; thus, some scholars have emphasised this issue. In this sense, Magnan et al. (2016) stated that firms are exposed to economic consequences as a result of employing various inputs in FVEs of assets and liabilities. The findings of Magnan et al. (2015) in their analysis of the finance industry during 2007-2014 suggest that greater usage of Level 2 and 3 FVEs results in greater cost of debt. Consistently, Huang et al. (2016) revealed that companies featuring considerably more Level 3 FVEs show greater cost of capital. In a global way, the same results were recorded by Daly and Skaife (2016) who concentrate on investigating the influence that IAS

41 has on companies' debt expenses. The results acquired indicate firms' cost of debt is significantly increased by intense utilisation of fair value in financial statements. The findings of Badia et al. (2017) show there is an association between high ratios of Level 2 and 3 estimates and greater conservatism in accounting numbers. The authors argue that securities measured on Levels 2 and 3 are untradeable in liquid markets and this makes them more inclined toward manipulations. The authors also argue that companies may solve this issue by reporting FVM in a way that is more conditionally conservative which enhances the credibility of these measures. Song (2015) used a sample of 670 US financial firms over the period 2008-2013. He concludes that there is a significant effect of market volatility on pricing fair values by investors, especially for those based on market models. In particular, a higher amount of Level 3 FVEs is associated with higher cost of debt (Magnan et al. 2015), cost of capital (Huang et al. 2016), audit fees (Alexeyeva & Mejia-Likosova 2016) and lower credit rating Ayres (2016).

By way of contrast, firms featuring larger Level 2 and Level 1 FVEs exhibit less cost of capital. Ayres (2016) employed a sample of firms operating in both non-financial and financial sectors between 2007-2014, and reports there is a negative relationship between the credit rating of firms and the amount of Level 3 FVEs in use. According to Ayres et al. (2017), credit ratings are negatively influenced when the amount of Level 3 assets increases. This negative association manifests itself to a higher degree for firms having higher financial leverage which proposes that the documented primary effect can be amplified by a principal factor determining credit risk. An increase in the amount of Level 3 assets leads to a remarkable increase in the spreads of corporate bonds. Ayres et al. (2017) further suggest that companies having more assets and liabilities being measured at fair value have more accurate analyst earnings forecasts. For Level 3 fair values, Barron et al. (2016) suggest that the level of uncertainty in the information environment of analysts can be diminished by the disclosures of FAS 157 with respect to Level 3 measurements. Having those value disclosures in place reduces the level of uncertainty in future earnings, while making the forecast more accurate. There is a positive relationship between these values and the firm's future performance. The research by Liang and Riedl (2013) states that UK firms have greater accuracy in their net asset value forecasts compared to US-based businesses. This distinction weakens during recessions where HC models and fair value are more likely to converge. The authors report lesser earnings per share forecast accuracy for firms based in the UK while using the IFRS/fair value model. Magnan et al. (2015) provide evidence that market participants are given useful information thanks to Level 2 FVEs while Level 3 FVEs are the only ones encouraging managers to behave opportunistically.

2.3.3.1. Fair Value Accounting Consequences in Developing Countries

While these issues and concerns regarding FVA consequences are found to be critical in developed countries, those consequences and impacts are likely to be relatively greater in developing countries. This situation exists because of the lack of active markets in such regions (Abdullatif & Al-Rahahleh 2020). In developing countries, a few examinations have been done on several issues related to using FVA. For example, Al Barrak (2011) examined whether improvements in financial reporting have led to relevant financial information published in firms' financial statements using a sample of 97 Saudi firms for the period 1993-2009. It found that earnings deliver increasing explanatory power beyond that provided by current cash flows. Khanagha (2011) examined the value relevance of accounting information in two periods: pre-IFRS and post-IFRS in the 17 UAE firms for the years 2001-2008. The results showed that accounting information published by the UAE firms stock market is value relevant. Furthermore, by comparing the results for the periods before and after IFRS adoption using both regression and portfolio approaches, there is a noticeable decline in value relevance of accounting information following the application of IFRS. However, findings under the portfolio approach contend that the cash flows information content increased following IFRS implementation.

In the case of empirical evidence regarding FVA in Jordan, many scholars have investigated the effect of FVA in its economy. For example, Al-Khadash and Abdullatif (2009) focused on the effect of implementing FVM for financial instruments on Jordanian banks' income and earnings per share (EPS), for the years 2002-2006. A comparison between accounting results reported under fair value and those reported under HC for the same years was done. This comparison determines how FVA effects crucial financial measures and the value relevance of accounting information. The research concludes that banks' financial performance is substantially affected by using fair value in measuring financial instruments. Furthermore, compared with HCA, when using fair value in evaluating the financial instruments, it has detected a positive and high value of EPS. The authors stated that using FVA in evaluating financial instruments in Jordan and in some other developing countries leads to distorting the income and misleading financial statement users. The study also queried the appropriateness of applying IFRS/FVA. Al-Yaseen and Al-Khadash (2011) investigate the risk relevance of fair value income measures under IAS 39 and IAS 40 using Jordanian insurance firms. They find that income measured based on FVA expresses income volatility more than that measured based on the HCA. Further, income is more volatile with the recognition of unrealised fair value gains/losses on financial instruments and the contrary in the case of investment property.

Siam and Abdullatif (2011) studied the usefulness of FVA in terms of value relevance for decision-making, and the obstacles of its application in Jordanian banks using a structured questionnaire. The research finds that despite the general acceptance of the use of FVA in financial reporting, there are some uncertainties regarding its value relevance in terms of predictive value. Also, the main obstacles to the usefulness of fair value in financial reporting are: the possible misusing of fair value and fraud in fair value reporting; the unclear explanation provided by accounting standards about fair value application; the reliability of fair values compared to HC values. Al-Khadash (2012) focused on the effect of implementing FVA under IAS 40 for Jordanian real estate firms in representing the value relevance of FVA. They detected a significant association between share prices market value and FVDs and that the presence of unrealised gains and losses in the firms' financial statements influences the net income and the net income and book values together. Net income and book values individually are found to be significantly positively related to stock prices so FVDs are value relevant. Aladwan and Saaydah (2015) on the other hand, investigated whether financial reporting under IFRS resulted in more relevant financial information in Jordanian commercial banks and real estate companies for the years 2008-2012. Their study's regression analysis finds a positive and significant relationship between firms' financial performance and fair values. The study asserts that fair values of Jordanian commercial banks and real estate firms are value relevant.

Likewise, Ahmad and Aladwan (2015) measured whether the adoption of IFRS has led to more relevant financial information in Jordanian real estate firms during 2008-2011. Based on the regression analysis' findings, the research concludes that these firms' financial performance is positively associated with investment properties that are fair-valued. Moreover, the book value incremental information content is of higher quality than information content of the net income. Further, unrealised gains and losses present in owners' equity raise the explanatory power of the corporate's market value model of real estate businesses. In general, fair values for Jordanian real estate firms is found to be value relevant during the study period. Finally, Al-Kassar and Dannoun (2016) sought the impact of FVA on the quality of financial statements of commercial banks in Jordan with reference to four characteristics of financial information: appropriateness, reliability, neutrality, and verifiability. A questionnaire was distributed to a selected number of bankers in Jordanian commercial banks, leading to the finding that there is a significantly positive association between the application of FVA on the value relevance of financial information published in Jordanian banks' reports.

All in all, the main focus of the fair value debate research is mainly based on data from developed economies where well-developed markets for many financial products exist. In contrast, little is known about fair value practices in less developed economies. Indeed, the lack of research on this area in these markets is one of the major barriers preventing full compliance with IFRS/fair value requirements. The recent schools of thought on fair value debate focused on measurement selection, which has been investigated and addressed. The issues involved here are several theoretical and practical considerations on the current fair value debate, such as standards setting role, the effect on managers' behaviour, financial information usefulness, value relevance and market features.

2.3.4.4. The Proponents and Opponents of Fair Value Accounting

The main purpose for issuing fair value standards by the international accounting institutions is to create a comprehensible framework for fair value application, provide enriched financial disclosures regarding the nature and the basis of these measurements, and enhance the comparability and consistency of financial information. Current discussions are mostly about arguing if FVA is more advantageous than HCA. Those who are in favour of FVA (Ali et al. 2006; Carroll et al. 2003) usually assert that since the latest information is consistent with the market, it promotes transparency and fast corrective actions. The modern business environment is evolving at a fast pace and therefore, financial statements are expected to reflect the real economic situations of firms rather than summarising the transactions made in the past. Fair value supporters also put forward the argument that when financial assets are not priced at their real economic value, financial statements could be manipulated by selective selling and buying of assets. Those who criticise FVA (Evans et al. 2010; Laux & Leuz 2010; Song et al. 2010) mostly concentrate on the following deficiencies associated with it: model-based fair values lack reliability and can be manipulated by managers; price distortions owing to inefficiencies in the market, investor irrationality or liquidity issues can occur, fair values increase the level of volatility in financial reports. The concept of fair value opposes the assumption where the expectation from a firm is that it should keep operating in the medium- and long-terms. The prior literature on FVA research can be categorised into two groups as discussed below, i.e., the proponents and opponents of FVA.

2.3.4.5.1. The Proponents of Fair Value Accounting

The first group includes the proponents of FVA. The pioneers of this group were Leuz and Verrecchia (2000), Daske et al. (2008), Armstrong et al. (2010) and Karğın (2013) who asserted that the adoption of FVA provides a robust platform for users of accounting information when making decisions. This is due to its positive role in increasing the value relevance of financial information according to several researchers (see Barth 2014, 2018; Georgiou 2018; Huffman 2016; Magnan 2009; Müller et al. 2015; Sangchan et al. 2020; Vergauwe & Gaeremynck 2019). This is in addition to its essential role in increasing the quality of financial statements through reducing the problem of information asymmetry (Penman 2007; Laux & Leuz 2009; Muller et al. 2011; Lin et al. 2017). Thus, providing updated financial information on firms' financial position increases the transparency of such reports (Amel-Zadeh & Meeks 2015; Badertscher et al. 2011; Laux & Leuz 2010). On this issue, Plantin et al. (2008) state that the use of available market prices to prepare financial reports is useful to investors and authorities because it conveys relevant information on a firm's current situation risk than the information provided by HCA. This should lead to greater market discipline and assist financial statement users to make better informed decisions on capital allocations. Subsequently, Boyer (2007) supports the view that FVA is the best way to create efficient markets while HCA delays or hides important disclosures, thus generating inefficient market decisions. Bowen et al. (2010) argue that fair value information offers timely and informative financial disclosures about banks' financial performance. Bischof et al. (2010) suggested that employing FVA to measure financial assets offers beneficial financial information for capital markets.

2.3.4.5.2. The Opponents of Fair Value Accounting

The scholars opposing FVA, including Barth and Landsman (1995) and Khurana and Kim (2003) asserted that FVA is not appropriate for all cases since it provides more relevant measures, but only if active markets exist. Duhovnik (2007), Laux and Leuz (2009) and Kumarasiri and Fisher (2011) stated that the lack of active markets and rational investors may lead to distorted market values. Furthermore, Becker et al. (1998), Christensen et al. (2007), Penman (2007), Landsman et al. (2012) and Yao et al. (2018) found that the adoption of FVA leads to significant measurement errors and encourages managerial manipulation. Similarly, Riedl and Serafeim (2011) and Ball et al. (2012), respectively, asserted that using fair values based on unobservable inputs, such as Level 3 inputs, leads to high information risk and information asymmetry.

According to Duh et al. (2012), applying FVA has led to greater volatility in firms' net income and comprehensive income of financial instruments (Barth & Landsman 1995; Hodder et al. 2006). Many scholars in the FVA literature documented that mark-to-market is problematic (Allen & Carletti 2008a; Hellwig 2009; Plantin et al. 2008). Fair value Level 3 inputs are supposed to be measured based on managers' own expectations and assumptions and such measurements would be more complex and difficult for verification by external auditors (Lin et al. 2017). Such measures are more likely to contain major intentional or unintentional managerial errors and manipulation (Landsman 2007; Penman 2007; Song et al. 2010a). While acknowledging there are reliability problems, McGregor and Street (2007) argue that as utilisation share of fair value rises, the markets and valuation methodologies will become more advanced. These improvements will result in less reliability issues (Benston 2006). FVA is also criticised since FVMs are often based on management assumptions, which could also reflect management bias especially in selecting and employing the valuation techniques (Bratten et al. 2013; Sangchan et al. 2020). This in turn may result in an emerging significant bias being published in firms' annual reports, which subsequently can lead to poor investment decisions by financial report users (Siam & Abdullatif 2011). Accordingly, Cameran and Perotti (2014), Ettredge et al. (2014a), Griffith et al. (2015), Cannon and Bedard (2016), Alexeyeva and Mejia-Likosova (2016), Huang et al. (2016) and Sangchan et al. (2020) fair value brought with its implementation higher cost. Included here are expensive audit prices due to the greater use of managerial assumptions and discretions, especially for the more uncertain FVEs, Level 2 and 3 estimates.

All in all, both the supporting and opposing parties arrive at a consensus that there are issues associated with verifiability by third parties including analysts and auditors and these are major issues yet to be resolved (Barth 2007; King 2012). The proponent's groups advocate for the value relevance of fair value, whereas the opponents stressed the substantial lack of reliability of fair value information (Bratten et al. 2013; Siekkinen 2016).

2.4. Auditing Fair Value Disclosures: Empirical Evidence

2.4.1. ISA Development and Purposes

Following remarkable periods of financial failure that led to catastrophic global downturns, such as the "Asian Financial Crisis" of 1997-98 and the GFC of 2008-9, interest in the ISAs had subsequently increased dramatically[12]. This is due to the concerns regarding the quality of financial statements and auditing standards (Boolaky & Soobaroyen 2017). Financial statement frauds caused by large corporations such as Xerox, Enron, WorldCom, and Tyco, resulted in the demand for better governance, audit efficiency, integrity, and credibility in financial reporting (Wells 2005). The severity of the GFC has led to questions about the role of auditors since so many financial institutions received an unqualified audit opinion which ultimately led to scandal and/or collapse (Sikka 2009). This situation necessitates further revising of the role of auditing in contemporary society, such as investigating whether auditors lack the necessary experience, independence, or the motivation to provide a true and fair judgement of firms' financial affairs (Humphrey et al. 2009). It is argued by many authors that such standards are useful to developing an efficient and effective global economy by delivering relevant and reliable financial information to investors and capital markets (Archambault & Archambault 2009; Leuz 2010; Radebaugh et al. 2006; Wang et al. 2006).

In the last two decades, because of the significant increase in the number of complex multinational companies, the internationalisation of the auditing profession has been remarkable, alongside the auditing standards-setting and governing processes. The ISAs are issued by IFAC through the International Auditing and Assurance Standards Board (IAASB), in conjunction with services provided by public supervising bodies in various global jurisdictions (Simnett et al. 2016). The US's auditors' Statements on Auditing Standards (SAS) have been issued by the Auditing Standards Board of the American Institute of Certified Public Accountants (AICPA) in the case of auditing non-public firms. However, they use the Public Company Accounting Oversight

[12] This section covers the international standards required to audit FVA under IASB (i.e., ISA 540 and ISA 545). However, those required under FASB are ignored since this study addresses auditing issues promulgated by the IASB.

Board's (PCAOB) auditing standards (AS) when auditing public firms. Generally, ISAs are principle-based standards, whereas SAS and AS are rules-based standards. According to Lindberg and Seifert (2011), there are some significant differences between USA standards and international auditing standards: internal controls over financial reporting, use another auditor, going concern considerations and risk assessment.

2.4.2. ISA Adoption by Jurisdictions Analysis

It can be stated that auditing is the enforcement mechanism that proves the credibility of reported information under IFRS (Leuz 2010). On the other hand, the strength of such a mechanism depends basically on the way standards are employed by the auditors. In this sense and according to the IFAC's systematic analysis, 127 countries have so far adopted ISAs which means there is a high adoption level with IFRS. It is evident that the highest adoption with ISAs is found in Africa followed by Europe, Asia-Pacific, the Americas and Caribbean and lastly in the ME; 96%, 73%, 57%, 56% and 50%, respectively. Moreover, only three regions which have not yet adopted ISAs, and these are the Americas and Caribbean and Asia-Pacific which reached 8% and 4%, respectively (IFAC 2019). To be more specific and according to the detailed systematic analysis provided by IFAC (2019), the implementation of ISAs is widespread. The total countries that fully adopted ISAs is 93 (69% of total jurisdictions), while partially adopted is 37 (28% of total jurisdictions). Meanwhile the countries which have not adopted is 3 (2% of total jurisdictions). The number of Arab ME countries with ISAs is 3 (38% of total ME countries), and partially adopted amounts to 5 (63% of ME countries). Furthermore, no country has not yet adopted the ISAs (see *Appendix B*).

2.4.3. Auditing Fair Value Accounting

Following the increased prevalence of FVA in accounting standards, specific attention is given to FVA issues. This is due to the important debate regarding the greater use of the valuation models underlying certain FVEs which are technically complex and vary from one industry to another and its reliance on unobservable inputs (Sangchan et al. 2020). As a result, using FVA to measure firms' assets and liabilities needs a third party to ensure the reliability and credibility of the fair values prepared by managers (Griffith et al. 2015; Lachmann et al. 2015). Auditors, in this case, should act as a monitoring tool to assist shareholders in making decisions by minimising asymmetric information (Mattingly et al. 2009). This problem is caused by the separate roles of owners and managers. The ongoing debate in relation to the significant role of FVA on the recent credit crisis has implications for accounting practices and especially the auditing profession. The embarrassing situation that large audit firms had been in, has turned the attention to the apparent failure of these firms to identify banks' financial failures (Hopwood 2009). As a consequence, the role, significance and independence of external auditors have been questioned because most failed financial institutions had received unqualified opinions (Sikka 2009). Responding to the GFC, the issue of auditing FVEs was the main issue for the auditing profession (Bratten et al. 2013; Dixon & Frolova 2013; IAASB 2008).

Auditing FVEs was first required by IAASB in February 2008 through the ISA 540 *(IAASB 2009b)*. ISA 540 underlines the typical audit approach for auditing accounting estimates, including FVEs. ISA 540 replaced ISA 545, which only covered auditing issues related to FVA (IAASB 2004). It has been noted elsewhere by Dixon and Frolova (2013), that ISA 540 identified the required process to audit FVEs which starts with identifying whether the fair value is permitted or required and understanding how their auditee's management computed the estimate. This is followed by evaluating the management prepared fair values as well as identifying the sources of uncertain estimations that would lead to the risk of substantial misstatement. This is followed by assessing the rationality of FVEs, assessing their related disclosures, and getting illustrations from their clients if the assumptions used to calculate these estimates are reasonable (Dixon & Frolova 2013). ISA 540 requires auditors to pay careful attention to issues of higher risk, accounting judgment and management intentional or unintentional bias (Sangchan et al. 2020).

Since ISA 540 is aligned with the audit risk model, auditors under this standard are required to assess the material misstatement linked to FVEs. Therefore, auditors must obtain a comprehensive understanding of how managers arrive at the prepared estimates and the data that they are based on to prepare these estimates (IAASB 2009b, paragraph 29-32). To do this, auditors are required to consider relevant internal controls, valuation techniques used, management's use of specialisation and experience, and assumptions leading to the estimate. Further, auditors should respond to any identified risks by evaluating the relevant transactions and events after the balance date. They must also assess how management made its estimates and the data they were based on, look at the reasonableness of measurement methods and assumptions used by managers, test the efficiency and the effectiveness of relevant controls, and finally develop their own estimates to compare them with those prepared by managers (IAASB 2009b, paragraph 23). Auditing FVEs with Level 3 is more challenging, and such estimates need specific focus and attention from auditors who in this case, need to develop technical knowledge about fair valuation techniques and the relevant audit procedures. Such estimates, moreover, place significant demands on auditors to enhance their professional scepticism, judgement, negotiation skills and moral bravery (Benston 2006; Sangchan et al. 2020).

2.4.4. Issues Related to Auditing Fair Value Accounting: Empirical Evidence

In recent decades, FVMs in financial statements have increased, and made financial reporting more difficult and complex (Christensen & Nikolaev 2013; Glover et al. 2019). Despite the advantages of using FVMs to market participants (Barth & Landsman 2010), they are often unobservable and subjective (Griffith 2020). Concerns about the issues related to auditing FVA have risen during the past decades (Cannon & Bedard 2017; Glover et al. 2017). By reviewing the literature about auditing challenging FVA, the majority of published research focused merely on the USA’s GAAP (Martin et al. 2006; Bratten et al. 2013; Griffith et al. 2015). Although the challenges and difficulties in auditing FVA in developing countries are relatively higher compared to developed countries, the empirical research in such regions is very rare (Kumarasiri & Fisher 2011; Abdullatif 2016).

As a starting point, Woods et al. (2009) stated that auditors are encountering great risk and pressure under the FVMs and disclosure requirements, especially when the clients used valuation models to measure complex financial instruments. Further, Smith-Lacroix et al. (2012) argue that external auditors not only have to assess the valuation models used for FVM, but also the experience of valuators who are responsible for delivering the information. Dennis (2015) suggested that the reliability of FVEs is a matter of judgment where external auditors evaluate the credibility of assumptions instead of evaluating the facts. Specifically, auditors of fair values are dealing with assumptions about subjective predictions of events expected to happen in the future rather than dealing with truth of past events (Griffith et al. 2015). However, Bratten et al. (2013) states that when the items prepared at fair value are traded in illiquid markets, the experts cannot accept the reported estimates, or the method used to prepare it.

In this sense, where auditors need to evaluate valuation techniques used for preparing and reporting fair values, auditors encounter higher risk if the market is volatile in nature. In the same vein, Humphrey et al. (2009) argued that the clear and significant definitions and guidance of fair valuation models and disclosures are all created where the markets are stable. Using valuation methods during the crisis period can be largely subject to the assumptions which ultimately lead to substantially different figures being reported (Benston 2006). On the other side, auditors in such a case need to provide additional effort and professional judgement in auditing and verifying the accuracy of their client’s procedures for identifying FVEs (Humphrey et al. 2009). According to ISA 540, the range of auditor's estimates must be sufficiently narrow and include only the reasonable estimates rather than all possible estimates. Thus, the material misstatement is realised when it is higher than the difference between the client's estimates and auditor's developed estimates (IAASB 2009b, paragraph 52). Conversely, Christensen et al. (2012) assert that any small change in FVEs inputs would lead to greater material misstatements in account values. This problem is more likely to arise often at Level 3 FVEs where there is large usage of unobservable inputs.

Overall, auditors must choose whether to assess fair value assumptions prepared by managers or to develop their own fair values and then compare them with those prepared by their clients (Glover et al. 2017). In the case of developing their own fair values, auditors then must decide whether to employ their own estimates internally or get assistance from independent specialist auditors, pricing services or external valuers (IAASB 2008, 2009a, 2009b). In fact, most external auditors rely on management's prepared estimates instead of developing independent estimates as the latter is the costliest procedure (Griffith et al. 2015). According to Martin et al. (2006), developing independent FVEs by audit firms is more useful than relying on clients' estimates, as the first choice provides high-quality audits. This is due to the increased opportunity to compare client's estimates and auditors' estimates, and thus the significant difference between them leads to audit firms increasing the scepticism about clients' financial statements.

A few scholars have outlined the main issues related to auditing fair values using semi-structured interviews and surveys (Cannon & Bedard 2017; Glover et al. 2017; Glover et al. 2019; Griffith et al. 2015; Griffith et al. 2016; Joe et al. 2017; Nguyen 2019). For example, Griffith et al. (2015) conclude that auditors over-rely on managers' prepared assumptions, usually fail to reconcile conflicting evidence and thus face coordination challenges with corporations' in-house specialists. Glover et al. (2017) conclude that intensive uncertain measurements in FVMs further worsens the FVMs gap and improve the audit complexity. The scholars also state that in the case of using high risky fair values, audit partners are more likely to apply their own assumptions when auditing it instead of using the auditee's assumptions. Joe et al.'s (2017) research find that complex estimates including fair values are more likely to lead to managerial bias which raises significant emphasis on auditors' ability to provide accurate assurance on the FVEs. Lower audit effort is allocated for testing FVEs by auditors when the level of client qualification and experience is high. Moreover, Glover et al. (2019) evidenced that there is a difference between audit experts and inspectors in the way that they interpret standards and evaluate audit evidence. The result confirms the significant gap between auditors and inspectors regarding providing sufficient audit assurance of FVMs. Griffin (2014), moreover, states that encouraging additional FVDs regarding how such values are estimated and prepared may have a negative influence on the recognised fair value figures. This is due to auditors being more likely to accept the possible misstatements in preparing fair values in the firm's financial statements if clients provide additional disclosures on these values. Glover et al. (2017) stated there is a difference in the views of both auditors' attitude and regulators' expectations on auditing FVEs. This gap is caused by the lack of credible evidence, using valuation experts due to auditors' limited experience and knowledge about complex matters and controversial valuation inputs, etc. Cannon and Bedard

(2017) concluded that the main causes challenges in auditing fair values are: higher usage of uncertain estimations, complex assumptions and multiple valuation techniques which ultimately could lead to large subjectivity in FVEs. High uncertain estimation is linked to higher inherent risk assessments which as a result mean large potential problems for the client. Bratten et al. (2013) note that under the current legal system and regulations, the problems that face external auditors in attesting to the uncertain estimates is complex and unstructured. They also state that the increased usage of the complex financial instruments, subjective assumptions and economic volatility are all factors which lead to inherent estimation uncertainty of fair valuations (Huang et al. 2016). Specifically, Huang et al. (2016) suggest that financial assets measured by the fair value model promote greater difficulties from an auditors perspective as such assets are subject to substantial managers assumptions and possibly become subject to fraud and managerial bias, especially for Level 3 assets. The volatitlity linked to fair-valued assets increases the internal risk of the clients given the volatility of exist prices avaliable in the market.

Glover et al.'s (2017) research finds that the subjectivity linked with estimating future financial events, in addition to the possible high extent of measurements uncertainty, all increase the challenges associated with auditing FVMs and other complex estimates. Recently, Miah (2019) concluded that using higher ratios of complex fair values of research and development expenses, intangibles, goodwill, and property, plant and equipment assets by US firms leads to expensive audit fees. Based on interview with a number of auditors and external valuers, Griffith (2020) recently confirms that institutional considerations are the primary factors to influence the quality of auditing fair values. This in addition to the auditors' lack of sufficient expertise and knowledge regarding auditing FVEs. Therefore, auditors seek to gain support from valuation specialists to deal with the complexity of auditing fair values. However, the level of accepting valuers' audits by firms may be subject to some institutional and competition with experts' factors.

According to IAASB (2008), the main challenges that auditors could encounter when auditing FVEs are: auditing significant estimates and assumptions made by others; the reliability or availability of evidence; the extent of assets and liabilities that must be measured by fair value; and the appropriateness of used valuation models used. Although auditing fair value Level 1 has not resulted in serious problems for auditors, it does worsen while moving to the other levels of the fair value hierarchy (e.g., Level 2 and 3) (Bratten et al. 2013; Ettredge et al. 2014a). For example, fair value Level 3 leads to risks of errors or managerial bias especially in the selection of the valuation model and making assumptions to estimate fair values (Cannon & Bedard 2016). However, Bell and Griffin (2012) and Christensen et al. (2012) noted that the subjectivity of fair valuations is progressively linked to Level 2 and Level 3 of fair value inputs; especially, for Level 3 due to the non-availability of observed market prices. According to Bratten et al. (2013)

employing complicated valuation procedures which are based on managers' estimations forced auditors to check numerous methodologies and underlying factors utilised by management.

The empirical evidence on the suitability of fair value measures and the issues related to auditing fair values in developing countries has been documented by Abdullatif (2016) in Jordan, Kumarasiri and Fisher (2011) in Sri Lanka, Alexander et al. (2012) in Romania, Nguyen (2019) in Vietnam, Oyewo et al. (2020) and Oyewo (2020) in Nigeria. Alexander et al. (2012) surveyed a sample of valuators and concluded that all the participants had a medium level of knowledge about fair value. Most participants also stated that using clients' assumptions about fair value limited their ability to develop their own estimations. One rare analysis on auditing FVEs in Sri Lanka was done by Kumarasiri and Fisher (2011). The main issue encountered here was that auditors in Sri Lanka when auditing FVEs suffer due to the lack of active markets, high degree of complexity in valuation models used in ascertaining fair values, and the lack of fundamental technical knowledge. There is a need to provide sufficient training and technical guidance to overcome these problems. Another evidence from developing countries, Nguyen (2019) in his study explored the suitability and difficulties of adopting fair value measures in Vietnam capital market following the full convergence with IFRSs. Using semi-structured interviews, the study finds that fair value implementation in Vietnam faces several barriers by institutional and business environment. In addition, the primary challenges towards fair value application is the weak infrastructure for valuation system which may result in highly fraudulent practices by managers. Recently, Oyewo et al. (2020) aimed to examine the post-implementation consequences and challenges in auditing fair values. Using a structured questionnaire, the study concludes that the most prevalent difficulties in auditing FVEs are managers manipulations and the complexities in testing the unobservable inputs caused by the managerial assumptions and judgements in preparing FVEs. Furthermore, Oyewo (2020) explored the challenges in auditing fair value from auditors' perspective following the application of IFRS 13 in Nigeria. Using structured questionnaire technique, the author confirmed that lack of relevant information is the dominant challenge facing auditing FVEs. This in addition to managerial fraud, noncompliance with FVD requirements as requested by IFRS 13 and the low level of awareness by preparers about the auditing fair value challenges.

In Jordan, Abdullatif (2016) explored the main issues that auditors face when auditing fair values. The main finding of this research is that FVA is aggressively used by some companies to over-estimate their assets, assets impairment and business combination, in particular. The reasons that facilitate this abuse are the non-availability of fair value information and weaknesses in corporate governance. The author states that auditors in Jordan encounter extreme pressure from both: their clients and regulatory authorities. Clients want auditors to accept their doubtful fair value assumptions in an environment where the demand for high quality audit is absent, yet the regulatory authorities encourage auditors to improve the quality of their work.

Overall, developing countries shared the same challenges in terms of auditing FVEs due to the higher level of complexity and risk related to the uncertainty inherent in these estimates (Kumarasiri & Fisher 2011). The main reasons beyond these challenges and difficulties in auditing FVDs are as follows. First, the lack of efficient markets for various types of assets and liabilities; (i.e., financial instruments and investment properties) allows management bias to occur and this results in disclosing unreliable financial information to decision-makers (Ahmad & Aladwan 2015). Second, the recognition of unrealised gains or losses emerges from the fair valuations for the assets and liabilities in firms' annual reports. Thus, the recognition of these values leads to greater volatility in share prices which eventually leads to unpredictable market conditions (Barth et al. 2006; Huang et al. 2016). Third, there is the lack of sufficient knowledge, skills and training by auditors to cope with complexity estimate changes and evaluate management's estimations. Fourth and most importantly, standard setters and the regulatory authorities in Jordan do not guide the monitoring of fair values evaluators external auditors (Abdullatif 2016).

Table 2.2. Systematic Analysis Review of Findings Regarding Auditing Fair Value Theme through Each Theme and Topic

Theme	*Topic*	*Findings*	*Example of authors*
Auditing development	***FVA challenges***	Auditors in ME countries, like Jordan, face some challenges when dealing with fair values: - The lack of liquid market, lack of sufficient technical knowledge, complexities linked with assuring fair value amounts, the availability of various valuation techniques. - The weakness of corporate governance schemas. - Managers lack technical valuation knowledge. - The non-availability of required data for preparing and auditing fair values. - Encountering managerial uncertain measurements and the risk of financial misstatement. - The lack of efficient infrastructure for this evaluation; thus, these circumstances expected to lead managers to behave opportunistically.	*Al-Yaseen and Al-Khadash (2011), Kumarasiri & Fisher (2011), Siam & Abdullatif (2011), He et al. (2012), Cameran and Perotti (2014), Taplin et al. (2014), Bell & Griffin (2016), Ayres et al. (2017), Joe et al. (2017), Lin et al. (2017), Georgiou (2018), McInnis et al. (2018), Plantin & Tirole (2018), Yao et al. (2018), Barth (2018), Vergauwe & Gaeremynck (2019), He et al. (2020), Bradley & Sun (2021).*
	FVA and audit fees	***Mixed results documented; some scholars find that:*** - The association between FVA and audit fees is positive and significant **(3 articles).** - Audit fees are related to the increased risk and complexity of fair-valued assets **(5 articles).** - Higher audit fees reported for more complex fair values; Level 2 and Level 3 inputs **(4 articles).** - The association between the proportion of fair-valued assets and audit fees is insignificant **(1 article).** - The association between the proportion of fair-valued investment properties and audit fees is significant with negative sign **(2 articles).**	*Ettredge et al. (2014a), Goncharov et al. (2014), Yao et al. (2015), Alexeyeva and Mejia-Likosova (2016), Sangchan et al. (2020)*
	The development of the ISA	- ISA 540 issued by IAASB in February 2008, and it replaced the ISA 545. - ISA 540 underlines the typical audit approach for auditing FVA. - Auditors became responsible for auditing accounting estimates, including fair value accounting estimates and related disclosures. - Auditors required to pay additional attention while auditing FVMs that include higher risk, accounting judgment and management intentional or unintentional bias.	*Bratten et al. (2013), Dixon & Frolova (2013), Cannon & Bedard (2016), Boolaky & Soobaroyen (2017), Haswell & Evans (2018), Glover et al. (2019)*

(This Table is continued on the next page)

(Table 2.2. Continued)

Note: *in order to assess fair value implementation on auditing prices and its' application status factors, the researcher has conducted a systematic literature review of academic published effort on this area. The literature review covers the published work over the period between 2000 and 2020. The PRISMA (i.e., Preferred Reporting Items for Systematic Reviews and MetaAnalyses) framework was followed. The analysis started with downloading meta-data on selected papers and was independently examined by two researchers. The analysis was on relevance and quality assessment. The results obtained independently were cross checked to triangulate the view and compile the final sample. The final sample included 155 articles.*
Source: Alharasis et al. (forthcoming).

2.5. Audit Fees Definition and the Recent Auditing Literature

This section looks at the factors affecting the determination of audit fees in briefly since these factors are explained more thoroughly in the next chapter.

2.5.1. Audit Fees Definition

The auditing literature is rich with research on the audit profession and audit pricing. According to the ISA, audit prices are defined as the amount of money paid to auditors for the work they do, based on their expertise, experience and qualifications (Chersan et al. 2012). Zhang and Huang (2013) and Rusmanto and Waworuntu (2015) defined audit fee as the amount paid to auditing firms and usually comprises three main components: the frequent and fixed amount of performing the audits; the potential litigation costs for audit failure and loss of reputation; and profit margin computed based on the audit firm and market competition. According to Che-Ahmad and Abidin (2008) and Al-Ajmi (2008), audit fees constitute the auditor's remuneration for services provided. Audousset-Coulier et al. (2015) stated that audit fees depend on the client size, complexity, and risks involved. Furthermore, Causholli et al. (2010) outlined that audit prices indicate interdependence of audit demand, audit firm nature, the structure of the audit market, and the real cost of the audits.

2.5.2. The Determinants of Audit Fees Research

Not surprisingly, external auditors play a vital role in assuring the fairness of financial statements. Therefore, the importance of financial statements' relevance and transparency has led scholars to emphasise the main determinants of audit fees as a proxy for audit quality (Abbott et al. 2003; He et al. 2017). Such determinants would benefit investors and other stakeholders by providing essential policies and strategies to make rational decisions (Salehi et al. 2019). Prior scholars outline that audit fees can be a better paradigm for audit quality and therefore enrich a firm's financial reporting quality (DeFond et al. 2014; Gaynor et al. 2016; Mitra et al. 2009).

In terms of audit fees factors, three main factors were emphasised by prior literature; client, auditor, and engagement factors (Chen et al. 2019; MohammadRezaei et al. 2018). Based on auditing theory, auditors' respond to high-risk clients by increasing the audit fee due to the time involved in doing their accounts (Alareeni 2019; Reid et al. 2019). On the other hand, some previous research suggests that clients with high information quality usually have fee discounts (Salehi et al. 2019).

Much accounting knowledge investigates various aspects of the auditing profession and determinants of audit fees. Simunic (1980) was the first to develop empirical and theoretical evidence on this area and explain audit fees as an example of the agency cost. Previous audit fees research categorised the main factors that significantly affect the level of audit fees as client attributes and auditor attributes (Bratten et al. 2013; Griffith et al. 2015). Audit fees have been extensively investigated in single country-level analyses in both developed and developing economies. In developed single country-level studies that investigated audit fee-related matters are extensive and they looked at: the US (Abernathy et al. 2019; Antle et al. 2006; Ashbaugh et al. 2003; Bryan & Mason 2016; Casterella et al. 2004; Ettredge et al. 2007a; Ettredge et al. 2014a; Francis et al. 2005; Francis & Simon 1987; Gist 1992; Goncharov et al. 2014; Hogan & Wilkins 2008; Miah 2019; Mitra et al. 2007; Palmrose 1986; Scott & Gist 2013; Simon 1985; Simunic 1984); the UK (Beatty 2007; Chan et al. 1993; Chaney et al. 2004; Che-Ahmad & Houghton 1996; Clatworthy & Peel 2007; Ding & Jia 2012; Ezzamel et al. 2002; Giroux & Jones 2007; Ireland & Lennox 2002; Matthews & Peel 2003; Niemi 2002, 2005; O'Sullivan & Diacon 2002; Pong & Whittington 1994; Taylor & Baker 1981); Australia (Craswell & Francis 1999; Craswell et al. 1995; De George et al. 2012, 2013; Ferguson et al. 2003; Ferguson & Stokes 2002; Francis 1984; Francis & Stokes 1986; Goodwin & Wu 2014; Houghton & Jubb 1999; Jubb et al. 1996; Salman & Carson 2009; Sangchan et al. 2020; Yao et al. 2015); New Zealand (Adams et al. 1997; Firth 1985; Hay & Knechel 2010; Johnson et al. 1995; Rainsbury et al. 2009); Canada (Anderson & Zeghal 1994; Bandyopadhyay & Kao 2004; Chung & Lindsay 1988); Ireland (Simon & Taylor 2002); Norway (Firth 1997); Japan (Taylor 1997); Singapore (Low et al. 1990); Hong Kong (DeFond et al. 2000; Lee 1996; Sandra & Patrick 1996); South Korea (Behn et al. 2008; Jeong et al. 2005); France (Audousset-Coulier et al. 2015); Italy (Cameran & Perotti 2014).

For the developing countries, there have been analyses on: China (Cahan & Sun 2015; Lin & Yen 2016; Liu & Subramaniam 2013; Shan & Troshani 2016); India (Dugar et al. 1995; Johl et al. 2016; Simon et al. 1986); Pakistan (Hassan et al. 2014; Simon & Taylor 1997; Ulhaq & Leghari 2015); Malaysia (Che-Ahmad & Abidin 2008; Yaacob & Che-Ahmad 2012); Thailand (Zaman & Chayasombat 2014); Iran (MohammadRezaei et al. 2018); Bangladesh (Karim & Moizer 1996; Khan et al. 2015); Greece (Owusu-Ansah et al. 2010); Bahrain (Joshi & Al-Bastaki 2000; Khasharmeh 2018); Kuwait (Al-Harshani 2008); UAE (Hassan & Naser 2013; Naser & Hassan 2016); and Jordan (Al-Thuneibat et al. 2008; Alhababsah 2019; Kikhia 2015; Naser & Nuseibeh 2008; Nawaiseh et al. 2019).

Cross-country-level evidence on the factors of determining audit fees is provided by a number of scholars (Ahmed & Goyal 2005; Alexeyeva & Mejia-Likosova 2016; Carson 2009; Choi et al. 2010; Chung & Narasimhan 2002; Haskins & Williams 1988; Rose 1999; Simon et al. 1992; Taylor & Simon 1999). Furthermore, a review analysis had been made by several scholars in the auditing literature and the origin reviews had been conducted by Cobbin (2002) and Hay et al. (2006). More recent updated meta-analysis research has been done by Hay (2013), Salehi et al. (2019) and Alareeni (2019). Cobbin's (2002) meta-analysis for audit fee determinants literature is based on 56 published studies during the period (1980-2000) in 17 countries[13]. Furthermore, Hay et al.'s (2006) meta-analysis summarised a wider range of research on audit fee determinants. The analysis indicates around 122 studies published over the period (1980-2003) in more than 22 different countries[14]. The meta-analysis undertaken by Hay (2013) includes more recent studies on audit fees published during the period (2004-2007). More recently, two meta-analyses were conducted by Salehi et al. (2019) and Alareeni (2019). The former emphasised the major factors on audit quality and incorporated 52 studies: 40 international studies for 2000-2015 and 12 national studies for 2001-2015. The latter examined the relationship between audit firm characteristics and audit quality. The analysis included 71 recent published studies for the years 1992-2017. Overall, most of these empirical analyses documented a positive relationship between auditee size, risk, auditor tenure and type, and audit fees.

2.6. IFRS and Audit Fees: Empirical Evidence

As discussed previously, audited financial reports are considered an acceptable method through which firms report their business results and financial position. These financial reports, on the completion of the audit, are provided with an audit report put together by independent qualified auditors who state the integrity of these reports and are in accordance with recognised accounting standards. Audit fee determinants constitute an interesting issue and many studies have attempted to explain the factors that influence audit fees (Ulhaq & Leghari 2015). Consistent with this, Salehi et al. (2019) categorised the main factors that influence audit prices as consisting of auditor attributes and audit client's attributes. Auditor attributes comprise auditor size, reputation, experience, expertise in a specific industry, audit market competition status and Big 4 status of the auditor (Joshi & Al-Bastaki 2000). Conversely, audit client's attributes comprise the client's size, complexity, risk, and profitability (Cannon & Bedard 2017; Ng et al. 2018).

Audit fee research has neglected developments in regulatory and disclosure requirements (Ghosh & Pawlewicz 2009). Empirical studies have confirmed that standards development and audit pricing are directly linked. For instance, Ghosh and Pawlewicz (2009), Vieru and Schadewitz (2010) and Kim et al. (2012) find that changes in regulatory and disclosure requirements have led to audit fee premium especially in countries with weak legal regimes. Some recent research examined the role of IFRS transition on audit pricing. For example, Griffin et al. (2009) was one of the earliest on this topic using a sample of New Zealand companies. Many studies have

[13] Including the US, the United Kingdom, Australia, Canada, India, New Zealand, Ireland, Pakistan, Bangladesh, Malaysia, Singapore, Hong Kong, Japan, South Korea, South Africa, The Netherlands and Norway.
[14] Including the US, Canada, UK, Australia, Hong Kong, India, Malaysia, Norway, Texas, Ireland, Western Australia, Bahrain, Bangladesh, Singapore, Netherlands, Finland, South Africa, Pakistan, Japan, Nigeria, South Korea and Belgium.

followed this research (Abu Risheh & Al-Saeed 2014; Cameran & Perotti 2014; Choi & Yoon 2014; De George et al. 2012; Hassan et al. 2014; Kim et al. 2012; Lin et al. 2011; Vieru & Schadewitz 2010; Yaacob & Che-Ahmad 2012). Most research on the impact of IFRS adoption on audit fees reported that audit prices have risen because of its acceptance. Overall, it seems that analysis of the effect of IFRS on audit fees revealed a significant increase in audit fees in common law settings (Australia, New Zealand and the UK) and civil law settings (European and Asian countries).

The move to IFRS has resulted in more clients reporting disclosure complexity (Ahmed et al. 2013; Beattie et al. 2008; Cameran & Perotti 2014; De George et al. 2013; Glaum et al. 2013; Khlif & Achek 2016; Raffournier & Schatt 2018). Griffin et al. (2009) used a sample of New Zealand 653 firm-year observations over the period 2002-2006. The researchers find that audit prices have increased substantially for the next two years of IFRS implementation relative to the year before such implementation. For one civil law country, Finland, the study by Vieru and Schadewitz (2010) investigated the impact of IFRS on audit fees using a sample of 73 listed firms over the period 2004-2005. They quantify the magnitude of IFRS modifications using an index of comparability between IFRS and local GAAP to proxy for IFRS switch complexity. There is a positive association between IFRS adoption and audit fees. Based on the theoretical view, Cameran and Perotti (2014) confirmed that auditing literature asserts that IFRS implementation has led to further auditing being done by external auditors. A theoretical framework was devised by Kim et al. (2012) and they reported that auditors choose to minimise audit prices. The researchers in their theoretical model defined the total audit costs as the sum of the estimated legal losses and auditor's effort costs. The former relates to the risk that an auditor failed to detect anything wrong and would be held responsible in court due to that audit failure. Kim et al. (2012) prove that audit prices are a growing function of audit risk and complexity which often increases under IFRS. Changing to the IFRS system is preferred by regulators and standard setters to enhance the quality of financial reporting, yet the adoption of such innovative standards has been considered expensive by companies because of the cost, effort, knowledge, experience, and professional skills required (De George et al. 2013). The audit fee is considered to be a direct cost of IFRS transition which is carried by firms.

Cross-country evidence was provided by Kim et al. (2012) on the impact of IFRS adoption on audit fees in 14 EU countries for the years 2004-2008. Their first argument suggests that using IFRS instead of local GAAP has led to higher disclosure requirements and greater use of complex fair values which eventually required better judgment and thus more effort and time thereby expensive audit fees. The second argument claims that IFRS promised high quality financial reporting and subsequently less probability of material misstatement in the documents, thus less audit risk and complexity and a fee discount. The periods before and after adoption were compared to find the difference in audit prices. Adoption led to audit fee premium (during the post-IFRS adoption period) due to the complexity that ensued.

In Australia, De George et al. (2013) documented that audit prices rose by 23% in the year following IFRS adoption. This increase was justified by the additional effort and knowledge and skills for external auditors to report to complex standards. Auditors have responded by asking for higher audit payments to compensate for their efforts. Referring to a civil law country, Cameran and Perotti (2014) investigated the transition to the IFRSs and the impact on auditors' fee determination in Italian banks from 1999 to 2006. The study finds that IFRS affect audit fees in two keyways: firstly, incremental effort is required from auditors, which leads to higher audit prices; and secondly, when IFRS improves the credibility and transparency of the financial reporting there is less inherent risk so smaller audit prices are charged. While Hart et al. (2009) explored the impact of the implementation of IFRS on audit pricing of the private sector firms in New Zealand, the study reveals that audit prices rose by 48% in the two years prior to IFRS and in the transition year.

Audit prices concurrently increased following IFRS transition due to the further disclosure requirements. Habib (2011) stated that following IFRS adoption auditors were under pressure to undertake a lot more work. Raffournier and Schatt (2018) examined the effect of IFRS adoption on audit fees using a sample of Swiss firms for the period 2002-2016. The study concludes that firms adopting IFRS are more likely to incur higher audit fees. Lyubimov (2013) finds that audit risk and effort are the primary audit pricing factors. Auditing IFRSs requires much effort since IFRSs are more principle oriented and are mainly based on FVA which makes the process more challenging compared to auditing with rule-based standards which are based on HC. According to Choi and Yoon (2014), in the case of an absent efficient market, auditors are more likely to use various methods to gather information which could help in assessing the credibility of management prepared estimates. This situation may lead to a higher risk of material misstatement in the disclosed financial information due to intentional or unintentional errors and fraud which raises the litigation risk. Generally, possible legal losses based on various factors, such as the likelihood of material misstatements in the financial statements will carry a legal liability due to the audit failure.

In Asian countries, there is limited empirical evidence from China, Malaysia and South Korea. For example, Lin and Yen (2016) find that in China, audit prices have significantly risen after the adoption of IFRS. Similarly, Zhu and Sun (2012) examined the impact of IFRS implementation on audit fees based on Chinese firms in 2007; the new IFRS-based Chinese accounting standards resulted in higher audit fees. The researchers justified this on the grounds that additional disclosures required more work by firms regarding their market risk. Yaacob and Che-Ahmad (2012) investigate the association between audit fees and the implementation of IFRS using a sample form Malaysian firms for the years 2004-2008. Likewise, Brink et al. (2016) concluded that auditors in China have less ability to evaluate specialists' evidence due to the highly complex specialists' reports. More recently, Ye et al. (2018) examined the effect of the new Chinese standards which converged with IFRS in 2007, on earnings quality and earnings transparency and their relationship with audit fees for the period 2001-2012. The adoption of these accounting standards and the introduction of FVM led to increased earnings transparency which negatively affected audit fees. Regarding Arab ME economies, Jordan in particular, Abu Risheh and Al-Saeed (2014) examined the impact of implementing IFRSs on audit fees based on a sample of industrial listed companies. Findings indicate that IFRS significantly resulted in higher audit fees for Jordanian companies.

All in all, it is agreed by most scholars in accounting that IFRS has led to much more time and effort spent by external auditors doing companies' accounts. Consequently, higher audit fees will be required from those firms implementing the new standards, IFRS. Most scholars (De George et al. 2013; Glaum et al. 2013; Cameran & Perotti 2014; Raffournier & Schatt 2018) confirm that the inherent cause of audit complexity and risk following IFRS adoption is due to the emphasis of IFRS on fair value implementation (Bell & Griffin 2012). In this respect, Khlif and Achek (2016) summarising the main consequences of IFRS fair value application on the auditing profession in developing countries based their systematic review on recent research on the area (see Figure 2.3). The researchers state that IFRS increases audit fees due to the emphasis of IFRS on fair value application which caused higher risks and complixities of disclosed financial information on corporates annual reports.

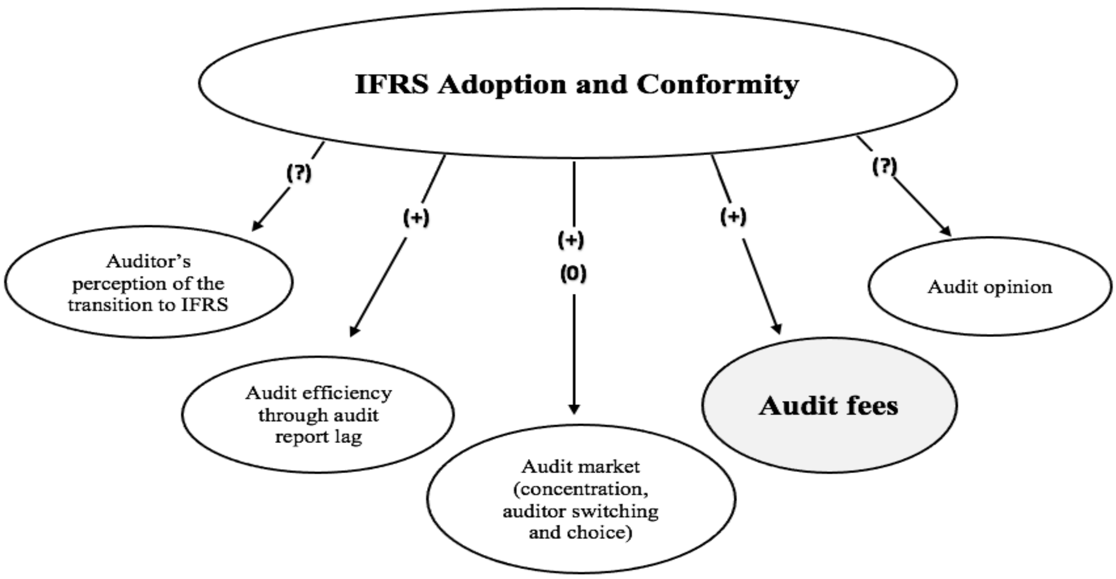

Figure 2.3. The Effect of IFRS on Auditing Profession

Source: Khlif and Achek (2016)

2.7. Fair Value Accounting and Audit Fees: Empirical Evidence

Scholars, who examined issues related to IFRS adoption, suggest that the main source of complexity and risk of IFRS is derived from the emphasis of IFRS on using FVMs (Khlif & Achek 2016). To value firms' assets and liabilities based on IFRS/fair value requirements, firms need to use complex processes as the basis of forward-looking information (Glaum et al. 2013). In general, there is a dominant argument that the IFRS principles-based standards have led to higher legal liabilities, since the lack of professional skills by auditors in regard to applying and auditing in accordance with the IFRS requirements has ultimately caused significant audit failure (Diehl 2010). Cameran and Perotti (2014) stated that the rising use of hedge accounting and valuation of financial derivatives resulted in greater complexity in auditing tasks. Hence, under IFRS the increased audit risks are caused by the possibility of material misstatements and this increases the litigation risk (Kim et al. 2012). Based on the above-mentioned arguments, Kim et al. (2012) and Cameran and Perotti (2014) suggest that auditors will be required to charge expensive fees to compensate for high audit risk and complexity. Turning back to FVA consequences, and consistent with the literature, it is evident that fair value has its implications for the accounting and audit profession in particular. This section reviews the few studies done on the impact of fair value on audit fees which seems to be the main proxy for assessing the quality of audit services (Alhababsah 2019; Ghafran & O'Sullivan 2017; Zaman et al. 2011).

Recently, scholars started studying the relationship between FVD and audit fees but not much has been published on developed countries with inconsistent and inconclusive results. At the time of writing, five empirical studies have examined the relationship between FVD and audit fees. Ettredge et al. (2014a) looked at US banks based on US GAAP instead of IFRS, while Alexeyeva and Mejia-Likosova (2016) examined EU banks. Goncharov et al. (2014) investigated US and UK real estate companies, and finally, Yao et al. (2015) and Sangchan et al. (2020) analysed Australia for non-financial fair-valued assets.

As a starting point, Ettredge et al. (2014a) investigated this issue based on an examination of 299 US banks during 2008-2011. The Ordinary Least Squares (OLS) regression analysis concludes that the proportions of fair-valued financial assets are positively associated with audit fees. This result is because the level of audit fees is related to the increased risk and complexity of fair-valued assets. More effort is needed to audit these complex values and ultimately this has led to higher audit pricing. Moreover, the relationship between the proportions of fair-valued assets and audit fees become higher when Level 2 and Level 3 assets have been used. Cross-country evidence on this issue is provided by Alexeyeva and Mejia-Likosova (2016). The authors examined the relationship between fair-valued assets and audit prices using a sample of 177 banks operating in 24 EU countries from 2008 to 2013. The regression analysis failed to find a significant association between the proportion of fair-valued assets and audit fees. However, the amount of Level 3 FVEs is positively associated with audit fees. This is consistent with the argument that auditors spend more time and effort in evaluating highly uncertain fair-valued assets due to the complexity and risks they face when auditing these innovative assets. Other cross-country evidence provided by Goncharov et al. (2014) who summarised that the greater use of FVMs for financial instruments has led to high audit fees based on a sample consisting 172 European real estate companies for the period 2001-2008. The authors also assert that the wider use of fair-valued assets, especially for Level 2 and Level 3 leads to larger audit fees, and fair value reporting leads to extensive discretion into management evaluations (Watts 2006).

This increased discretion can raise agency costs, resulting in increased auditor effort to assess reputation risk, litigation risk, and FVEs. In Australia, Yao et al. (2015) examined the relationship between asset revaluations of non-current assets and audit fees, using a sample of 300 firms listed on the Australian Stock Exchange (ASX) for 2003-2007. It finds a significant positive association between non-financial assets (i.e. property, plant and equipments, investment properties and intangible assets) that are fair-valued and audit fees. The researchers provide further evidence on the role of the independent valuer or appraiser on the association between asset revaluations and audit fees. Their empirical test finds that the independent valuer negatively affects the association between asset revaluations and audit fees. Moreover, firms whose non-current assets are revalued almost every year have considerably higher audit fees. In general, the study suggests that agency costs following the adoption of FVEs may exceed its benefits. Recently, another Australian evidence on non-financial assets context was documented by Sangchan et al. (2020). They examined the relationship between audit fees and fair value exposure, changes in fair value and the source of fair value inputs and valuers in real estate corporates. The study finds a significant negative association between the proportion of fair-valued investment properties and audit fees. This negative relationship is justified by that auditors who can take advantage of their client with high fair value exposure prepared by managers, by simplifying auditing for fair-valued investment properties. Furthermore, a positive association is recorded between the total changes in fair-valued property assets and audit fees. Charging higher audit fees in this situation is due to the increase in audit process procedures which is caused by the greater risk and complexity in property assets fair values. There are complexities in understanding external valuers procedures in developing fair values as well as the difficulties in attaining enough information regarding assumptions and valuation models used by those valuers.

Consistent with the arguments above, the greater use of uncertain fair-valued assets leads to higher audit prices to meet business owners' needs for high-quality financial information. So, auditors act as a form of monitoring tool for shareholders to minimise asymmetric information (Ettredge et al. 2014a; Sangchan et al. 2020). In this respect, corporates may appoint high-quality auditors to send positive signals to stakeholders which leads to higher audit fees. This is in line with the argument that auditors spend more time and effort in evaluating the fair-valued assets to protect shareholders' rights through discovering expropriation by the management. In some cases, auditors need to hire valuation specialists due to their lack of valuation knowledge and experience in auditing such complex estimates, which in effect means that auditors bear additional costs and risks (Bratten et al. 2013; Brink et al. 2016). The adoption of FVA increases the difficulty of auditing and impinges on the quality of auditing as well due to external auditors' weak compliance with auditing standards (Christensen et al. 2012; Glover et al. 2019). According to Bell and Griffin (2012), FVM is associated with a great estimation uncertainty which is caused by the high subjectivity of the assets' valuation. In the case of the unobservable market prices, managers are obligated to use the required valuation models and follow complex procedures. Auditing such measurements leads to charging expensive audit fees to compensate for future litigation risk and to reward those auditors' efforts (Bratten et al. 2013).

2.8. Summary of the Chapter and the Research Gap

This chapter reviewed the main recent research findings on the association between FVD and audit fees. It critically discussed the major implications for the adoption of FVA, following IFRS implementation, on the accounting and auditing profession. The empirical research on the audit pricing resulting from the FVA of financial assets is limited and inconclusive (McDonough et al. 2020). A group of scholars assert that there is a positive association between FVD and audit fees (Ettredge et al. 2014a); however, some scholars suggest the opposite or no real significant correlation (Sangchan et al. 2020; Goncharov et al. 2014; Alexeyeva & Mejia-Likosova 2016). These studies have examined the relationship between fair value on audit pricing using data from developed countries, such as the US, EU, and Australia; however, there is no research, to date, which has tested this relationship in the context of developing countries, ME and Jordan, in particular (see Table 2.3).

Moreover, this thesis fills the gap in some recent and interesting areas about the relationship between FVD and audit fees in several ways. First, the study considers the moderating role of ownership structure on the the relationship between FVA and audit fees. This consideration is due to the extensive ownership concentration of businesses in Jordan. Most external auditor clients in Jordan operate under the family-business model, so light should be shed on the uniqueness of their ownership structures (Abdullatif & Al-Rahahleh 2020). Khlif and Achek (2016) asserted no research has examined the effect of ownership structure factors on the association between FVA and audit fees. Second, the effect of auditor industry specialisation is also considered by the present study to test its effect on the relationship between FVA and audit fees. The current study answers the call made by Al-Harshani (2008) and Abu Risheh and Al-Saeed (2014) to empirically test the effect of auditor industry specialisation on audit fees. Therefore, following Ettredge et al. (2014a), this thesis explores the effect of auditor industry specialisation on the relationship between FVA and audit fees following IFRS rather than the US's GAAP system. Third, this study fills the gap in knowledge about the effect of the corporate industry type and the GFC on the association between FVA and audit fees.

Table 2.3. The Study Approach (Knowledge gap)

	Audit pricing literature	IFRS and audit pricing literature	Fair value disclosure and audit pricing literature
Setting	- Developed country evidence: US, UK, EU. - Developing country evidence: Bangladesh, India, Pakistan, Bahrain, Kuwait, UAE and Jordan.	- Developed country evidence: New Zealand, Australia, UK and EU. - Developing country evidence: Asian countries, such as Jordan, China and Malaysia.	- Developed country evidence: US, EU and Australia. - Developing country evidence: ***"No evidence provided yet"***
Main findings	A positive relationship between auditee size, risk, and auditor size, and audit fees.	Audit prices increase as a result of IFRS adaptation.	Audit prices increase with the increase using of uncertain fair value estimates.

In order to fill the research gap in this area, the main research question has been developed as follows:

"What is the relationship between fair value disclosure and audit fees among Jordanian listed firms?"

The sub-questions have been formatted as follows:

1- What is the relationship between the presence of fair-valued assets and audit fees among Jordanian listed firms?

2- What is the relationship between the proportion fair-valued assets and audit fees among Jordanian listed firms?

3- What is the impact of ownership structure on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms?

4- What is the impact of auditor industry specialisation on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms?

5- What is the impact of corporate industry type (financial versus non-financial) on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms?

6- What is the impact of the Global Financial Crisis on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms?

CHAPTER THREE: THEORY, HYPOTHESES DEVELOPMENT AND METHODOLOGY

3.1. Introduction

This chapter summarises the chosen methodology in accordance with the research aim and objectives. It is structured as follows. Section 3.2. presents the research theoretical basis that has been integrated into the current study. Section 3.3. discusses the study's conceptual framework. Section 3.4. explains hypotheses development. Section 3.5. describes the research methodology and data collection. Section 3.6. focuses on the research design. Section 3.7. outlines the research variables and variables measurement. Section 3.8. summarises the chapter.

3.2. Theoretical Framework

3.2.1. Introduction

The primary aim of this study is to examine the relationship between FVD and audit fees. The survey of fair value and audit fees research revealed that agency theory, signalling theory and stakeholder theory can investigate this phenomenon (Simunic 1980; Griffin et al. 2009; Bratten et al. 2013; Ettredge et al. 2014a; Yao et al. 2015; Alexeyeva & Mejia-Likosova 2016; Cannon & Bedard 2017; Barth 2018; Bradley & Sun 2021; Glover et al. 2019; Sangchan et al. 2020; Huang et al. 2020; Griffith 2020; Oyewo et al. 2020; McDonough et al. 2020). The discussion of each theory and the link between the theories is explained below (see Figure 3.1).

3.2.2. Agency Theory

Agency theory is defined as "a contract under which one or more persons (principals) engage another person (agent) to achieve some service on their behalf that includes delegating some decision-making authority to the agent" (Jensen & Meckling 1976, p. 308). Based on this definition, managers make decisions on behalf of business owners and they should behave according to the owners' interests and needs. However, due to the distinction between ownership and management, the latter may not work according to the interests of the former. This can potentially lead to abuse and fraud by management and consequently material misstatements in reported company information (Davidson et al. 2004; Jiraporn et al. 2008; Healy & Wahlen 1999) that disadvantages the owners.

There are mainly two assumptions that can be deduced from this theory (Deegan & Samkin 2008, p.71). The first assumption is that both the principal and the agent intend to maximise their utility. Their sole objective is to ensure that their values or utilities are maximised to the greatest extent possible. The other assumption is that the parties may not have the same interests (An et al. 2011). This implies that it is not necessary for the interests of both the principal and agent to be the same. In business, the shareholders and managers are the principals and agents, respectively (Jensen & Meckling 1976). Shareholders engage managers to execute the day-to-day activities. However, it is not necessary that they have similar objectives or interests. There may be a conflict of interest between them which may lead to catastrophic results. The conflict of interest primarily arises when there is a clash of objectives between the principal and the agent (Uyar et al. 2013).

The problem of fragmented and incomplete information is the root of the conflict of interest. The management certainly has more information than investors since it takes care of the regular affairs of the business. The conflict of interest becomes more acute when managers provide biased information (Davidson III et al. 2004; Jiraporn et al. 2008). Biased or fragmented information leads to major problems such as distrust, chaos, and confusion. The only feasible solution to eliminate conflict is to ensure the integrity of the published information by a third party (external auditor) so that the investors are confident about their investment (Huang et al. 2016). A company will be able to improve itself as there will be better returns from such kinds of investments. In other words, the managers need to provide the necessary information to the shareholders for better decision-making (McDonough et al. 2020; Bradley & Sun 2021).

Unavailability of information can lead to major problems in the decision-making structure (Griffin 2014). The purpose of conducting an audit is to retain strict vigilance over the operations of managers and report any discrepancies to shareholders. Auditors keep a track of managers' actions and ensure their personal interests do not conflict with the business's objectives (Joe et al. 2017). The audit fees become a part of agency costs (Sangchan et al. 2020). The company needs to bear these costs to curb the wrongful acts of managers. Consistent with this, Simunic (1980), Fields et al. (2004), Habib (2011) and Bratten et al. (2013) define audit fees as an important type of agency cost since the auditors responsible for ensuring whether the managers are behaving according to the stakeholders' interests and expectations. Based on this and compared with the regular auditing process, when the agency problem exists, auditors need more time to ensure managers' evaluations regarding uncertain FVEs (Griffith 2020; Glover et al. 2016). This, in turn, leads to higher audit prices to meet the owners' needs for high-quality financial information.

Auditors act as a form of monitoring tool which helps stakeholders minimise the problem of asymmetric information (Griffith 2020). One possible way to reduce the agency conflict between managers and shareholders is to provide transparent and reliable financial reports audited by the external auditor (Arens et al. 2012; Huang et al. 2016, 2020). Hodge and Pronk (2006) defined audit fees as essential monitoring costs, a key factor of the agency cost and the result of agency problems between shareholders and managers. Jensen and Meckling (1976) state that monitoring cost is the cost paid by the principal to monitor managers to prevent abnormal behaviours of the latter. Audit quality is another important issue, since auditors play an intermediary role between investors and the board of directors (Badia et al. 2017).

Audit fees are deemed to be an element of firms' monitoring costs which are attributed to overseeing the agent's behaviour (Agyei-Mensah 2018). The auditing process, when implemented by a credible and independent auditor, seeks to restrain opportunistic preparing and reporting of accruals, to diminish managers' possible manipulation of earnings (Alzoubi 2016, 2018; Francis & Krishnan 1999). In this sense, audit fees serve as a monitoring tool which in turn, improves shareholders' comprehension regarding to what extent managers allocate firm's resources in a logical and fair way. Thus, the amount of audit fees paid by firms would bridge the information gap between managers and investors (Huang et al. 2016). In fact, auditing FVDs need careful attention, as managers have the choice about the quantity and type of information disclosed. Following the disclosure requirements by IFRS, managers can select an acceptable accounting method to measure fair value for assets and liabilities in a way that could serve their own interests and manipulate investors. FVM is strongly based on managerial discretion and especially in the case of absent active markets where the managers use the valuation methods to prepare such complex estimates (Yao et al. 2018). The major influence of such estimates can be noticed in reported earnings, such as unrealised gains or losses. Such behaviours could reduce the quality of published financial reports and thus, manipulate shareholders (Barth & Landsman 2018). In this sense, some scholars assert that audit fees are a form of corporate governance practice: Haniffa et al. (2006), Bozec and Dia (2017), Jizi and Nehme (2018) and Farooq et al. (2018). Others have suggested that higher audit fees mean low earnings management practices which in the current study result from the wide use of accounting choices especially for fair valuation models and managers' manipulation (McDonough et al. 2020).

In Jordan, there are significant differences between family and non-family companies (Abdullatif & Al-Rahahleh 2020; Clarke 2004). The former generally face little conflict of interest problem as there is basically no separation between the ownership and management. The conflict of interest mainly arises in the latter where the ownership and management are divorced (Khan et al. 2015; Mäki et al. 2016). The agency problem mainly occurs in two different forms. There can be a conflict between shareholders and managers (agency problem type I) or between the majority and minority shareholders (agency problem type II) (Deegan & Unerman 2006; Deegan & Samkin 2008). Agency problem type I takes place only when the shareholders can hold a large chunk of the shares. This leads to shareholders wondering if the affairs of the company are being managed effectively. The shareholders need to be made aware of the different activities that have a significant bearing on the company's operations (Watts & Zimmerman 1986). This type of conflict in interest is not much evident in developing countries, like Jordan. It is mostly found in developed countries where more information can be requested from the management (Healy &

Wahlen 1999). However, agency problem type II gives rise to the difference between family and non-family owners, so in other words the conflict among the majority and minority shareholders arises in family companies. The conflict of interest arises when the majority shareholders command more information than minority shareholders (An et al. 2011; Lundholm & Van Winkle 2006). There are various ways to end this conflict and the primary way is to appoint independent reliable audit firms.

Using complex FVEs by Jordanian firms was challenging due to the lack of active markets. As a result, it created the need for high-quality audits to mitigate the abuse of power dedicated to the managers to mislead the shareholders (Abdullatif 2016). Here, higher audit fees paid to external auditors have been used in the Jordanian economy to ensure the credibility and transparency of uncertain FVEs prepared by managers (Abu Risheh & Al-Saeed 2014). Consequently, minimising the information asymmetry problem emerged due to the agency problem caused by either the conflict between agent to principal or principal to principal (Alhababsah 2019). In fact, both types of agency conflict exist in Jordan, especially type II (Abdullatif 2016). This is due to a large number of family businesses in Jordan (Al-Akra & Hutchinson 2013; Alhababsah 2019).

3.2.3. Signalling Theory

Signalling theory seeks to explain the reason beyond disclosing corporate information by managers. According to Spence (1973), accounting information is deemed to be a signal to the capital markets. Signalling theory addresses the information asymmetry problem which is caused by the agency problem resulting from the separation between managers and owners (Inchausti 1997; Khan et al. 2015; Leventis & Caramanis 2005). Based on the signalling theory, external auditors are considered to be a signal about the firm's disclosure quality (Moore & Ronen 1990). Corporates may appoint higher quality auditors to send positive signals to stakeholders in the stock market which leads to higher audit fees being paid (Krishnan & Yang 1999; Moizer 1997). Given the rising use of complex estimates of FVA, the opportunity of management bias adds further pressure on the need for high-quality audit services as a proxy for the reliability of financial reports (Glover et al. 2019; Huang et al. 2020). Ultimately, this leads to the charging of higher audit fees due to the effort and time spent in auditing these uncertain estimates (Ettredge et al. 2014a; Sangchan et al. 2020). According to Lennox (1999), better audit quality leads to lower expropriation behaviour by managers because IASs are being applied. In this respect, specialist auditors in specific industries offer a high-quality audit (Audousset-Coulier et al. 2015; Hux 2017) which can signal the potential reporting of management's misstatements and/or fraud (Carcello & Nagy 2004; Havasi & Darabi 2016; Jaggi et al. 2012).

The need for greater audit quality is critical in Jordan since its economy is linked with the global economy (Tahat et al. 2016). The government seeks to provide high-quality financial reports to investors to attract foreign investors and in this way, generate economic growth (Nawaiseh et al. 2019). As stated elsewhere (Barth et al. 2012; Landsman et al. 2012) the reliability of FVA is a matter of judgment, and stakeholders need assurance about the reliability of the financial information published by firms. In this respect, adopting high quality accounting and auditing standards, such as FVA emerges as an acceptable signal to market participants, and the disclosure of additional information means high quality disclosures are available (Griffith 2020).

Dyczkowska (2014) suggested that signalling theory predicts that firms with high quality information are more subject to select accounting procedures which allow their high-quality reports to be disseminated. Such firms are seeking to get advantages from open association with investors, thus, in turn they could signal their competitive advantage. Such firms are willing to employ professional audit firms, accordingly, pay audit fee premium but firms with lower quality reports are more likely to hide their financial failure through appointing low-quality auditors (Dyczkowska 2014). Since audit fees are a signal for audit quality and lower financial statement manipulation (Ettredge et al. 2014a; Hoitash et al. 2007; Stanley & DeZoort 2007), financially successful corporates are willing to signal this in their financial reports; meanwhile, corporates in the opposite situation are more reluctant to do so (Alhababsah 2019). Accordingly, disclosure quality and audit quality are the most important factors, especially in the case of using fair value complex estimates, for obtaining the trust of investors and constrain their uncertainty about firms' disclosed reports. This in turn, would play a vital role in improving firms' returns and share prices.

All in all, there is a significant overlap between the signalling and agency theories since both are linked to rational behaviour and information asymmetry between agents and principals (An et al. 2011). Morris (1987) argued that due to this overlap, integrating these theories enhances the predictions regarding accounting choices and electing accounting methods and procedures. Therefore, the rationale behind choosing the fair value model can be clearly explained through these two theories (Khlif & Achek 2016; Samaha & Khlif 2016). Higher audit fees paid by firms help to monitor managers' behaviours and resolve the information asymmetry problem (Sangchan et al. 2020). In addition, higher auditor fees can be positive signals sent to various stakeholders where their trust in the disclosed financial statements is improved and leads to attracting investments, cheaper capital, reducing the volatility of stocks and thereby developing good relationships with stakeholders (An et al. 2011; Huang et al. 2020).

3.2.4. Stakeholder Theory

Stakeholders are defined as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman et al. 2010). Based on this definition, the task of the company is to evaluate the needs of stakeholders and provide them with all the necessary information which they can use to make informed decisions (Healy & Wahlen 1999). While agency theory expresses the conflict between organisations' managers and shareholders, stakeholder theory reflects the wider range internal and external users (Guidara et al. 2021). In this respect, according to Clarkson et al. (1994), stakeholders can be broadly classified into two categories - primary and the secondary. The former is directly interested in the affairs of the organisation and they include shareholders, employees, suppliers, and customers. The latter are those who are indirectly related to the organisation and its business, for example government and other organisations' personnel and environmentalists (Freeman et al. 2010). There are three views concerning stakeholder theory, these being descriptive accuracy, instrumental power, and the managerial perspective (Freeman et al. 2010, p. 46). The first two approaches encompass the view that the company should effectively manage the primary stakeholders first, whereas the last approach indicates that all the stakeholders' needs are to be considered (Donaldson & Preston 1995).

In fact, corporate disclosure is the most significant tool for achieving the desired objectives. Business managers need to be very specific about the disclosure of the relevant information (An et al. 2011; Lundholm & Van Winkle 2006). The strategy of disclosing the right kind of information can solve myriad problems at the same time. Stakeholders are the building blocks of the business and it is the responsibility of the managers to keep them well-informed (Healy & Wahlen 1999). Unless they are provided with the most relevant information, they will not have confidence in the company.

The adoption of FVA has led to an increase in client's complexity and risk for auditors. This in turn can lead to fraud when utilising such complex estimates (Huang et al. 2020; Bradley & Sun 2021). This situation is caused by the growing use of uncertain FVEs and the complex valuation techniques to measure the fair value of the assets and liabilities (Barth 2018; Griffith 2020). This, in turn, might result in manipulating and misleading outside users due to the higher management bias in choosing the valuation models (Joe et al. 2017; He et al. 2020). The need for verification from a third party (i.e., external auditor) on the credibility and transparency of the managers prepared fair values is higher in the firms which are based on fund providers, such as manufacturing companies (Lin et al. 2017). Such entities need to attract external financing (investors, suppliers, or creditors) to continuing normal operations. Therefore, these firms attempt to implement higher audit fees to get such approval due to the complex activities and the high level of agency cost (Sangchan et al. 2020).

The need to hire qualified external auditors to authorise financial information attracts considerable attention from Jordanian government authorities (Naser & Hassan 2016). It has been suggested by Lin and Hwang (2010) and Audousset-Coulier et al. (2015) that higher audit fees express lower levels of earnings management and provide greater earnings quality which subsequently add credibility to firms' financial reports. Therefore, external auditors contribute to minimising managers' opportunities and incentives to manipulate accounting information published in the firms' annual reports for their own ends (Abbott et al. 2006; Yao et al. 2018; Oyewo 2020). Auditors play a vital role in enforcing and protecting stakeholders' rights through discovering expropriation by the management (Carcello & Nagy 2004; Newman et al. 2005; Oyewo et al. 2020). In this way, auditors assist stakeholders by informing them about the reliability of management-provided information, consequently allowing their wealth to grow (Baker & Owsen 2002).

Since FVA came into force in 2005 in Jordan after the widespread adoption of IFRSs, it is evident that audit fees are now the most important tool for maximising stakeholders' interests (Abdullatif 2016; Alhababsah 2019). Helping corporates in maintaining current investors and attracting new foreign investors increases confidence about firms' financial position. In this sense, Griffith (2020) asserted that higher audit prices determine the quality of financial information published in firms' annual reports. According to Healy and Wahlen (1999), earnings management happens when managers alter financial statement for the purpose of misleading stakeholders regarding the financial performance of the corporate or to influence contractual consequences which depend on published accounting numbers (Salehi et al. 2019). In this sense, the connection between stakeholder's theory and earnings management is underlined by Hodge's (2006) study which concluded that managers may manipulate earnings to meet their own interests and needs at the expense of stakeholders. As stated by Mattingly et al. (2009), audit fees serve to protect all stakeholders' interests. High audit fees lead to high-quality accounts which ultimately resulted in lower earnings management by corporates' management (Demartini & Trucco 2017). In stakeholder theory, external auditors' function as an oversight system which protects the rights of all stakeholders, not just protecting shareholders' interests (Baker & Owsen 2002). Consistent with the adoption of FVA, this adaptation leads to large-scale earnings management behaviour by managers, such as engaging in flexible accounting practices to misrepresenting the reliability of a firm's financial reports (Alzoubi 2016).

All in all, and based on stakeholder theory, corporate disclosures are a necessary tool to meet stakeholders' interests and make decisions on resources allocations. Unlike agency theory, from the stakeholder theory view, the firm is seen in its wider social fabric and managers are accountable to a wider range of stakeholders (Freeman et al. 2010). In this respect, stakeholder theory expands agency theory emphasis. Therefore, managers should support all stakeholder groups with high quality financial information. Both, agency and stakeholder theories can be integrated, since the latter theory does not employ the information asymmetry concept (An et al. 2011; Bradley & Sun 2021). Therefore, in discussing the relationship between FVD and audit fees the integrated theories can explain the relationship by arguing that, audit fees can reduce information asymmetry between corporates and their stakeholders.

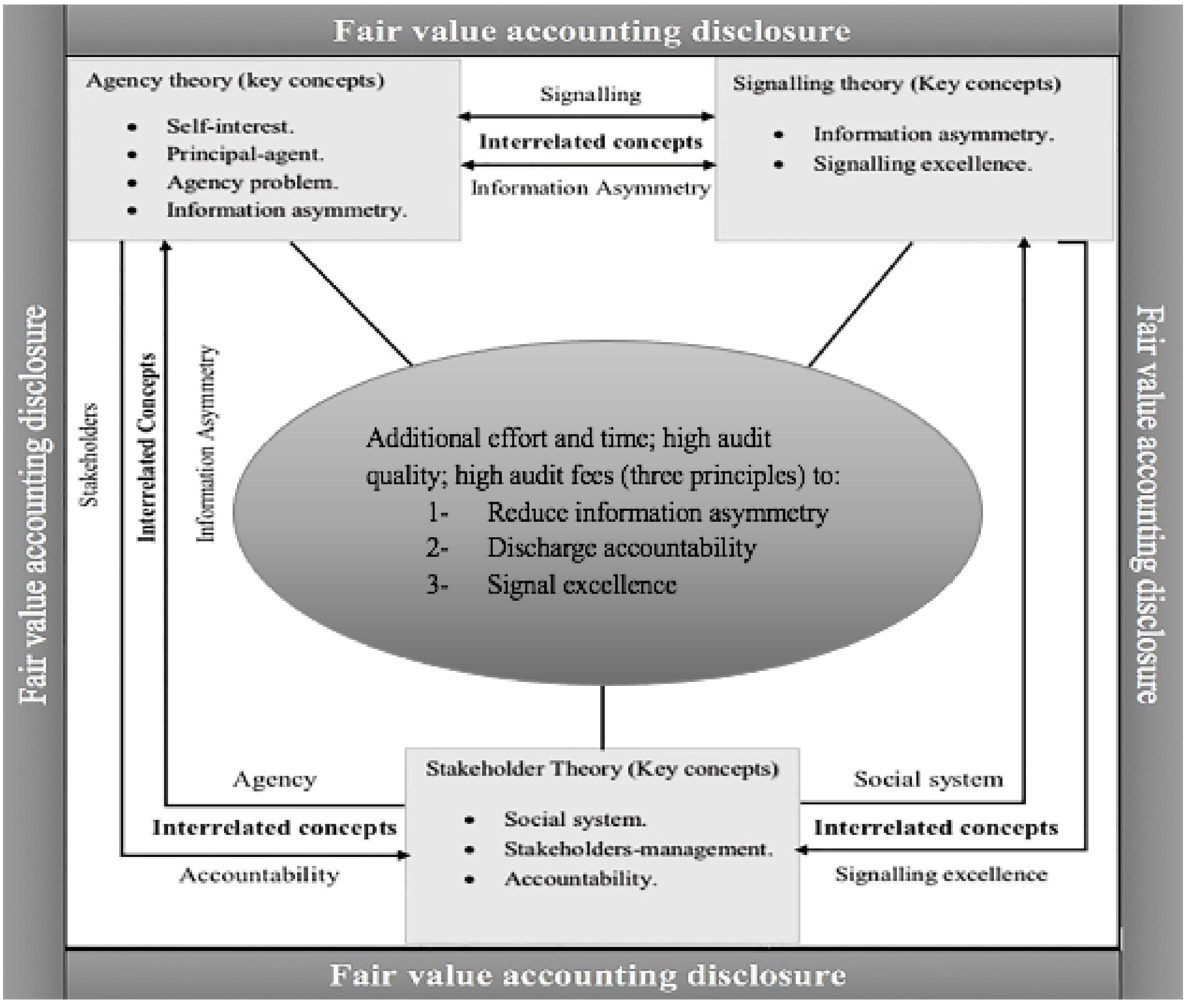

Figure 3.1. The Adapted Theoretical Framework
Source: Modified from An et al. (2011).

3.3. The Study Conceptual Framework

Based on prior research, and agency, signalling and stakeholder theories, the present study's main aim is to examine the relationship between FVD and audit fees in the context of Jordan. The passage of FVD may increase audit client's complexity and risk (Griffith 2020; Bradley & Sun 2021). The presence of fair values in the firms' annual reports came with growing use of uncertain estimates and assumptions made by the managers (Abdullatif 2016). Thus, the possibility of managements bias and fraud has risen due to the agency problem. The only way to minimise it is to hire an external auditor who can provide assurance about the reliability of the firm's disclosed financial reports (Hodge 2006). Therefore, auditors come under additional scrutiny to meet stakeholders' needs for high-quality financial reporting (Baker & Owsen 2002; McDonough et al. 2020). Statutory auditors more than ever before need to spend much time and effort to meet the finance documents' users' interests and expectations. Consequently, auditors' prices have been increased correspondingly to compensate for the time and effort consumed in auditing such complex estimates (Joe et al. 2017).

Auditors, instead of dealing with facts about financial events that happened, now deal with estimates regarding subjective forecasts of events expected to happen in the future (Abdullatif & Al-Rahahleh 2020). As mentioned by Alhababsah (2019) and Hribar et al. (2014), higher audit fees have been considered a vital indicator of high-quality audits provided by the external auditor (i.e., Abbott et al. 2003; Guidara et al. 2021; He et al. 2017; O'Sullivan & Diacon 2002; Zaman et al. 2011).

In Jordan, Alhababsah (2016) identified that audit fees are suitable to measure audit quality. According to Lin and Hwang (2010) and Audousset-Coulier et al. (2015), higher audit fees reflect higher levels of earnings quality which means lower levels of earnings management which causes the information asymmetry problem. Implementing FVA increases earnings management risk which leads to more investigations to be made by auditors to avoid litigation costs and provide assurance regarding FVEs (Oyewo 2020; Oyewo et al. 2020; Palmrose et al. 2004). Thus, higher audit fees to be paid by clients to external auditors are deemed an indicator for the high quality of financial reporting (Hribar et al. 2014; He et al. 2020), which is questioned after the adoption of FVA (Abdullatif 2016). Abbott et al. (2006) explained the motivation beyond asking for expensive audit fees by external auditors through referring to this as the conservative bias. They also mentioned that the conservative bias caused by the asymmetry litigation risk is significantly associated with the discretionary accruals' levels in the firms.

This scenario is more critical for firms which need a lot of capital (i.e., firms with a high percentage of governmental and financial institutional ownership in Jordan). These firms are searching for approval of their financial disclosures from specialist auditors in a specific industry to send signals to fund providers about its profitable situation (Alhababsah 2019). The level of discretionary accruals in the high-growth corporates is higher than other firms which are strongly associated with higher audit fees to be paid to external auditors (Heninger 2001). Higher fees guarantee lower asymmetry information problem and provide trustful financial information suitable for resource allocation decisions by stakeholders. Thus, auditor industry specialisation is more than ever before essential to maximise stakeholders' interests and detect management fraud and misstatements (Krishnan 2003). In turn, this helps management to send signals to their interested parties to confirm their high-quality FVD, which means low information asymmetry caused by the agency problem. Ultimately, this leads to attracting many suppliers and investors who contribute to maximising the firms' capital to the highest levels. Consequently, corporates seek to pay higher audit fees to experts' auditors to send a satisfactory signal on their credible and transparent disclosures (Habib 2011).

Some scholars in the literature criticised FVA as the main cause of the GFC due to the increasing use of management assumptions and estimates to measure the fair value of assets and liabilities (Laux & Leuz 2010). Based on the agency theory, the adoption of FVA has led to the likelihood of material misstatements, and managers' fraud and abuse of their power to mislead the shareholders and serve their personal interests (Menicucci & Paolucci 2016). This combines with the lack of a specific guideline and sufficient legislation related to measuring and auditing such complex estimates. In addition to the lack of active markets, the lack of skilled and knowledgeable preparers and auditors, and weak corporate governance mechanisms is the reality in most developing countries, like Jordan (Abdullatif 2016; Nguyen 2019). This situation has also resulted in the biggest auditing failure in world economic history (i.e., Enron's and WorldCom scandals). Overall, the conjunction between different types of users and the main problem which is faced by those users who employ complex and uncertain fair values, are selected to develop the present study's conceptual framework. Several theories assert that there is a connection between FVA and audit fees as mentioned earlier. These theories have been established to demonstrate what motivates high audit fees so that disclosed information serves stakeholders' needs. Therefore, this study builds on the same assumptions that have been empirically proved in auditing fair value literature by Alexeyeva and Mejia-Likosova (2016), Ettredge et al. (2014a) and Sangchan et al. (2020) that there is a positive relationship between FVD and audit fees. A diagrammatic representation of the links between the research theories and variables is shown below (see Figure 3.2).

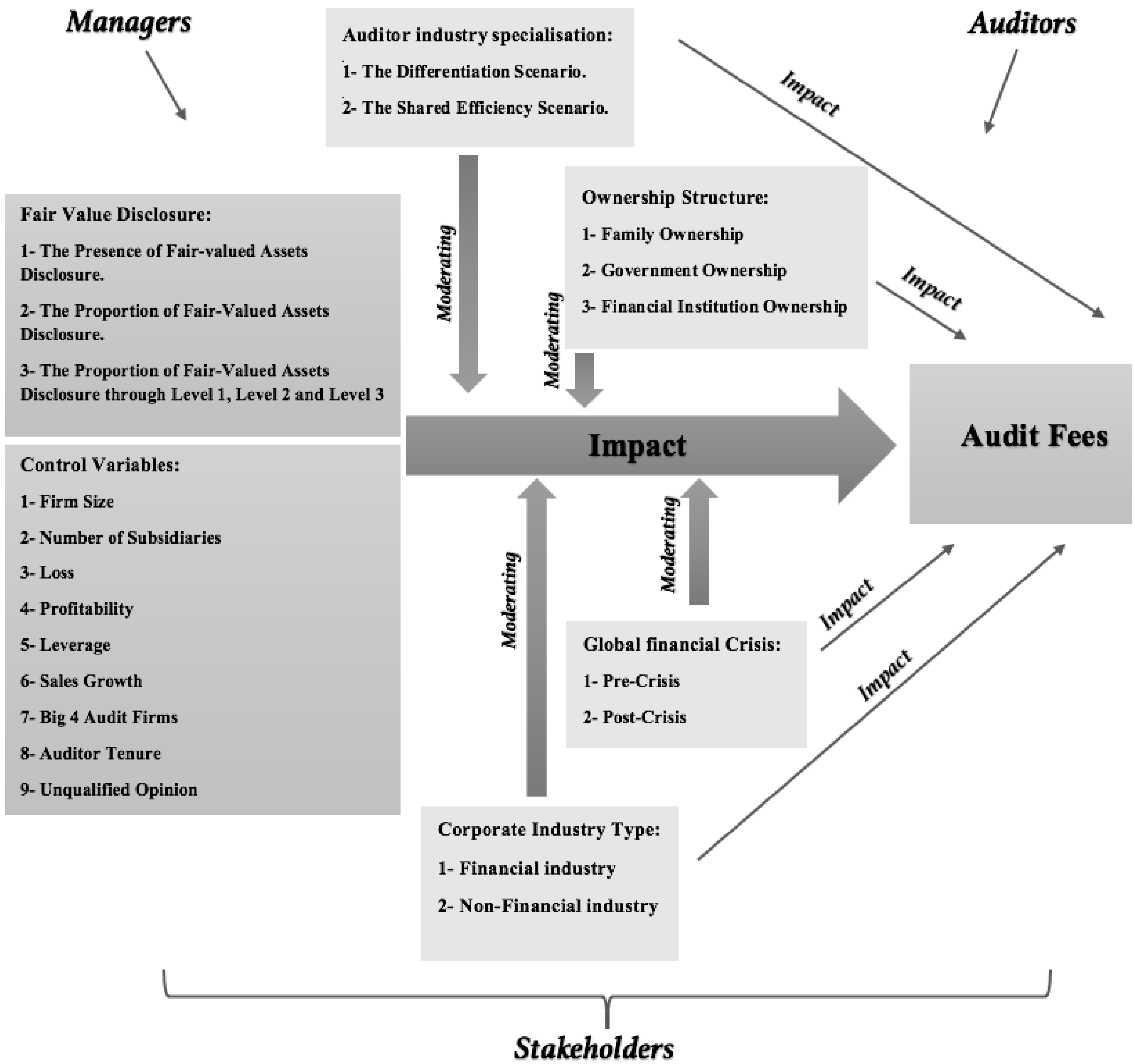

Figure 3.2. The Study's Conceptual Framework

3.4. Hypotheses Development

This study builds upon two literature threads that examine the determinants of audit fees and the effects of FVD. Based on agency theory, audit fees are a part of agency costs responding to the agency problem between the principal and the agent (Jensen & Meckling 1976). In this case, audit fees are mainly driven by the potential future risks and losses and the cost of audit resources. Unlike the HC approach, FVA was introduced by the IASB in order to increase the quality of financial reporting. It has been suggested by Deegan and Unerman (2006) that HCA is irrelevant for the purpose of economic decision-making and thus, it is necessary to be replaced with more relevant accounting methods, such as FVA (Beisland 2009; McDonough et al. 2020). However, the fair valuation of financial assets provides the market values of the assets which expresses the true economic position (Penman 2007). As a consequence, FVA contributes to providing better quality of financial information and accounting harmonisation (Barlev & Haddad 2007; Boolaky et al. 2018; Oyewo et al. 2020). Despite that, it has been proved by; Christensen et al. (2012); Bratten et al. (2013), Goncharov et al. (2014), Griffith et al. (2015), Glover et al. (2016), Abdullatif (2016), Griffith, (2020) and Oyewo (2020) that the presence of fair values increases the information load which eventually leads to a more complex auditing process.

This is due to the risks of inherent uncertainties caused by management bias. For this reason, auditors act on this greater complexity in auditing fair values by offering more time, effort and using their own valuation specialists, ultimately producing higher audit fees (Hackenbrack & Knechel 1997; Sangchan et al. 2020; Stice 1991). Audit complexity and risk are primarily affected by the presence of subjectivity in FVEs. Valuation of financial assets may not be based on direct observations of transactions or a quoted market price in an active market that offers superior reliability (Alexeyeva & Mejia-Likosova 2016). Therefore, fair value reporting leads to extensive discretion in preparing management evaluations (Watts 2006). Auditors come under additional pressure to provide an assurance on fair values to stakeholders. This leads to rising agency costs, resulting in more auditing effort to assess reputation and litigation risks, and consequently, increase the time spent confirming FVEs. In some cases, auditors need to hire valuation specialists due to their lack of valuation knowledge and experience in these issues, and this raises auditing costs as well (Bratten et al. 2013; Griffith 2020).

Implementing FVA is more challenging in the context of developing countries (He et al. 2012; Nguyen 2019). In the same vein, Abdullatif (2016) asserted that, the presence of fair value of financial assets causes serious problems in the Jordanian capital market due to the lack of efficient markets. The recognition of unrealised gains/losses of the fair value of financial assets raised share prices to the highest levels during the economic boom years. Consequently, the share prices dramatically reduced later (Abdullatif & Al-Khadash 2010; Abdullatif & Al-Rahahleh 2020). This situation has led to some corrective actions by the government to minimise the effects of fair value on the market prices (Abdullatif 2016). The main cause of this situation was fair value fraud and abuse by managers due to the existence of the agency problem (Siam & Abdullatif 2011). Therefore, the need for independent assurance regarding FVEs has been increased to constrain earnings management practises in Jordanian firms which ultimately leads to higher monitoring prices (Abu Risheh & Al-Saeed 2014). Therefore, expensive audit fees paid by Jordanian firms become a signal of high-quality financial information provided to stakeholders (Alhababsah 2019). Based on the theoretical evidence discussed above, the following hypothesis is developed:

Hypothesis 1: There is a positive relationship between the presence of fair-valued assets and audit fees among Jordanian listed firms.

Consistent with the previous mentioned theoretical evidence, it has been concluded by Alexeyeva and Mejia-Likosova (2016) and Ettredge et al. (2014a) that the higher use of uncertain fair-valued assets leads to higher audit fees. This is in line with the argument that auditors expend more time and effort in evaluating the fair-valued assets due to the complexity and risks they face while conducting the audits (Sangchan et al. 2020). Specifically, auditing fair value model has the potential to pose audit effort and costs given it comprises high level of estimation uncertainty (Griffith 2020). Measuring fair value using fair value inputs or selected valuation techniques may magnify the potential risk of material misstatement (Bell & Griffin 2012; Bratten et al. 2013; Ettredge et al. 2014a). To cope with this situation of high inherent risk and uncertain FVEs, auditors are supposed to increase their audit resources, such as, training and hiring valuation specialists (Glover et al. 2019). Collectively, this situation of high estimation uncertainty magnifies the legal or litigation risks and reputational risks of audits. Consequently, to avoid any potential harm, auditors act by increasing audit resources and procedures which resulting higher audit fees.

Since FVM is based on the existing prices available in active markets at the measurement date, some types of assets could not be evaluated fairly due to the lack of efficient markets. Thus, in the case of the unavailability of active markets, the incentives of manipulation and misstatement of financial information become greater. To expand on this, the implementation of FVA comes with higher usage of assumptions to estimate the fair values of various type of accounts. Following the IFRSs requirements regarding fair value hierarchy disclosure, especially for less verifiable inputs (Level 3 inputs), more pressure has emphasised firms to provide additional disclosures which explain the valuation techniques and the models used to conduct FVEs. In addition, these requirements may introduce extra work, as auditors must ensure that managers did not misclassify fair value input hierarchies to mislead financial report users (Griffith 2020).

Fair value Level 1 inputs (market-based) are considered the most reliable evidence of fair value offered by an active market which is used without any adjustments to measure fair valued-assets or liabilities. Unlike fair value Level 1 inputs, Level 2 inputs (market-related information) of assets and liabilities are observable either directly or indirectly (IAASB 2009b; IASB 2018). The most controversial type is fair value Level 3 inputs (mark-to-model) which depends on unobservable inputs to measure the fair values. These unobservable inputs are often irrelevant because of the non-availability of the relevant observable inputs especially in the case of the lack of efficient markets (IAASB 2009b; IASB 2018).

As has been stated by Abdullatif (2016), fair value is aggressively used by Jordanian firms to serve managers' interests due to the agency problem. Consequently, this abuse caused significant problems in the Jordanian capital market and increased volatility in share prices traded there. The reason behind this fraud and abuse is the lack of Jordanian active markets, weak corporate governance systems and the non-availability of single guidelines on how fair value is to be measured and audited (Al-Khadash & Abdullatif 2009; Siam & Abdullatif 2011). Therefore, Jordanian auditors spend more time and effort detecting management fraud and misstatement. Increasing the credibility of a firm's financial reporting quality is considered a positive signal that helps stakeholders make decisions (Sangchan et al. 2020). Based on the theoretical evidence discussed above, the following hypotheses are developed:

Hypothesis 2_A: There is a positive relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.

Hypothesis 2_B: The relationship between fair-valued assets and audit fees is stronger for firms with greater ratios of subjective fair-valued assets (Level 2 and Level 3) among Jordanian listed firms.

According to Alexeyeva and Mejia-Likosova (2016), country institutional setting plays a vital role in external auditor behaviours and thus audit fees. In this respect, Alhababsah (2019) stated that institutional differences between developed and developing countries leaves uncertainty of appropriateness audit fees research findings from developed markets. Therefore, one primary factor that affects the quality of accounting information following the adoption of IFRS/FVA is ownership concentration (Ball & Shivakumar 2005; Burgstahler et al. 2006; Fan & Wong 2002; Menicucci 2020; Soderstrom & Sun 2007). Khlif and Achek (2016) and Soderstrom and Sun (2007) argued that ownership structure is an important factor in the context of developing countries which could affect the relationship between IFRS and audit fees.

Ownership structure could be a significant factor influencing the relationship between IFRS and audit fees, especially in developing countries which might influence audit prices either positively or negatively (Khlif & Achek 2016). In this sense, some evidence (Laux & Leuz 2009; Evans et al. 2010; Song 2015; Hay et al. 2006) concluded that the application of FVA leads to higher earnings management practices due to the agency problem. In this situation, the audit process will be more complex and riskier. So, due to the emphasis on high-audit quality caused by ownership concentration to signal financial success, additional effort and time will be spending by auditors to ensure the quality of FVEs prepared by managers (Sangchan et al. 2020). Consequently, higher audit fees will be required to compensate for auditors' efforts (Alexeyeva & Mejia- Likosova 2016). In contrast, some scholars (Badertscher et al. 2011; Karğın 2013; Amel-Zadeh & Meeks 2015; Lin et al. 2017) argue that ownership concentration leads to preparing more accurate FVEs due to owners' sufficient knowledge and experience in the exact industry. Consequently, lower audit risk and complexity means less effort spent in auditing; ultimately, auditors are expected to offer fees discount (Soderstrom & Sun 2007; Griffith et al. 2015). Furthermore, in some cases, ownership concentration leads to fees discount due to the low demand for high-quality audit services, so corporates are more likely to appoint auditors who offer lower audit prices.

Ownership concentration is also considered to be one of the crucial corporate governance mechanisms for supervising managers' discretion and enhance the credibility of financial information in capital markets (Balsam et al. 2003; Ferreira et al. 2010; Koh 2003; Tosi & Gomez-Mejia 1989). Mixed results are also documented by previous research in regard to the effect of the moderating corporate governance proxies arising from the application of FVA. For example, the outcomes of Lin and Yen (2011), Laux and Leuz (2009), Evans et al. (2010) and Song (2015) assert that FVA leads to higher earnings management practices due to the agency problem. In this situation, the audit process will be more complex and riskier. Additional effort and time will be spent by auditors to ensure the accuracy of fair value measures prepared by company managers. Consequently, audit fee premiums expect to be required to compensate for auditors' efforts (Alexeyeva & Mejia- Likosova 2016). Conversely, Lin et al. (2017) argued that the interaction term of corporate governance on the association between fair value inputs and the financial restatement is significantly negative. Likewise, Badertscher et al. (2011) suggested that ownership concentration is an ideal way to reduce agency costs following the application of IAS. In the same vein, Gebhardt and Novotny-Farkas (2011) confirmed the significant effect of ownership concentration in reducing the negative consequence of IFRS application. Tama-Sweet and Zhang (2015) and Joe et al. (2017) consequently suggested that ownership concentration leads to preparing more accurate fair value measures due to their sufficient knowledge and experience in an exact industry. Similarly, Yao et al.'s (2015) study also confirms that corporate governance leads to lower audit fees paid by fair value model firms as ownership concentration is one of the crucial ways to strengthen corporate governance procedures (Shleifer & Vishny 1997). Ben-Nasr et al. (2015) empirically confirmed a significant positive association between government ownership and earnings quality. In this respect, government owners attempt to report lower levels of earnings management to avoid possible tunnelling of firms' resources to protect their own political interests and avoid scrutiny by minority shareholders (Ben-Nasr et al. 2015; Johnson, Simon et al. 2000).

Family Ownership

It has been confirmed that most Jordanian firms are family-run concerns (Abdullatif & Al-Rahahleh 2020; Alhababsah 2019) which means lower agency conflict between the owners and managers (agency problem type I) (Srinidhi et al. 2014). However, the family business model leads to the agency problem type II which reflects the conflict between the controlling and non-controlling shareholders.

In general, and based on agency theory, contradictory arguments accompanying the impacts of family ownership are also explained based on a controlling owner. Many scholars emphasise investigating whether family ownership's effect on the agency cost and confirmed that family owners can help increase or curtail the agency cost (Alhababsah 2019; Lim et al. 2014; Niskanen et al. 2010). One perspective, which is known as the alignment view, is on where family ownership is deemed to be a vital factor which could minimise the agency conflict (Anderson & Reeb 2003; Jiraporn & DaDalt 2009). According to this perspective, there is no serious conflict of interest between powerful family owners and minority owners; their interests are aligned and therefore the expropriation concern falls away (Chrisman et al. 2004). According to Niskanen et al. (2010) and DeFond et al. (2014), in the case of the alignment perspective, the demand for high quality audit services is likely to be muted since the information asymmetry problem is minimised (Alareeni 2019). It means less complexities in the auditing process and subsequently, lower audit prices (Sanchez et al. 2007). The second perspective is the controversy viewpoint which outlines the opposite view which is known as the entrenchment view. For example, Fan and Wong (2005), Wang et al. (2006) and Ali et al. (2007) state that high family ownership increases the potential abuse of their power and impairing non-family minority shareholders. In other words, managerial positions are frequently occupied by family members, and therefore the possibility to gain private benefits and confiscate other shareholders' interests rises to the highest levels. This is referred to as agency problem type II which is caused by the conflict of interest between majority and minority shareholders (Srinidhi et al. 2014). Higher audit fees are expected to be charged to meet the high level of the agency conflict and thus protect the interests of shareholders.

In fact, most publicly listed firms in developing countries are family-controlled entities (Claessens et al. 2000). Recently, Alhababsah (2019) and Nawaiseh et al. (2019), stated that family ownership is one of the most important determinants of audit fees in developing countries since most businesses are conducted in this way. Scholars find a positive impact of family ownership on audit fees paid by Jordanian firms. Based on Jordanian customary traditions, family owners attempt to enhance their business success and maintain their social status and strive to maintain their reputation in society and minimise the agency problem (Al-Akra & Hutchinson 2013). This is more significant in Jordan where the firms' name is usually related to the family's name (Alhababsah 2019). According to Alzoubi (2016) family ownership has been empirically proved to be a significant factor contributing to enhanced financial reporting quality in Jordan. Such types of ownership structure can minimise earnings management levels. Following the application of FVA, auditing such complex estimates is more complex and riskier in family-controlled firms due to the weakness of internal controls, and thereby the probability of abuse of power and misleading non-family owners emerges (Abdullatif 2016; Abdullatif & Al-Rahahleh 2020). Therefore, following the application of FVA by Jordanian corporates, such owners either expect to bear more monitoring costs to avoid the possibility of reputation impairment (higher fees charged) or enhance the quality of their published financial statements (lower fees charged). Given the contradictory conclusions reported by empirical literature, the following hypotheses are developed in null form:

Hypothesis 3_A: There is no significant impact of family ownership on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.

Hypothesis 3_B: There is no significant impact of family ownership on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.

Government Ownership

Government ownership is a unique type of corporate ownership since these types of owners are not seeking any personal rights to a firm's cash flow (Niemi 2005). State ownership is a monitoring tool and an attempt to raise the credibility and transparency of corporates financial reports to meet market expectations. Government ownership increases the demand for higher audit quality to maintain their reputation, protect investors and raise the amount of capital (Fiechter & Meyer 2011; Kolev 2008).

Two conflicting perspectives have been provided by scholars regarding the effect of the government's representatives on audit fees. As for the first perspective, some analysts (Grout & Stevens 2003; Megginson & Netter 2001; Najid & Rahman 2011; Orden & Garmendia 2005; Ramaswamy 2001) claimed that state ownership has a negative influence on firms' performance due to the highest level of the agency problem in such firms. Shleifer and Vishny (1997) argued that managers of such firms are more likely to serve their own interests on the account of shareholders. Here the main purpose of such firms changes from value maximisation to using the firm's assets to achieve the government's political objectives. Specifically, the government is more likely to be interested in controlling ownership rights than cash flow rights, leading to the lack of motivation for decision-makers to track wealth maximisation, in turn leads to encouraging decision-makers to focus on wealth expansion. In this respect, Megginson and Netter (2001) documented that in comparison with privately owned firms, government owned ones are less profitable. Similarly, the latter are less innovative (Najid & Rahman 2011). Such firms are more politically than commercially motivated which means firms function poorly commercially. Accordingly, Johnson (2007) and Liu and Subramaniam (2013) confirmed that government owners are more willing to conceal some critical information to hide their financial failure and corruption. In this case, that auditing firms with worse performance led to a higher level of audit risk and complexity which means more effort and time performed by the auditor (Abernathy et al. 2019; Francis et al. 2017; Huang et al. 2016). In this situation, it is expected that these state representatives are more likely to keep appointing highly qualified auditors and pay audit fee premiums to get a high audit quality for their firms' financial information, protect their reputation and increase market capital.

Scholars from the second perspective, such as La Porta et al. (2002), Lim et al. (2014) and Habib et al. (2018) asserted that state ownership resulted in higher credibility of disclosed financial statements by firms to raise capital and send positive signals to the marketplace. In this respect, the government might be less motivated to monitor managers' behaviour given that government owners are acting to create certain political objectives (Lim et al. 2014; Habib et al. 2018). In this situation, state owners are less likely to seeking high quality auditors. Therefore, lower monitoring costs are expected to be paid due to the low level of agency conflict which means less complexity and risk in auditing.

The Jordanian government is working extensively to improve the quality of the country's firms' financial reporting through stressing audit quality. As mentioned by Alhabasneh (2019), no evidence so far has confirmed adverse behaviours of Jordanian government owners against the interests of shareholders. In this respect, it can be said that governmental ownership is most likely to appoint high-quality auditors which means higher audit fees to retain firms' market value and send positive signals to future investors (Nawaiseh et al. 2019; Zeitun & Tian 2007).

External auditors in Jordan face serious problems when auditing FVEs due to the lack of active markets and extensive pressure from the government to provide high-quality audits (Abdullatif 2016; Abdullatif & Al-Rahahleh 2020). In addition, the main priority of Jordan's government is to attract foreign investors by sending positive signals on the credibility of firms' financial reports (Alhababsah 2019). This is because the country's natural resources are scarce. For this reason, Jordan's government made considerable effort to embrace FVA and develop the disclosure framework. Government ownership in Jordan acts in the interests of investors. Therefore, state representatives in Jordan most likely either bear additional monitoring costs to mitigate the agency problem (higher fees charged) or enhance the quality of their published financial statements to send positive signals to investors (lower fees charged). Given the contradictory conclusions reported by empirical literature, the following hypotheses are developed in null form:

Hypothesis 4_A: There is no significant impact of government ownership on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.

Hypothesis 4_B: There is no significant impact of government ownership on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.

Financial Institution Ownership

Institutional ownership is considered a vital corporate governance mechanism for supervising managers' discretion and enhancing credibility of financial information in capital markets (Koh 2003; Balsam et al. 2003; Ferreira et al. 2010). In the same vein, if large shareholdings are owned by specific institutions, managerial policies and strategies would be more efficient and lead to improved business performance (Cremers & Nair 2005). Some prior studies, such as those by Ajinkya et al. (2005) and Karamanou and Vafeas (2005) stated that firms with higher levels of institutional ownership are more likely to provide additional disclosures regarding management forecasts. Mixed results have been reported regarding the effect of financial institutional ownership on audit fees in the auditing literature.

Scholars such as Almazan et al. (2005) and Chen et al. (2006) stated that due to the agency problem, managers in this type of ownership behave in a way that meets their interests rather than the shareholders' interests since such owners prefer short-term returns instead of long-term ones. Thus, such owners cooperate with managers since benefits resulting from supporting managers' decisions are higher than the monitoring costs spend on monitoring process (Pound 1988). In such a scenario and due to the greater agency problem, external auditors are expected to face high risk, more time and complexity in their work; ultimately, higher audit fees will be paid for doing so. In the same perspective, financial institutions owners, such as bank owners, have advanced technical skills and knowledge to assess the level of the agency cost in the firms to decide whether to provide a loan to those companies (Alzoubi 2016; Tian 2004)[15]. In the case of ownership, owners act as owners and lenders at the same time, thus this situation encourages a significant conflict of interest where such owners prioritise their own interests and not those of other owners (Lin & Liu 2009)[16].

In contrast, another stream of research (Alhababsah 2019; Berlin et al. 1996; Del Guercio & Hawkins 1999; Gillan & Starks 2000; Mahrt-Smith 2006; McConnell & Servaes 1990; Nesbitt 1994; Smith 1996) contends that institutional owners, financial in particular, are more knowledgeable and skilled in terms of capital markets and business than other stakeholders. Such owners are strongly able to monitor managers' behaviours and thereby lower levels of agency problem can be found. Ultimately, lower levels of audit complexity and risk will be faced by auditors, and this means less effort and time are spent in auditing such firms' financial statements which leads to charging lower audit prices.

Institutional investors are deemed a crucial monitoring tool in Jordan. They assist in boosting corporate governance schemes because such investors have the authority to monitor the managers and thus improve the quality of financial reporting (Alhababsah 2019). According to Matar, Mohammad and Nour (2007) and Abdullatif (2016), such intuitions in Jordan are well-organised, well-structured, and developed and more importantly operate in accordance with the corporate governance code compared with other sectors of the market. For example, strict regulations and strong supervision from the CBJ are applied. Therefore, financial institutions owners in Jordan

[15] Banks ownership is considered to be a special type of financial institutional ownership and such owners can be lenders and owners at the same time (Boonyawat 2013).
[16] This situation is more important in the case of the banks are the primary sources of funding. This issue is more important especially in Jordan where banks are the main sources of firms' funding (Alhababsah 2019).

are more likely to be seeking higher quality auditing because they have motivations and powers to control firms' financial reporting and impose penalties on managers who disclose poorer reporting quality. Forcing managers to demand high audit quality which leads to higher monitoring costs (Nawaiseh et al. 2019; Alzoubi 2015; Alhababsah 2019).

The existence of such owners would be a significant way to reduce the aggressive behaviour by managers when measuring FVEs in many ways: through employing high-quality auditors as a crucial monitoring tool (enhanced fee scenario) or diminishing the levels of agency problem (reduced fee scenario). In the former way, it can be said that the adoption of FVA by Jordanian firms causes additional complexity and risk for external auditors which has led to rising audit fees. Consequently, this scenario threatens the credibility and transparency of management-provided FVEs (Abu Risheh & Al-Saeed 2014). This could increase doubts about the reliability of Jordanian firms' financial information (Abdullatif & Al-Rahahleh 2020) as the main source of the complexity and risk comes from IFRS due to the emphasis on FVA by various IFRSs (Khlif & Achek 2016). Managers of Jordanian businesses might be interested in gaining high quality audit services through paying expensive audit fees to provide assurance on FVMs. Thus, minimising the agency cost makes corporates eligible to receive funding from the financial institutions (Nawaiseh et al. 2019). However, in the latter way, owners play a critical role in reducing earnings management behaviours; in other words, a negative correlation is evidenced between this type of ownership and earnings management practices which resulted from the agency conflict, ultimately leading to lower audit fees being charged (Charitou et al. 2007; Cheng & Reitenga 2009; Hsu & Koh 2005; Yu & Hassan 2008). Given the contradictory conclusions reported by empirical literature, the third hypothesis is developed in null form:

Hypothesis 5_A. There is no significant impact of financial institutional ownership on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.

Hypothesis 5_B. There is no significant impact of financial institutional ownership on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.

According to Audousset-Coulier et al. (2015) specialised auditors have special skills in auditing that could assist their clients. Nowadays, the demand for specialised auditors is increased gradually due to economic and accounting development universally; in turn, auditors more than ever before attempt to get at outcome differentiation (Hogan & Jeter 1999). Therefore, auditors start to concentrate on developing their auditing skills in a specific industry by enhancing their knowledge about particular clients' characteristics. Industry specialisation may lead to providing precious opportunities to perform high-quality audits for a large number of firms that share the same needs (Dunn & Mayhew 2004). According to Dunn and Mayhew (2004), Minutti- Meza (2013), Sun and Liu (2013) and Bills et al. (2015), audit industry specialisation is strongly associated with high-quality audit services, and thus disclosure quality.

Based on audit pricing literature, the results are mixed with reference to the impact of auditor industry specialisation on audit fees. Some research finds that specialist auditors earn audit fee premiums known as the product differentiation scenario (Carson 2009; DeFond et al. 2000; Ferguson et al. 2003; Francis et al. 2005; Fung et al. 2012; Reichelt & Wang 2010). On the other hand, some scholars conclude that industry specialisation leads to fee discounts known as the shared efficiency scenario (Behn et al. 2008; Ettredge & Greenberg 1990; Hay & Jeter 2011). Some scholars find no association between auditor expertise and audit fees (Palmrose 1986; Ferguson & Stokes 2002). In developing countries, the literature shows mixed results regarding the impact of auditor industry expertise on audit fees. For example, some scholars stated that auditor expertise leads to higher audit-quality (higher audit fees) and consequently better financial information being disclosed by firms and lower levels of information inequality are evident (Salehi et al. 2019). In Egypt, Hegazy et al. (2015) find a positive impact of industry specialisation on financial reporting quality. The researchers asserted that industry specialisation resulted in audit quality. Elsewhere, Dao and Pham (2014) reveal a positive association between auditor industry expertise and audit quality in Vietnam. Almutairi et al. (2009) find the relationship between information asymmetry and auditor tenure is U-shaped for specialist and non-specialist auditors. During all tenure intervals, lower bid-ask to spread for specialists has been documented relative to non-specialists. However, from the Tehran stock market Hasasyeganeh and Azinfar (2010) failed to find any association between auditor specialisation and reporting quality (Salehi et al. 2019).

Based on the product differentiation scenario, Francis et al. (2005) contend that specialist auditors are more qualified and require higher audit fees than non-specialised auditors. In this respect, auditors delivering higher audit quality to meet the stakeholders' demand for accurate financial information and therefore declining information asymmetry problem to least levels (Gul et al. 2013; Griffith et al. 2015; Glover et al. 2016). Similarly, Ettredge et al. (2014) and Goncharov et al. (2014) reported that in the product differentiation scenario specialist auditors are more qualified and require higher audit fees than non-specialised auditors. Those auditors are likely to support stakeholders' demand for transparent and credible fair value measures and therefore curtail information asymmetry caused by the agency problem (Fields et al. 2004; Habib 2011; Griffith et al. 2015; Glover et al. 2016). In turn, this could assist managers to convey signals to the interested parties regarding the credibility of the financial statements. Indeed, this situation is more important in the large-sized firms, such as the manufacturing firms in Jordan which are more reliant on the capital provider to continue operating. Such firms need to show credible financial information provided by managers which are audited by specialist auditors if they want finance from fund providers (Alhababsah 2019).

In contrast, in the shared efficiency scenario, industry specialist auditors earn low audit fees due to the competition found between the auditors. However, in some cases, as found in most developing countries, including Jordan, the small-sized capital firms (i.e., family-business model) are looking for cheaper audit services (Abdullatif 2016). This is due to the lower level of the agency problem between owners and managers. This resulted in increasing the competition between the audit firms by offering fee discounts to attract more clients (Abdullatif 2016). Cairney and Young (2006) and Eichenseher and Danos (1981) also stated that specialist auditors are skilled and working efficiently with less time and effort required. In the case of auditing high complex fair values and based on this scenario, specialist auditors may gain cost efficiencies which they pass to their auditees in lower audit prices (Ettredge et al. 2014a). In auditing theory, higher efficiency and expertise in auditing specific industries could lead to lower hours spent in auditing; thus, this leads to lower audit fees (Behn et al. 2008).

Following the introduction of FVA, auditor industry expertise is more than ever before essential to maximise stakeholders' interests and detect managers fraud and improve the quality and transparency of accounting information. According to Hegazy and Hegazy (2018), specialist auditors provide higher audit quality than the non-specialists due to their compliance with auditing standards, especially those related to auditing FVA, such as ISA 540. External auditors are responsible for discovering any breaches of accounting standards by clients caused by the agency problem. Therefore, an auditor's ability to detect these breaches is one determinant of audit quality (Gul et al. 2013). Based on the differentiation scenario, Ettredge et al. (2014a) stated that specialist auditors charge higher audit fees for auditing the proportion of fair-valued assets due to the higher business risk and measurement uncertainty which need further audit effort and time. Ettredge et al. (2014a) also reported that those auditors charge lower audit fees for the reason there is competition between audit firms. They also contend that specialist auditors spend more effort in auditing less verifiable fair values which allow them to gain cost savings from other aspects of the audit process which more than offset these costs. Based on the theoretical evidence discussed above, the following hypotheses have been developed in null form given the contradictory pricing scenarios:

Hypothesis 6_A: There is no significant impact of auditor industry expertise on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.

Hypothesis 6_B: There is no significant impact of auditor industry expertise on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.

Corporate industry type is a significant factor of audit fees in auditing literature (Hay et al. 2006; Glaum et al. 2013; Cahan et al. 2008; Glover et al. 2017; Huang et al. 2020). The audit complexity and risk differ from industry to another based on the nature of operation of each industry (Chung & Narasimhan 2002; Griffith 2020; Matthews & Peel 2003; McDonough et al. 2020; Simunic 1980; Stein et al. 1994). There may be no apparent standard to presume any specific industry impacts on audit fees. Therefore, the conclusions are mixed and not definitive. For instance, some scholars (Matthews & Peel 2003; Griffin & Lont 2011) suggested that financial industries need more audit effort and time and more complex than non-financial industries. Scholars justified this situation of charging higher audit fees by the financial industry because the industry is very different from non-financial institutions. Financial firms have offices and branches and as a result, this industry requires more auditing processes. Karim and Moizer (1996) in their study find that financial firms pay more audit fees compared to non-financial firms and this is due to the additional volume of audit effort required.

Conversely, some scholars confirmed that auditing a non-financial industry requires higher audit fees (Goodwin-Stewart & Kent 2006; Oyewo 2020). They stated that financial industries such as banks, insurance, and investment firms have simpler assets structures than the non-financial firms since these hold stock and are more likely to have more plant and equipment, such as manufacturing firms. Hay et al. (2006) find that although financial institutions and utilities have extensive assets, they are easier to audit than other industries that have large inventories and receivables. Thus, audit fees of these industries are expected to be less. Audit fees of manufacturing companies are supposed to be higher because they are likely to disclose more information which means bearing expensive audit prices (Craswell et al. 1995; Naser & Nuseibeh 2008). Manufacturing firms demand higher audit quality level than other industries due to the higher agency costs (Stein et al. 1994). Such firms require big capital investment which encourages them to search for external financing sources.

Overall, auditing fair values vary depending on the industry type since auditing some fair values are easier than others used in some industries (Lin et al. 2017; Abdullatif 2016). According to Naser and Nuseibeh (2008), audit fees paid by Jordanian manufacturing and financial industries are higher than the fees paid by service industries. The reason for this is that these industries have more complex assets and inventory structures which forces external auditors to spend more time and effort minimising information asymmetry caused by the agency problem (Alhababsah 2019). FVMs in some industries are more complex and riskier. In this respect, Lin et al. (2017) evidenced that fair-valued assets disclosed by the non-financial industry are positively associated with lower levels of financial reporting quality caused by errors and managerial manipulation. While there is no association recorded between them in the context of the financial industry, Badia et al. (2017) stated that high audit fees paid by the finance industry are mainly driven by the fair value model where the majority of such industry's assets are financial assets measured mainly by fair value measures. Given the contradictory conclusions reported by the empirical literature, the following hypotheses are developed in null form:

Hypothesis 7_A: There is no significant impact of corporate industry type on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.

Hypothesis 7_B: There is no significant impact of corporate industry type on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.

Since the financial crisis unfolded in 2008, FVMs have become a crucial area of accounting and the emphasis on the need for FVD (Xu et al. 2013; Huang et al. 2020). In particular, FVMs uncertainty creates an urgent need to increase the transparency of corporates information (Penman 2007; Yao et al. 2018). A large debate has occurred among accounting scholars (de Jager 2014; Laux & Leuz 2009) on the possible role of FVA in the GFC. As a result, the modern financial scandals and court cases emphasise the powerful role of FVA on audit fees (Badertscher et al. 2011). Because of this business turmoil, the demand for high quality financial reports increased dramatically, as financial reports are the primary communication means to bridge the gap between managers and stakeholders (Amel-Zadeh & Meeks 2015). The verified reliability of such reports is increased also for the purpose of improving the confidence of the capital markets and investors' trust in such information (Shaw 2003). In this respect, for the financial information to be trustworthy it should be comprehensive, transparent, and timely to minimise the asymmetric information problem (Healy & Palepu 2001). Thus, highly qualified supervision of managers' practices and lower agency problem translated by high audit fees are all factors leading to superior financial disclosure (Gaynor et al. 2016).

A fresh concern about FVMs emerged in the aftermath of the GFC 2008–2009 due to higher managerial assumptions being utilised to prepare fair values especially in the case of absent active markets (Alexeyeva & Svanström 2015; Demartini & Trucco 2017; Haswell & Evans 2018; Huang et al. 2020; Zaman et al. 2017; Zhang & Huang 2013). Two controversial views regarding the alleged role of FVA in the GFC were provided by previous research (Alharasis et al. 2020; Alharasis et al. 2020). Some commentators summarised that fair value implementation was not responsible for the crisis and there is no solid evidence which supports this claim against FVA (Barth & Landsman 2010; Laux & Leuz 2010; Plantin et al. 2008; Pozen 2009). On the other hand, due to the agency problem, a group of scholars (Allen & Carletti 2008b; Cathey et al. 2012; Plantin & Tirole 2018; Ryan 2008) blamed FVA as the main cause for the failure of many financial institutions worldwide. For example, Benston (2006) reported that FVA is the major reason for the Enron scandal and the company's demise. He also adds that due to the agency problem, FVA was misused by Enron's managers with the connivance of Andersen's auditors.

As a result, the reliability and the quality of firms' financial reporting become the priority of standard setters around the world to avoid misleading the stakeholders and send positive signals on the creditability of corporates' financial information (Krishnan & Zhang 2014; Lin et al. 2017). Accordingly, external auditing has been questioned and stressed especially regarding the use of FVEs to meet users' needs for high-quality financial information (Sikka 2009).

The role of FVA in the GFC has been linked to the damage it did to institutions' capital due to the recognition of unrealised profits (Magnan 2009; Ryan 2008). Using fair valuation model during the GFC is highly sensitive to managerial assumptions, thus leading to substantially doubtful amounts being reported. Such metrics would require massive effort, time, and professional judgments from external auditors to confirm the accuracy of clients' FVMs (Alexeyeva & Svanström 2015). Because of this business turmoil, the demand for high-quality financial reports increased dramatically, to bridge the gap between managers and stakeholders (Amel-Zadeh & Meeks 2015). In addition, verifying the reliability of fair values rose for the purpose of improving the confidence of the capital markets and increasing investors' trust (Shaw 2003). Thus, highly qualified supervision of manager's practices and lower agency problem translated by high audit fees are all factors which lead to better financial disclosure (Gaynor et al. 2016).

The GFC led to greater market volatility in the Jordanian economy which endangered the reliability of FVMs (Siam & Abdullatif 2011). Abdullatif (2016) revealed that using fair value guidance is suitable when markets are stable. The risk became higher, particularly for Level 2 and Level 3 fair value inputs which resulted in increasing auditors' burden and eventually driving audit prices up (Abdullatif 2016). The crisis brought in its wake many abuses and FVA fraud practiced by managers to enhance their owners' confidence in the firms' financial performance (De Jager 2014; Ryan 2008). A number of reforms were implemented to overcome the damage wrought by the crisis (Abdullatif 2016; Alexeyeva & Svanström 2015). For example, Jordan's government enacted recovery plans through the JSC and the CBJ to overcome the negative effect of the crisis on the country's economy. Some reforms concerned the audit profession regarding FVEs and thus increased the efforts of auditors, in essence meaning an increase in audit fees. Given the contradictory conclusions reported by empirical literature, the following hypotheses developed null form:

Hypothesis 8_A: There is no significant impact of the GFC on the proportion of fair-valued assets and audit fees among Jordanian listed firms.

Hypothesis 8_B: There is no significant impact of the GFC on the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.

3.5. Research Methodology and Data Collection

3.5.1. Research Philosophy, Paradigm and Strategy

Selecting the appropriate research philosophies is linked with identifying the proper ontology, epistemology and axiology aspects that the researcher embraces. This thesis employs the positivist philosophy whereby the researcher builds her/his research on an existing theory to develop and test the hypotheses and summarise the findings (Bell et al. 2019). The positivist philosophy is adopted in this study in which the hypotheses developed are based on the notion of the effect of FVD on audit fees. Consistent with this argument, Bryman and Bell (2015) stated that "the positivist assumption that objective facts offer the best scientific evidence is likely to result in the choice of quantitative research methods." This relationship can be investigated empirically using published numerical data and statistical tools of analysis along with the theoretical estimations. According to Burrell and Morgan (1994) and Burrell and Morgan (2017), "positivists seek to explain and predict what happens in the social world by searching for regularities and causal relationships between its constituent elements." Similarly, Saunders et al. (2012) argued that deduction and positivism are linked, and both satisfy the requirement to explain the causal association among variables and address the conclusions.

The current study uses the deductive approach which is based on scientific principles and seeks to find the association between the variables and test the hypotheses using the quantitative approach. According to Bell et al. (2019), the deductive research approach is about the association between the research variables based on a certain theory, determining how variables are going to be measured, testing the hypotheses and summarising the results. According to Bell et al. (2019), the deductive approach indicates using an existing theory to build and test the hypotheses, and the results finally falsify or verify the theory.

Researchers are more concerned about explaining the 'real world' economy. There are two main research methods used here, i.e., qualitative and quantitative methods. The difference between the two can be seen only when the methods are being applied to find solutions for problems that businesses face. The quantitiative paradigm is based on collecting numerical data in order to test the hypotheses through a number of statistical analyses (Elsayed 2010; Punch 2013). This type of research paradigm is more objective and reliable thereby, its findings are more likely to be generalised (Hussey & Hussey 1997). The quantitative method involves numerical evidence that helps the researcher in predict and estimate the correlation between two or more variables. In this case, quantitative research can be used to perform an experiment whereby the diverse variables can be manipulated. The relationship between the independent variable/s and dependent variable/s can be tested here. One of the most significant advantages is that the internal validity is high.

Regarding the qualitative paradigm, Berg and Lune (2004) state that this method is descriptive and non-numeric in character. It builds on in-depth comprehension of individual or people's behaviour; thus, the data is collected using observations or documentation with the purpose of understanding individuals' behaviours and their related beliefs, attitudes, values, and emotions (Creswell 2003). According to this paradigm, the researcher is more likely to build a theory based on the collection of statements or views about certain phenomena (Easterby-Smith et al. 2008). There are a number of challenges in applying the qualitative approach, such as small sample size, in which the sample does not actually represent the population fairly (Hakim 1987) and there is a lack of reliability and transparency in such approaches (Berg & Lune 2004). Thus, the qualitative approach is not adopted in this study since it does not meet the current research requirements. The deductive positivist approach recognises a preceding theoretical framework, and it is selected to test the proposed hypotheses. Generally, the rationale for choosing the quantitative approach is that it can help to examine and explain the relationship between FVD and audit fees. The current study extends the quantitative tradition and builds on the research in audit pricing by Ettredge et al. (2014a), Goncharov et al. (2014), Yao et al. (2015), Alexeyeva and Mejia-Likosova (2016) and Sangchan et al. (2020).

The main aim of this research is to investigate the relationship between FVD and audit fees in Jordanian firms. To satisfy this aim, the researcher employed existing theories and the results of previous literature to improve and test the hypotheses and discover whether these hypotheses are valid or otherwise. This research adopted the positivist philosophy which seems to be more appropriate to meet the aim and objectives. Referring to the selected research paradigm, quantitative data has been collected from Jordanian firms' annual reports for the period 2005-2018. The collected data has been tested to answer the research questions. So, the quantitative paradigm is the best one to employ based on the positivist philosophy. It should be noted that the main purpose of this study is not to devise a new theory but to test the developed hypotheses through analysing the quantitative data. The deductive approach serves to collect and analyse the secondary data to test the association between FVD and audit fees.

3.5.2. Research Data and Sample Construction

In the current investigation, the hypotheses were tested using pooled data extracted from Jordanian listed companies' annual reports listed on the ASE. Some websites served as additional sources, such as the Securities Depository Centre (SDC) and JSC websites, OSIRIS database, Orbis database and Eikon software. Financial data and data concerning other research variables were hand-collected and extracted by the researcher from corporations' annual reports disclosed on the ASE website during the period 2005 to 2018. This study investigates the 14-year period from 2005 to 2018 mainly because 2005 was the first year in which the fair value for financial assets in Jordan following IAS 39 was implemented, followed by the amendment IFRS 7 in 2008 which required corporations to disclose in detail their FVMs of financial assets. As discussed in detail in the previous chapter, the current study period is aligned with FVD requirement timelines as requested by a various number of IFRSs, such as IAS 39 in (2005), IFRS 7 in (2008), IFRS 9 in (2009) and (2018) and IFRS 13 in (2011). The study period ends in 2018 because there is no data for the subsequent years.

Some websites served as additional sources, such as the Securities Depository Centre (SDC) and Jordan Securities Commission (JSC) websites, OSIRIS database, Orbis database and Eikon software. The initial sample comprised 3290 firm-year observations (235 unique firms). However, all firms with missing fair value, audit fees or financial indicators data were excluded. Therefore, the final sample consisted of 3108 firm-year observations, as presented in *Panel A* of Table (3.1) below. Here the total number of firms with missing data is 13 (almost 6% of total initial sample). The final sample after excluding firms with missing data is 222 (almost 82% of total initial sample). *Panel B* isolates firms that fully comply with FVD requirements for financial assets from other firms using alternative accounting methods (i.e., HCA). The latter group of firms is called the "control group" which makes it possible to explore if there is any difference in the audit prices in firms that adopt FVA from those that do not. This kind of finding would increase the reliability of the final research results as explained by Goncharov et al. (2014), Yao et al. (2015) and Sangchan et al. (2020). The total firms adopting FVD requirements is 172; while 50 firms that do not. *Panel C* categorises the final accepted sample into two main industries and 22 sub-sectors as explained in the table. The total firms accepted from the financial industry is 119 (54% of the total final sample) while the total firms from the non-financial industry number 103 (46% of the total final sample). The analysis is conducted using Statistical Analysis Package (Stata)[17].

Table 3.1. Sample Selection Procedure

Panel A: Sample Selection		**Total firms**	**Pooled**
Initial sample		235	3290
(-) Firms with missing data		*(13)*	*(182)*
Final Sample		**222**	**3108**
Panel B: Fair Value vs. Historical Cost Model			
Total firms adopting fair value disclosure requirements		172	2408
Total firms using other accounting methods (HC)		50	700
Total Sample		**222**	**3108**
Panel C: Industry Distribution	**Total accepted firms**		
	Fair-valued firms	**Historical cost firms**	**Percentage %**
Financial Industry Sub-Sectors:			
Banks	16	0	7.21

(This Table is continued on the next page)

[17] Statistical Package for the Social Sciences (SPSS) software used to conduct some parts of the Univariate analysis in this thesis.

(Table 3.1. Continued)

Panel C: Industry Distribution			
	Total accepted firms		
	Fair-valued firms	**Historical cost firms**	**Percentage %**
Insurance	23	0	10.36
Diversified Financial Services	38	6	19.82
Real Estate	29	8	16.67
Total Sample from Financial Industry	**105**	**14**	**53.60**
Non-Financial Industry Sub-Sectors:			
Service Sub-Sector Includes:			
Health Care Services	3	1	1.80
Educational Services	5	1	2.70
Hotels and Tourism	8	2	4.50
Transportation	9	2	4.95
Technology and Communication	0	2	0.90
Media	1	1	0.90
Utilities and Energy	3	3	2.70
Commercial Services	6	2	3.60
Total Sample from Service Industry	**35**	**14**	**22.07**
Industrial Sub-Sector Includes:			
Pharmaceutical and Medical Industries	4	2	2.70
Chemical Industries	4	3	3.15
Paper and Cardboard Industries	1	3	1.80
Printing and Packaging	0	1	0.45
Food and Beverages	4	5	4.05
Tobacco and Cigarettes	2	0	0.90
Mining and Extraction Industries	7	3	4.50
Engineering and Construction	4	4	3.60
Electrical Industries	3	1	1.80
Textiles, Leathers and Clothing	3	0	1.35
Total Sample from Industrial Industry	**32**	**22**	**24.32**
Total Sample from Non-Financial Industry	**67**	**36**	**46.40**
Total	**172**	**50**	**100.00**

3.6. Research Design

3.6.1. Historical Development of Audit Pricing Models

Simunic (1980) has defined audit fees as the amount that clients paid to their external auditors based on the product of unit price and the quantity of audits required by the client's management. Simunic's (1980) work on audit pricing is the earliest undertaken and it encapsulates this stream of the literature. Simunic (1980) developed his empirical and theoretical evidence on audit fees as an example of agency cost. Auditors in this sense serve as a monitoring tool assisting stakeholders to diminish asymmetric information caused by the agency problem. Simunic (1980) in his study analysed the potential factors that significantly explain the audit fee using regression model based on audit fees and the related data for 397 firms in the US. The three factors emphasised in his model are: client's size, client's complexity, and client's risk. He found evidence that clients' characteristics are the main factors influencing the determinants of audit fees. This model is considered to be the basis of all later research on this area. The basic assumption of this model is that audit fee is a function reflecting the auditor's effort and it has two primary components, i.e., the exact production cost and potential future costs that might arise from the current audits. Therefore, and based on Simunic's (1980) theoretical framework, the audit fee is calculated using the following formula:

$$E(\tilde{C}) = cq + E(\tilde{d} | a, q) E(\tilde{\Theta})$$

The audit pricing (fee) is explained in a mathematical way in this formula. Specifically, $E(\tilde{C})$ reflects the potential total cost (fee) of the audit; c reflects the price of audit service per unit; q reflects the quantity of external audit; $\tilde{d}$ reflects the potential value of future risk or loss arise from the audits; a reflects the quantity of internal resources a client devotes to audit-related activities, such as internal control; and $E(\tilde{\Theta})$ finally denotes the risk or loss which has actually occurred.

Some scholars criticised Simunic's model. For example, Francis (2004) stated that it is difficult to affirm that audit firms could be able to provide all audit services at the same level of quality as proposed by their brand name. Accordingly, the dominant audit firms in audit markets are the Big 4 firms. In this case, the market share of those large audit firms could reduce the role of a competitive market on determining audit fees. Consequently, Simunic's (1980) model is the basis for the audit fees model to predict audit prices; however, the practical application of the model is questioned. As a result, Simunic's (1980) model was extended by including more factors that may affect audit pricing. Specifically, Francis (1984) improved Simunic's (1980) mathematical equation by including the logarithmic audit fee model to identify the relationship between the log of total audit fees and other influential factors. Since then, this model has become the accepted benchmark in auditing literature. Hay et al. (2006) stated that the basic model used to determine audit fees has been used by most researchers; it is one that regresses the log of audit fees to several attributes which are theorised to have a significant effect on audit fees whatever the nature of this effect; negative or positive. The model is explained in the following equation as follows:

$$Infi = b0 + b1\ InAi + \Sigma bigi + ei,$$

Where: *Infi* reflects the dependent variable, which is natural log of audit fees; *InAi* reflects the measure of client size which is the natural log of total assets; and *Σbigi* reflects the independent variables that are deemed possible audit fees determinants.

Hay et al. (2006) stated that audit clients' attributes have been directly linked to audit fees. The researchers assert that audit clients' attributes are effective proxies to identify the audit fee. Subsequent scholars found that auditor characteristics and engagement attributes could also increase the effectiveness of audit pricing models because they also essential factors affecting the audit fee. Naturally, considering these attributes would impact on the audit pricing either by the total audit hours consumed or the cost of audit per hour, the audit fee model developed by Simunic (1980) is still usable as a basis to identify the drivers of audit pricing (Hay et al. 2006). Consequently, a significant body of literature has been published based on this model. According to Hay (2013) the size of audit fees can also be affected by other factors which are linked with audit engagement, such as audit firm size. The researchers reported that large audit firms in the UK are more likely to charge higher audit fees than their smaller counterparts in the same industry. Conversely, Simunic (1980) reported that big firms obtain lower audit fees due to such firms largely enjoying economies of scale. Simunic (1980), moreover, stated there are other factors which could influence audit pricing, such as the nature of the auditing market, the possibility of attaining non-audit work, for instance taxation and consultation services, the going concern status of the client, and the business's reputation.

Therefore, the deductive positivism approach using OLS regression recognises a preceding theoretical framework (Ettredge et al. 2014a; Goncharov et al. 2014; Yao et al. 2015; Alexeyeva & Mejia-Likosova 2016; Sangchan et al. 2020) and it is selected to test the proposed hypotheses. This study is based on Fields et al.'s (2004) model as a baseline model to test the hypotheses. This model has been employed by several scholars to test the relationship between IFRS/FVD and audit fees in various settings, Cameran and Perotti (2014), Ettredge et al. (2014a) and Alexeyeva and Mejia-Likosova (2016). The major focus of their work was the banking industry in the US and the EU. According to Hay et al. (2006), the significance of certain factors in determining audit fees changes according to each context's features and the period being examined, so the audit fee models need to be revised periodically. Fields et al.'s (2004) model is summarised as follows:

$$LOGFEEj=\gamma 0+\gamma 1LOGASSj+\gamma 2BIG5j+\gamma 3LOSSj+\gamma 4STDRETj+\gamma 5TRANSACCTj+\quad 6SECURITIESj + \gamma 7EFFICIENCYj + \gamma 8COMMLOANj + \gamma 9NONPERFORMj + \gamma 10CHGOFFj + \gamma 11MTGLOANj + \gamma 12CAPRATIOj + \gamma 13INTANGj + \gamma 14SENSITIVE + \gamma 15SAVINGSj + \varepsilon j.$$

However, Fields et al.'s (2004) model suffers some limitations, such as generalisability since the institutional characteristics of developed countries firms may not be applicable for developing countries' firms. Karim and Moizer (1996) noted that some findings on audit fee determinants derived from the Western audit pricing research may not be valid in developing countries. Consequently, the effect of FVD on audit fees might differ to other settings (i.e., US and EU)

with varied institutional factors and therefore should be examined individually from other contexts. The model was developed in 2004 before the introduction of fair value standards which was included in the IASB agenda in 2005 (IAS Plus 2019a). Added to this, the GFC triggered much debate on the adoption of FVA and the auditing profession universally. Thus, the current study extends the model by introducing new experimental independent variables as proxies for FVD in Jordanian firms' annual reports, such as the presence of fair value (*FVA*) following Goncharov et al. (2014) and the proportion of fair-valued assets (*FVA_TA*) following Ettredge et al. (2014a) examined the impact of FVD on audit fees. To test the impact of the moderating role of ownership structure factors on the association between FVD and audit fees, three ownership structure variables following Alhababsah (2019) and Nawaiseh et al. (2019); (*FAMILY_OWN*), (*GOV_OWN*) and (*FIN_INST_OWN*) have been employed in the model.
To test the impact of the moderating role of auditor industry specialisation on the relationship between FVD and audit fees, two industry specialisation variables following Audousset-Coulier et al. (2015); (*ISPEC1*) and (*ISPEC2*) based on the two scenarios of auditor specialisation have been added to the model. The industry type (*INDS*) variable has also been integrated into the model to assess the impact of the moderating of corporate industry type (financial versus non-financial) role on the relationship between the proportion of fair-valued assets and audit fees. Furthermore, two more variables have been selected and employed in the model following Alexeyeva and Svanström (2015) to test the impact of the moderating role of the GFC on the relationship between the proportion of fair-valued assets and audit fees. These variables are the (*PRECRISIS*) variable which refers to the pre-crisis period (2005-2007) and (*POSTCRISIS*) which refers to the post-crisis period (2010-2018).

A number of control variables have been incorporated into the model based on the setting characteristics and the study's main aim and objectives. The traditional control variables in the auditing literature have been selected to ensure the model's suitability for the study (i.e., *LnASSET, ROI, LOSS, LEV, GROWTH, SUBS, BIG4, CHANGE, UNQUALIFIED*). In fact, these variables emerged as being significant in audit pricing literature regarding Jordan; for this reason, they have been selected to control their effects on the dependent variable, i.e., audit fees. Overall, following the previous research on audit pricing (including: Simunic 1980; Taylor & Simon 1999; Craswell et al. 1995; Fields et al. 2004; Kim et al. 2012; De George et al. 2012; Ettredge et al. 2014a; Yao et al. 2015; Alexeyeva & Mejia-Likosova 2016; Abernathy et al. 2019; Sangchan et al. 2020) and for the purpose of the current study, Fields et al.'s (2004) model has been modified into fifteen basic equations to test each hypothesis.

Table 3.2. Thesis Equations

Research Question #	Equation #	Formula
Hypothesis 1: There is a positive relationship between the presence of fair-valued assets and audit fees in Jordanian listed firms.		
Q. 1	**E. 1**	$LnAFEES = \delta 0 + \delta 1FVA + \delta 2LnASSET + \delta 3SUBS + \delta 4LOSS + \delta 5ROI + \delta 6LEV + \delta 7GROWTH + \delta 8BIG4 + \delta 9CHANGE + \delta 10UNQUALIFIED + IndFE + YearFE + \varepsilon$.
Hypothesis 2_A: There is a positive relationship between the fair-valued assets and audit fees in Jordanian listed firms.		
Q. 2	**E. 2**	$LnAFEES = \delta 0 + \delta 1FVA\_TA + \delta 2LnASSET + \delta 3SUBS + \delta 4LOSS + \delta 5ROI + \delta 6LEV + \delta 7 GROWTH + \delta 8BIG4 + \delta 9CHANGE + \delta 10UNQUALIFIED + IndFE + YearFE + \varepsilon$.
Hypothesis 2_B: The relationship between fair-valued assets and audit fees is stronger for firms with greater ratios of the subjective and complex fair-valued assets (Level 2 and Level 3) among Jordanian listed firms.		
Q. 2	**E. 3**	$LnAFEES = \delta 0 + \delta 1FVA1\_TA + \delta 2FVA2\_TA + \delta 3FVA3\_TA + \delta 4LnASSET + \delta 5SUBS + \delta 6LOSS + \delta 7ROI + \delta 8LEV + \delta 9GROWTH + \delta 10BIG4 + \delta 11CHANGE + \delta 12UNQUALIFIED + IndFE + YearFE + \varepsilon$.
Hypothesis 3_A: There is no significant impact of family ownership on the relationship between the proportion of fair-valued assets and audit fees in Jordanian listed firms.		
Q. 3	**E. 4**	$LnAFEES = \delta 0 + \delta 1FVA\_TA + \delta 2FAMILY\_OWN + \delta 3\, FVA\_TA * FAMILY\_OWN + \delta 4LnASSET + \delta 5SUBS + \delta 6LOSS + \delta 7ROI + \delta 8LEV + \delta 9\, GROWTH + \delta 10BIG4 + \delta 11CHANGE + \delta 12UNQUALIFIED + IndFE + YearFE_{it} + \varepsilon$.
Hypothesis 3_B: There is no significant impact of family ownership on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.		
Q. 3	**E. 5**	$LnAFEES = \delta 0 + \delta 1FVA1\_TA + \delta 2FVA2\_TA + \delta 3FVA3\_TA + \delta 4FAMILY\_OWN + \delta 5FVA1\_TA * FAMILY\_OWN + \delta 6FVA2\_TA * FAMILY\_OWN + \delta 7FVA3\_TA * FAMILY\_OWN + \delta 8LnASSET + \delta 9SUBS + \delta 10LOSS + \delta 11ROI + \delta 12LEV + \delta 13GROWTH + \delta 14BIG4 + \delta 15CHANGE + \delta 16UNQUALIFIED + IndFE + YearFE_{it} + \varepsilon$.
Hypothesis 4_A: There is no significant impact of government ownership on the relationship between the proportion of fair-valued assets and audit fees in Jordanian listed firms.		
Q. 3	**E. 6**	$LnAFEES = \delta 0 + \delta 1FVA\_TA + \delta 2GOV\_OWN + \delta 3FVA\_TA * GOV\_OWN + \delta 4LnASSET + \delta 5SUBS + \delta 6LOSS + \delta 7ROI + \delta 8LEV + \delta 9\, GROWTH + \delta 10BIG4 + \delta 11CHANGE + \delta 12UNQUALIFIED + IndFE + YearFE + \varepsilon$.
Hypothesis 4_B: There is a no significant impact of government ownership on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.		
Q. 3	**E. 7**	$LnAFEES = \delta 0 + \delta 1FVA1\_TA + \delta 2FVA2\_TA + \delta 3FVA3\_TA + \delta 4GOV\_OWN + \delta 5FVA1\_TA * GOV\_OWN + \delta 6FVA2\_TA * GOV\_OWN + \delta 7FVA3\_TA * GOV\_OWN + \delta 8LnASSET + \delta 9SUBS + \delta 10LOSS + \delta 11ROI + \delta 12LEV + \delta 13GROWTH + \delta 14BIG4 + \delta 15CHANGE + \delta 16UNQUALIFIED + IndFE + YearFE_{it} + \varepsilon$.
Hypothesis 5_A: There is no significant impact of financial institutional ownership on the relationship between the proportion of fair- valued assets and audit fees in Jordanian listed firms.		
Q. 3	**E. 8**	$LnAFEES = \delta 0 + \delta 1FVA\_TA + \delta 2FIN\_INST\_OWN + \delta 3\, FVA\_TA * FIN\_INST\_OWN + \delta 4LnASSET + \delta 5SUBS + \delta 6LOSS + \delta 7ROI + \delta 8LEV + \delta 9\, GROWTH + \delta 10BIG4 + \delta 11CHANGE + \delta 12UNQUALIFIED + IndFE + YearFE + \varepsilon$.
Hypothesis 5_B: There is a no significant impact of financial institutional ownership on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.		
Q. 3	**E. 9**	$LnAFEES = \delta 0 + \delta 1FVA1\_TA + \delta 2FVA2\_TA + \delta 3FVA3\_TA + \delta 4FIN\_INST\_OWN + \delta 5FVA1\_TA * FIN\_INST\_OWN + \delta 6FVA2\_TA * FIN\_INST\_OWN + \delta 7FVA3\_TA * FIN\_INST\_OWN + \delta 8LnASSET + \delta 9SUBS + \delta 10LOSS + \delta 11ROI + \delta 12LEV + \delta 13GROWTH + \delta 14BIG4 + \delta 15CHANGE + \delta 16UNQUALIFIED + IndFE + YearFE_{it} + \varepsilon$.
Hypotheses 6_A: There is no significant impact of auditor industry specialisation on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.		
Q. 4	**E. 10**	$LnAFEES = \Phi 0 + \Phi 1ISPEC1$ (or $ISPEC2$) $+ \Phi 2FVA\_TA + \Phi 3\, FVA\_TA * ISPEC1$ (or $ISPEC2$) $+ \Phi 4LnASSET + \Phi 5SUBS + \Phi 6LOSS + \Phi 7ROI + \Phi 8LEV + \Phi 9\, GROWTH + \Phi 10BIG4 + \Phi 11CHANGE + \Phi 12UNQUALIFIED + IndFE + YearFE + \varepsilon$.

(This Table is continued on the next page)

(Table 3.2. Continued)

Research Question #	Equation #	Formula
Hypotheses 6B: There is a no significant impact of auditor industry expertise on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.		
Q. 4	**E. 11**	*LnAFEES= Φ0 + Φ1FVA1_TA+ Φ2FVA2_TA+ Φ 3FVA3_TA+ Φ4ISPEC1 (or ISPEC2) + Φ5 FVA1_TA*ISPEC1 (or ISPEC2) + Φ6FVA2_TA*ISPEC1 (or ISPEC2) + Φ7 FVA3_TA*ISPEC1 (or ISPEC2) +Φ8LnASSET + Φ9SUBS + Φ10LOSS + Φ11ROI + Φ12LEV + Φ13 GROWTH + Φ14BIG4 + Φ15CHANGE + Φ16UNQUALIFIED + IndFE + YearFE + ε.*
Hypothesis 7A: There is no significant impact of corporate industry type on the relationship between the proportion of fair-valued assets and audit fees in Jordanian listed companies.		
Q. 5	**E. 12**	*LnAFEES= δ0 + δ1FVA_TA + δ2INDS + δ3FVA_TA * INDS + δ4LnASSET + δ5SUBS + δ6LOSS + δ7ROI+ δ8LEV + δ9 GROWTH + δ10BIG4 + δ11CHANGE + δ12UNQUALIFIED+ IndFE+ YearFE + ε.*
Hypothesis 7B: There is no significant impact of corporate industry type on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.		
Q. 5	**E. 13**	*LnAFEES= δ0 + δ1FVA1_TA+ δ2FVA2_TA+ δ3FVA3_TA + δ4INDS + δ5FVA1_TA * INDS + δ6FVA2_TA * INDS+ δ7FVA3_TA * INDS+ δ8LnASSET + δ9SUBS + δ10LOSS + δ11ROI+ δ12LEV + δ13 GROWTH + δ14BIG4 + δ15CHANGE + δ16UNQUALIFIED+ IndFE+ YearFE + ε.*
Hypothesis 8A: There is no significant impact of the global financial crisis on the proportion of fair-valued assets and audit fees among Jordanian listed companies.		
Q. 6	**E. 14**	*LnAFEES= δ0 + δ1FVA_TA + δ2PRECRISIS (or POSTCRISIS) + δ3 FVA_TA * PRECRISIS (or POSTCRISIS) + δ4LnASSET + δ5SUBS + δ6LOSS + δ7ROI+ δ8LEV + δ9 GROWTH + δ10BIG4 + δ11CHANGE + δ12UNQUALIFIED + IndFE + YearFE + ε.*
Hypothesis 8B: There is no significant impact of the GFC on the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.		
Q. 6	**E. 15**	*LnAFEES= δ0 + δ1FVA1_TA+ δ2FVA2_TA+ δ3FVA3_TA + δ4PRECRISIS (or POSTCRISIS) + δ5 FVA1_TA * PRECRISIS (or POSTCRISIS) + δ6 FVA2_TA * PRECRISIS (or POSTCRISIS) + δ7 FVA3_TA * PRECRISIS (or POSTCRISIS) + δ8LnASSET + δ9SUBS + δ10LOSS + δ11ROI+ δ12LEV + δ13 GROWTH + δ14BIG4 + δ15CHANGE + δ16UNQUALIFIED + IndFE + YearFE + ε.*

Note: all variables are defined below (see table 3.5 of Section 3.7).

3.7. Variables' Measurement

3.7.1. Dependent Variable

Following the current research on audit pricing, for example, Ettredge et al. (2014a), Goncharov et al. (2014), Alexeyeva and Mejia-Likosova (2016) and Sangchan et al. (2020) the natural log of audit fees (*LnAFEES*) is used in this study.

3.7.2. Experimental Independent Variables

3.7.2.1. Fair Value Disclosure

The effect of FVD of financial assets is tested using various proxies as discussed in more detail in the subsections below.

3.7.2.1.1. The Presence of Fair-Valued Assets (*FVA)*

The presence of the fair-valued assets variable (*FVA)* is incorporated into the study's model following Goncharov et al. (2014), Sangchan et al. (2020), and Tama-Sweet and Zhang (2015). This variable is tested first to explore the difference in audit fee paid by businesses that fully comply with FVD requirements for financial assets from others using historical cost (HC) principle. To test research *hypothesis 1*, *FVA* is used in Equation (1) as an experimental independent dummy variable coded as 1 if the firm's assets are reported in fair values, 0 otherwise.

3.7.2.1.2. The Proportion of Fair-Valued Assets *(FVA_TA)*

The proportion of fair-valued assets variable *FVA_TA* is borrowed from Ettredge et al. (2014a) and Goncharov et al. (2014) and was employed later by Alexeyeva and Mejia-Likosova (2016) and Sangchan (2020). *FVA_TA* measured by the total fair-valued assets deflated by total assets. To test research *hypothesis* 2_A, *FVA_TA* is used as presented in Equation (2).

3.7.2.1.3. The Proportion of Fair-valued Assets through Hierarchy Level Inputs *(FVA1_TA, FVA2_TA, FVA3_TA)*

To test research *hypothesis* 2_B, the relationship between the proportion of fair-valued assets through three-level hierarchy (Level 1, Level 2, Level 3) and audit fees is tested through breaking the proportion of fair-valued assets (*FVA_TA*) into three fair value level inputs: (*FVA1_TA*), (*FVA2_TA*) and (*FVA3_TA*) variables. The hierarchy level inputs variables (*FVA1_TA, FVA2_TA, FVA3_TA*) were also, borrowed from Ettredge et al. (2014), Goncharov et al. (2014), Alexeyeva and Mejia-Likosova (2016) and Sangchan (2020) and incorporated into the study's model as presented in Equation (3).

3.7.3. Experimental Moderating Variables

Following the previous literature and in line with this current study's aim and objectives, a number of moderator variables are employed in order to test their effect; either strengthen or weaken the association between the dependent and independent variables; FVD metrics and audit fees.

3.7.3.1. Family Ownership (FAMILY_OWN)

Family-owned shares are summarised in a separate section in Jordanian firms' annual reports. Following the existing literature, family ownership *FAMILY_OWN* is measured by the total number of shares held by family members as a proportion of the total number of a firm's shares. Family shares are summarised in a separate section in Jordanian firms' annual reports. The total number of shares owned by family members is manually collected and calculated from firms' annual reports for each year of the study period. To test *Hypothesis* 3_A, Equation (2) is modified by adding family ownership *FAMILY_OWN* and the interaction term of the proportion of fair-valued assets with family ownership (*FAMILY_OWN * FVA_TA*) as presented in Equation (4). To test *Hypothesis* 3_B, Equation (3) is modified by adding family ownership *FAMILY_OWN* and the interaction term of the proportion of fair-valued assets over the hierarchy inputs (Level 1, Level 2, Level 3) with family ownership (*FAMILY_OWN * FVA1_TA, FAMILY_OWN * FVA2_TA, FAMILY_OWN * FVA3_TA*) as presented in Equation (5).

3.7.3.2. Government Ownership (GOV_OWN)

Government shares are summarised in a separate section in Jordanian firms' annual reports. Following the existing literature, government ownership *GOV_OWN* is measured by the total number of shares held by government as a proportion of the total number of a firm's shares. Total shares owned by government are manually collected and calculated from firms' annual reports for each year of the study period. To test *Hypothesis* 4_A, Equation (2) is modified by adding government ownership *GOV_OWN* and the interaction term of the proportion of fair-valued assets with government ownership (*GOV_OWN * FVA_TA*) as presented in Equation (6). To test Hypothesis 4_B, Equation (3) is modified by adding government ownership GOV_OWN and the interaction of the proportion of fair-valued assets over the hierarchy inputs (Level 1, Level 2, Level 3) with government ownership (*GOV_OWN * FVA1_TA, GOV_OWN * FVA2_TA, GOV_OWN * FVA3_TA*) as presented in Equation (7).

3.7.3.1.3. Financial Institutions Ownership (FIN_INST_OWN)

Financial institutions' shares are summarised in a separate section in Jordanian firms' annual reports. Following the existing literature, financial institutional ownership *FIN_INST_OWN* is measured by the total number of shares held by financial institutions as a proportion of the total number of firm's shares. Total shares owned by financial institutions are manually collected and calculated from firms' annual reports for each year of the study period. To test *Hypothesis* 5_A, Equation (2) is modified by adding financial institutional ownership *FIN_INST_OWN* and the interaction of the proportion of fair-valued assets with financial institutional ownership (*FIN_INST_OWN * FVA_TA*) as presented in Equation (8). To test *Hypothesis* 5_B, Equation (3) is modified by adding financial institutional ownership *FIN_INST_OWN* and the interaction of the proportion of fair-valued assets over the hierarchy inputs (Level 1, Level 2, Level 3) with financial institutional ownership (*FIN_INST_OWN * FVA1_TA, FIN_INST_OWN * FVA2_TA, FIN_INST_OWN * FVA3_TA*) as presented in Equation (9).

3.7.3.2. Auditor Industry Specialisation (ISPEC1, ISPEC2)

The methodologies used to identify firms as industry audit specialists lack consistency. Review of prior research suggests a lack of consensus as to how auditor industry expertise should be measured (Audousset-Coulier et al. 2015; Hegazy & Hegazy 2018; Neal & Riley 2004). According to Audousset-Coulier et al. (2015), there are five measures with six proxies (i.e., audit fees, client's size, assets, sales, square root of assets, and square root of sales and the number of clients) have been used to determine whether the audit firm is a specialist in a given industry or not. Again, according to Audousset-Coulier et al. (2015), these measures are: largest market share, market share cut-off, largest portfolio share, portfolio share cut-off and weighted market share (see Table 3.3).

Table 3.3. Auditor Industry Expertise Measurements

Measure	Formula
MS	*Largest MS*
MS Cut-off	*MS > (1/N) * 1.2*
PS	*3 Largest PS*
PS Cut-off	*PS > 1/K*
Weighted MS	*WMS > [(1/N) * 1.2] * (1/K)*

Where: N = number of audit firms in a given industry; K = number of industries that an audit firm serves; MS = Market Share; PS = Portfolio Share; WMS = Weighted Market Share.

Following previous audit pricing rese arch such as Almutairi et al. (2009), Ettredge et al. (2014a), and Audousset-Coulier et al. (2015), and for the purpose of the current study, the two widely used measures of auditor industry specialisation are employed to explore the effect of auditor industry specialisation on audit fees and its moderating role on the relationship between the proportion of fair-valued assets and audit fees. Following other studies (DeFond et al. 2000; Ferguson et al. 2003; Francis et al. 2005; Carson 2009; Fung et al. 2012), the first measure captures the market share of the audit firm (*ISPEC1*) which reflects the product differentiation scenario. This measure indicates that auditors provide a high-quality and exclusive audit service to a specific industry; thus, they earn an audit fee premium. However, following Ettredge and Greenberg (1990) and Hay and Jeter (2011), the second measure captures the portfolio share of industry (*ISPEC2*) which reflects cost savings from efficiencies. This measure suggests that auditors provide a fee discount to their clients in order to get more clients and at the same time increase their client portfolio. Following Almutairi et al. (2009) and Abbott and Susan (2000), *ISPEC1* in the current study is a dummy variable coded as 1 if *ISPEC1* higher than the market share cut-off (10%) of the industry's total audit fees, 0 otherwise. While, Following Behn et al. (2008), Hegazy and Hegazy (2018), Audousset-Coulier (2016) and Ettredge et al. (2014), *ISPEC2* in the current study is a continuous variable measuring the auditor's percentage of each industry group's total audit fees. Audit fee-based measures are used to this study to measure the two scenarios[18]. According to Audousset-Coulier et al. (2015), audit fee-based measures are rarely used in the auditing literature as a proxy to measure auditor expertise due to the lack of audit fees disclosure; however, audit fee is the

[18] Previous literature does not presume a preference for either a continuous or indicator variable of industry expertise and the majority continue to examine both metrics, such as Ettredge et al. (2014). Following Audousset-Coulier et al. (2015) and Chi and Chin (2011), the attributes of specialisation adopted in this study's regression analysis contains a dichotomous measure of market share-based and a percentage measure of client portfolio share-based. This is because using both attributes at the same measurement is not acceptable in the auditing literature (Audousset-Coulier et al. 2015). Additional measures have utilised in this thesis to robust the analysis' results (details are provided in Section 6.6 of Chapter 6 below).

favoured measure as it appears to be the result of the auditee's size, complexity and risks as well as auditor effort.

To classify each industry, the International Securities Identification Number (ISIN) issued by the Jordanian Securities Depository Centre (JSDC) (a unique ten-digit number indicating the firm's type and the sector it operates in) is be employed (SDC 2020a). To test *hypothesis* 6_A, Equation (2) is modified by adding the two industry specialisation scenarios; *ISPEC1*, *ISPEC2)* and the interaction term of the proportion of fair-valued assets with each auditor industry specialisation scenarios (*FVA_TA*ISPEC1* (*or ISPEC2*)) in one model and testing them separately as presented in Equation (10). To test *hypothesis* 6_B, Equation (3) is modified by adding the two industry specialisation scenarios; (*ISPEC1* or *ISPEC2)* and the interaction of the proportion of fair-valued assets over the hierarchy inputs (Level 1, Level 2, Level 3) with the two industry specialisation scenarios (*FVA1_TA*ISPEC1* (*or ISPEC2*), *FVA2_TA*ISPEC1* (*or ISPEC2*), *FVA3_TA*ISPEC1* (*or ISPEC2*)) and testing them separately as presented in Equation (11). The coefficients of the two-auditor industry specialisation scenarios *ISPEC1 or ISPEC2* and audit fees are assumed to be either positive or negative. The coefficients of the interaction of *ISPEC1* or *ISPEC2* and the proportion of fair-valued assets are assumed to be either positive or negative. The two discussed scenarios of industry specialisation are measured using two measure equations which are explained in more detail in Table 3.4. below.

Table 3.4. Auditor MS and PS Equations *ISPEC1* or *ISPEC2*

Measure	Formula
ISPEC1	$\boldsymbol{MSik} = \frac{\sum_{J=1}^{Jik} \mathrm{Xijk}}{\sum_{i=1}^{Ik} \sum_{j=1}^{Jik} Xijk}$
ISPEC2	$\boldsymbol{PSik} = \frac{\sum_{J=1}^{Jik} \mathrm{Xijk}}{\sum_{K=1}^{k} \sum_{j=1}^{Jik} Xijk}$

Where: MSik market share of audit firm i in industry k; PSik portfolio share of industry k for auditor i; X = audit fees; i= auditor; k= industry; and j= client.

3.7.3.3. Corporate Industry Type (INDS)

To classify each industry, the ISIN is employed (SDC 2020a). *INDS* is used as a dummy variable coded as 1 if the firm is a financial institution, 0 otherwise (Stein et al. 1994; Hay et al. 2006; Lin et al. 2017). To test *hypothesis* 7_A, Equation (2) is modified by adding corporate industry type *INDS* and the interaction of the proportion of fair-valued assets with corporate industry type (*INDS* FVA_TA)* in one model as presented in Equation (12). To test Hypothesis 7_B, Equation (3) is modified by adding corporate industry type variable *INDS* and the interaction of the proportion of fair-valued assets over the hierarchy inputs (Level 1, Level 2, Level 3) with corporate industry type (*INDS * FVA1_TA, INDS * FVA2_TA, INDS * FVA3_TA*) as presented in Equation (13).

3.7.3.4. Global Financial Crisis Effect (PRECRISIS & POSTCRISIS)

To test the effect of the GFC on audit fees and its moderating role on the association between the proportion of fair-valued assets and audit fees, the current study developed two variables: Pre-crisis (*PRECRISIS*) and Post-crisis (*POSTCRISIS*) variables following Alexeyeva and Svanström (2015). *PRECRISIS* is a dummy variable coded 1 during 2005-2007, 0 otherwise; whereas *POSTCRISI* is a dummy variable coded 1 during 2010-2018, 0 otherwise. To test *hypothesis* 8_A, Equation (2) is modified by adding the two GFC variables (*PRECRISIS* or *POSTCRISIS*) and the interaction of the proportion of fair-valued assets with each GFC variable (*FVA_TA * PRECRISIS (or POSTCRISIS)*) and testing separately as presented in Equation (14). To test Hypothesis 8_B, Equation (3) is modified by adding the crisis variables (*PRECRISIS* or *POSTCRISIS*) and the interaction of the proportion of fair-valued assets over the hierarchy inputs (Level 1, Level 2, Level 3) with family ownership (*FVA1_TA * PRECRISIS (or POSTCRISIS)*), *FVA2_TA * PRECRISIS (or POSTCRISIS)*), *FVA3_TA * PRECRISIS (or POSTCRISIS)*) as presented in Equation (15).

3.7.4. Control Variables

3.7.4.1. Firm Size (LnASSET)

According to Simunic (1980) and Hay et al. (2006) firm size is the main variable affecting audit fees. Larger clients must undertake more monitoring, supervising, and auditing. Such clients are normally decentralised and thus the asymmetric information problem is largely found there. Thus, the need for additional monitoring mechanisms is greater too, in order to minimise the agency problem (Ahmed & Goyal 2005). Following earlier studies (Abernathy et al. 2019; Bryan & Mason 2016; Carson & Fargher 2007; Cullinan et al. 2016; Matthews & Peel 2003; Miah 2019; MohammadRezaei et al. 2018; Ng et al. 2018; Sangchan et al. 2020), audit client size is a very crucial explanatory factor that has been employed in audit fees research and emerged as the most significant influential factor on audit fees determination. The meta-analyses undertaken by Hay et al. (2006), Hay (2013, 2019), Salehi et al. (2019) and Alareeni (2019) supported prior results on the significant effect of client size on audit fees. DeAngelo (1981) and Simunic and Stein (1987) stated that larger clients are more careful about their reputation, so they would pay a fee premium to resolve an agency problem; they want credible approval of their financial reporting. In addition, studies which were based on samples derived from different countries in Europe, Australia, and the US (Ettredge et al. 2014a; Goncharov et al. 2014; Alexeyeva & Mejia-Likosova 2016; Yao et al. 2015; Sangchan et al. 2020) found the effect of the auditee's size wields a significantly positive effect on audit fees.

In the ME countries, Joshi and Al-Bastaki (2000), Naser and Nuseibeh (2008), Al-Harshani (2008), Hassan and Naser (2013) and Naser and Hassan (2016), found that the audit fee is higher for larger clients. In Jordan, several scholars (Naser & Nuseibeh 2008; Abu Risheh & Al-Saeed

2014; Kikhia 2015; Alzoubi 2018; Nawaiseh et al. 2019; Alhababsah 2019) asserted that large firms are closely controlled by the government because the agency problem is ubiquitous. The government sought to reduce the agency problem by employing high-quality audit firms to confirm the credibility of businesses' financial information so that investors and creditors had trust in them. This, in turn, resulted in paying higher audit fees. Firm size *LnASSET* has usually been measured by prior scholars as the Natural Log of a firm's total assets. Following the previous theoretical evidence in the auditing literature, the association between firm size and audit fees is assumed to be positive in the current study.

3.7.4.2. Loss (LOSS)

Client loss is a measure of a firm's risk level because it reveals the extent to which the auditor may be subjected to loss in the case of auditing clients who are not financially qualified (Simunic 1980). According to Francis (1984), Craswell et al. (1995), Hay et al. (2006) and Lin and Liu (2009), worse client performance leads to higher risk for the auditor, which eventually results in larger audit fees. Other scholars argue that auditors may expect the firm to experience a financial failure such as recurring huge losses, which would lead to the auditor being more cautious and spending more effort and time (Afify 2009; Habib 2011). Most prior studies conclude that firms incurring losses suffer higher audit fees (Matthews & Peel 2003; Hay & Knechel 2010; Ettredge et al. 2014a; Alexeyeva & Svanström 2015; Alexeyeva & Mejia-Likosova 2016; Huang et al. 2016; Francis et al. 2017; Abernathy et al. 2019; Sangchan et al. 2020). The meta-analysis by Audousset-Coulier et al. (2015) confirmed the previous scholars' findings on the effect of loss on audit fees. MohammadRezaei et al. (2018) contend that a client's loss positively affects auditors' fees in Iranian firms. Abu Risheh and Al-Saeed (2014) and Alhababsah (2019) stated that the loss is positively associated with audit fees paid by Jordanian firms. Loss is commonly used as a dummy variable coded as 1 for firms with a net income less than 0, 0 otherwise. Following the previous theoretical evidence in the auditing literature, the association between loss and audit fees is assumed to be positive in the current study.

3.7.4.3. Profitability (ROA)

Profitability is considered an important variable in audit pricing literature and it functions as a signal of management performance and its effectiveness in allocating resources (Hay et al. 2006; Hay 2013; Abernathy et al. 2019; Sangchan et al. 2020). Mixed results are found by previous scholars regarding the relationship between client profitability status and audit fees. Most of the prior literature found that firms reporting high profits are more likely to pay larger audit fees (Joshi & Al-Bastaki 2000; Ettredge et al. 2007; Ettredge et al. 2014a; Francis et al. 2017; Salehi et al. 2019). According to Watts and Zimmerman (1986) profitable firms usually attempted to disclose more information to convey their profitable performance to reduce the agency cost. As a result, such information would be a positive signal for firms to send to their shareholders which shows their intention to strengthen their position and justify their compensation schemes (Alhababsah 2019). In this respect, disclosing further information means further effort and time is required from auditors which ultimately leads to higher audit fees.

However, some scholars reported that a client's profitability is not a significant factor affecting the audit fees model (Audousset-Coulier et al. 2015; Francis et al. 2017; Owusu-Ansah et al. 2010; Rainsbury et al. 2009; Scott & Gist 2013). Keefe et al. (1994), Schelleman and Knechel (2010) and Huang et al. (2016), also found that using Return on Assets (ROA), Return on Equity (ROE) and Return on Equity (ROI) ratios as proxies to measure clients' profitability led to findings that are frequently found to be insignificant. Al-Harshani (2008), Abu Risheh and Al-Saeed (2014) and Kikhia (2015) stated that the profitable firms in Jordan attempt to bear higher audit fees, in an effort to signal their profitability to stakeholders. However, Hassan and Naser (2013) reported that clients' profitability is not significantly associated with audit fees in Abu Dhabi. Similarly, Naser and Hassan (2016), in their study in Jordan, revealed that audit fees are not significantly linked with clients' profitability. ROI ratio is the traditional variable commonly used in the audit fees literature. Simunic (1980), Francis and Simon (1987) and Hay et al. (2006) found that the relationship between a client's profitability and audit fees is significantly positive. Therefore, *ROI* ratio is used in this study as a proxy of client profitability. *ROI* is calculated by dividing firm's net income by total investments. Following the previous theoretical evidence in the auditing literature, the association between profitability and audit fees is assumed to be positive in the current study.

3.7.4.4. Leverage (LEV)

Leverage is a measure of the risk of a firm failing which possibly exposes the auditor to loss (Simunic 1980). Leverage is considered to be a significant measure of client risk because it indicates financial failure which could result in the manipulation of financial information in order to improve the firm's image. Mixed results are addressed by prior literature regarding the effect of a client's leverage on audit fees. The main reason for this difference in the researchers' results is due to the major difference between the markets that are used to draw the results. US-based studies conducted by Francis et al. (2005) and Bryan and Mason (2016) reported a significant positive association between clients having suffered high leverage and audit fees. Those scholars explained this result as clients with high leverage requiring special attention from auditors when assessing audit risk. Thus, auditors in this case attempt to spend more time to avoid audit risk linked with their clients who suffer a poor financial position and thus, auditors ask for an audit fee premium. Another group of researchers supported this claim (Chaney et al. 2004; Chen et al. 2007; Clatworthy & Peel 2007; Francis 1984; Francis et al. 2005; Hay 2013; Hay & Knechel 2010; Hay et al. 2006; Ittonen & Peni 2012; Jeong et al. 2005; Kumarasiri & Fisher 2011; Lin & Liu 2009; Sangchan et al. 2020; Scott & Gist 2013; Shan & Troshani 2016). By contrast, scholars noted a different outcome (including: Bell et al. 2008; Bell et al. 2001; Davidson & Gist 1996; Davis et al. 1993; Stein et al. 1994).

Different results obtained from less developed markets, for instance, in Kuwait's market, Al-Harshani (2008) finds that clients with high leverage are usually charged lower audit fees paid by Bahraini firms. However, Naser and Nuseibeh (2008), Abu Risheh and Al-Saeed (2014), Kikhia (2015) and Naser and Hassan (2016) reported that leverage is positively associated with audit fees paid by Jordanian firms. One of the *leverage* measures in prior research is the ratio of debt to total assets which is calculated by the total debt divided by total assets. Following the previous theoretical evidence in the auditing literature, the association between leverage and audit fees is assumed to be positive in the current study.

3.7.4.5. Sales Growth Ratio (GROWTH)

Sales growth ratio in audit pricing literature is an indicator of client risk (Abernathy et al. 2019; Alzoubi 2018; Hay et al. 2006; Minutti-Meza 2013). According to Hay (2013), the growth ratio reflects the amount a firm gained from current sales compared to a previous year's sales. It also refers to a low level of risk for auditor clients which resulted in low audit fees (Hay et al. 2006). Therefore, it is widely used as a proxy of audit client risk. Specifically, Firms with high *GROWTH* are more likely pay lower audit fees as a trade-off for auditor's litigation risk (Cahan & Sun 2015; Huang et al. 2016; Sikalidis & Leventis 2017; Soderstrom & Sun 2007). In addition, several other studies (DeFond et al. 2000; Ferguson et al. 2003; Francis et al. 2005; Hogan & Wilkins 2008; Carson 2009; Fung et al. 2012; Krishnan & Zhang 2014) revealed the same result. *GROWTH* is calculated in the literature by the ratio of the current sales to previous sales. Following the previous theoretical evidence in the auditing literature, the association between sales growth ratio and audit fees is assumed to be negative in the current study.

3.7.4.6. Number of Subsidiaries (SUBS)

Hay et al. (2006) stated that the most popular indicator for firm complexity is the number of a client's subsidiaries. Complex firms are harder to audit and require more time and effort to compensate the additional effort of auditors in understanding client's diverse disclosure requirements and the related risk of financial misstatements, such as litigation risk and reputation impairment, and thus charge higher audit fees (Simunic 1980). In the developing countries, the same results have been reported by a number of scholars, such as MohammadRezaei et al. (2018) in Iran, Naser and Hassan (2016) and Hassan and Naser (2013) in Dhabi, Naser and Nuseibeh (2008) and Alhababsah (2019) in Jordan. They justified this outcome as auditing such firms requires additional effort and time to provide assurance, so that the consolidated financial statements are of high quality. Auditors also should do work on firms' branches in other countries where various disclosure regulations exist. Any differences in reporting requirements from country to country will result in more complex auditing outcomes where additional tests are required; this ultimately drives audit fees up (Naser & Nuseibeh 2008). Conversely, some scholars find no significant association between a client's number of subsidiaries and audit fees. Most scholars reported results based on a sample from developing countries. For example, Al Harshani (2008) finds that the number of a client's branches is not a significant factor for determining audit fees. Similarly, Ahmed and Goyal (2005) in their examination of a number of emerging economies (including Pakistan, India and Bangladesh) have found a non-significant association between a client's number of branches and audit fees. Al Harshani (2008) and Ahmed and Goyal (2005) justified these results on the grounds that the majority of an auditor's clients in developing countries often do not have subsidiaries or branches in other countries.

Previous research (Carson et al. 2004; Francis & Simon 1987; Joshi & Al-Bastaki 2000; Pong et al. 2007; Simunic 1980; Thinggaard & Kiertzner 2008) outlined various measures of complexity. The first measure is physical complexity, and it is determined by the number and location of operating units, and the diversification of product lines. The second measure is the legal complexity. It is determined by the number of a firm's subsidiaries and the number of countries in which the firm trades. The final measure is reporting complexity. It is determined by the number of separate audit reports developed and published annually for the firm such as merging financial statements and separate reports on subsidiaries.

In general, whereas the description of complexity has received great attention in prior studies, the empirical studies undertaken by Simon and Taylor (1997), Matthews and Peel (2003), Niemi (2005), Dickins et al. (2008), Hay (2013) and Bryan and Mason (2016), greatly support the positive relationship between audit fees and client complexity. Hence, it can be said that higher complexity of the audit client leads to larger audit fees. Clients who have more diversified and decentralised financial reporting are very complex. Specifically, firms established in other countries have sophisticated operations and thus need more effort and time for auditors to go through the different reporting frameworks and disclosure requirements (Hay et al. 2006). *SUBS* in the current study is calculated by the number of subsidiaries of the corporate operating either inside or outside Jordan. Following previous theoretical evidence in the auditing literature, the association between the number of subsidiaries and audit fees is assumed to be positive in the current study.

3.7.4.7. Big4 Audit Firms (BIG4)

Big 4 has been widely used by prior literature as an essential factor affecting the audit pricing. Based on empirical auditing literature (Choi et al. 2010; Huang et al. 2016; Francis et al. 2017; Abernathy et al. 2019; Sangchan et al. 2020), Big 4 audit firms have more expertise and resources to detect misstatements and greater motivations to maintain their high audit quality reputations. Motivations include maintaining their reputation, avoiding litigation risks, maintaining existing and extending the range of their clients. Other evidence provided by Lawrence et al. (2011) shows that Big 4 audit firms are more likely to provide high-quality audits because of the support training programmes. Big 4 audit firms, moreover, follow standardised audit methodology and provide the opportunity for peer review opportunity by another partner. Wang et al. (2014) analysed the effect of the Big N audit firms on audit quality and information risk by comparing the audit quality of Big N audit firms in Taiwan with those in mainland China. They report that Big N audit firms in Taiwan help to reduce the information asymmetry problem and thus provide high-quality audit services.

However, Big N audit firms in mainland China are better able to limit earnings management practices. To this end, the meta-analysis by Salehi et al. (2019) showed a positive association between audit firm size and audit quality. In contrast, Chaney et al. (2004), Boone et al. (2010) and Lawrence et al. (2011) suggest that smaller audit client considered that Big 5 auditors are not the best regarding the perceived quality of audit services provided and thus, the audit price may reflect reputation-based pricing. Therefore, those scholars revealed there was no significant effect of Big 4 audit firms on audit prices. In the emerging economies, Siddiqui et al. (2013) document that Big 4 firms do not earn audit fee premiums in Bangladesh due to the nature of the stock market and audit market there. Big 4 audit firms in Bangladesh command just 17% of listed firms in that country.

In Jordan, Naser and Nuseibeh (2008), Kikhia (2015) and Abdullatif (2016) identified a significant positive association between Big 4 audit firms and audit fees in Jordan. The researchers also found evidence that audit quality provided by Big 4 audit firms is better than that provided by local ones. Large-sized firms operating in Jordan attempt to provide better auditing quality and thereby send signals to their interested users. Alhababsah (2019) and Alzoubi (2016) reported that the association between Big 4 audit firms and audit fees is positive. The *BIG4* variable has been widely used in the literature as a dummy variable coded as 1 if the audit firm is one of the Big 4 audit firms (PwC, KPMG, Deloitte, and EY), 0 otherwise. Following the previous theoretical evidence in the auditing literature, the association between Big 4 and audit fees is assumed to be positive in the current study.

3.7.4.8. Auditor Tenure (CHANGE)

Audit tenure has been defined by Sinason et al. (2001) as the period of time during which the auditor is employed by the client. Furthermore, Chen et al. (2010) defined audit tenure as a timespan during which the auditor provides an evaluation of the firm’s finances. Johnson et al. (2002) also described audit tenure as the number of sequential years where the auditors have provided audit services to their clients. Moreover, audit tenure also defined as the “period of engagement” of auditors with their clients; in other words, the length of time the auditor performs audit service for clients (Carey & Simnett 2006). Griffin et al. (2009) defined audit tenure in a different way as the number of years that auditor works with specific clients, particularly, the duration of an auditor working within a contract. Nearly a decade ago, Salehi et al. (2019) defined

audit tenure as the total duration of auditor to hold certain clients. Auditor tenure is one of the auditors' attributes measures which is widely used in audit pricing research (Hay et al. 2006).
In discussing the effect of audit tenure on audit fees, many scholars examined this issue, and two conflicting aspects were presented. A number of research studies report the positive impact of audit tenure on audit quality, such as Ghosh and Moon (2005) and Ball et al. (2015) who find that audit tenure is positively associated with audit prices. Other recent evidence on audit tenure and audit fees has been provided by Craswell et al. (1995), Krishnan (2003), Bedard and Johnstone (2010) and Rahmina and Agoes (2014). They all noted that audit tenure positively impacted on audit quality attributed with audit prices. This positive relationship is due to the fact that auditors with long tenure gain client-specific knowledge. Similarly, Salehi et al. (2019) asserted that lengths of engagement of audit firms with their clients are correlated to increasing audit fees. Furthermore, studies (including: Craswell et al. 1995; Krishnan 2003; Bedard & Johnstone 2010) asserted that auditors with long tenure are more likely to provide a better-quality audit which results in higher fees. Moreover, Almutairi et al. (2009) reported that an increase in audit tenure leads to a greater assessment of material misstatement by external auditors. Chi et al. (2009) addressed that within the initial period of the audit engagement, lower earnings quality was reported in Taiwan. According to Johnson et al. (2002) and MohammadRezaei et al. (2018), higher discretionary accruals were normally observed within the first three years of external auditor engagement. This result is justified by the auditors within the initial periods in audit engagement spending more time in auditing due to their lack of experience in a specific industry.

On the other hand, some scholars stated that auditors with longer tenure are subject to learning more detailed knowledge and experience about clients' operations and business strategies. In this respect, Myers et al. (2003) and Yang and Krishnan (2005) summarised a negative association between auditor tenure and earnings management. As a result, the complexity and risk levels in auditing process will be inclined which means less effort and time spent by auditors so they charge lower audit fees, as claimed by Salehi et al. (2019). Prior literature on the relationship between auditor tenure and audit quality finds that longer auditor tenure leads to less auditor independence (Griffin et al. 2009; Rahmina & Agoes 2014). Consequently, the weakened independence leads to poor audit quality, lower audit prices result. Auditors with new audit engagement charge low fees (Hay et al. 2006). Salehi et al. (2019) moreover, stated that during the initial years of the audit engagement, the number of discretionary accruals increases due to the less experienced and knowledge of auditors in a specific industry. However, Schneider (2017) failed to find a significant association between auditor tenure and audit fees in the US banks. Jordan’s government has required the local listed firms to rotate their external auditor team as a minimum once every four years (Abdullatif & Al-Rahahleh 2020). This makes it possible to change the auditor every year. Following most auditing research, *CHANGE* in auditor is defined in this study as auditor tenure of three years, coded 1 if the audit firm did not change, 0 otherwise (Hay et al. 2006). Following the previous theoretical evidence in the auditing literature, the association between audit tenure and audit fees is assumed to be positive.

3.7.4.9. *Unqualified Opinion* (*UNQUALIFIED)*

External auditors are responsible for assessing the client's financial reports and provision of the final audit opinion accordingly (Kausar & Lennox 2017; Abernathy et al. 2019). The audit opinion reflects the client risk which is usually considered to be a major determinant of auditor fees (Hay et al. 2006; Abernathy et al. 2019). Unqualified opinion reflects less complexity and risk of the auditor client which means simpler and thus, less time and effort spent on auditing assignments (Abernathy et al. 2019). However, qualified opinions signal bad news to shareholders and stock markets about the firm which might have a significant effect on a firm's stock price. Many studies have reported that clients with a qualified opinion are more likely to charge higher audit fees (Behn et al. 2009; Cahan & Sun 2015; Francis et al. 2005; Ghosh & Lustgarten 2006; Leventis et al. 2013). This finding is due to the additional tests and reports that should be prepared by auditors and they also should report the problems which emerge during the auditing process including higher risk expected by an auditor. Thus, auditors need to spend more time and the higher costs involved means charging higher audit fees (Leventis & Caramanis 2005). Auditor opinion reflects the client risk which is usually considered to be a major determinant of auditor fees (Hay et al. 2006). An unqualified opinion reflects less complexity and risk to the auditor client which means simpler and thus, less time and effort spent auditing (Abernathy 2019).

External auditors in Jordan are in a weak position since their clients can easily choose other auditors who can accept their questionable disclosures (Abdullatif 2016). Closely held firms are the majority of audit clients in the Jordanian market where the agency problem caused by the separation between owners and managers is limited. The requirement for high audit quality is limited which ultimately leads to less incentives for auditors to spend more effort and time in auditing. This is escalated by the intent of Jordanian auditors to maintain their clients and attract more clients. Jordanian auditors accept firms' financial statements (report unqualified opinion) without any serious consequences due to the weak sanctions and penalties system (Abdullatif & Al-Rahahleh 2020). Abu Risheh and Al-Saeed (2014) reported that there is a negative relationship between auditor opinion and audit fees in Jordanian firms. This, in turn, leads to lower fees being required by external auditors. The *UNQUALIFIED* variable is usually measured in the literature as a dummy variable coded 1 if the firm receives an unqualified opinion, 0 otherwise. Following the previous theoretical evidence in the auditing literature, the association between unqualified opinion and audit fees is assumed to be negative in the current study. A summary of the definitions and measurement of the variables is presented in Table 3.5 as follows.

Table 3.5. Variables Definition and Measurement

Variable	Expected sign	Label	Definition
Audit fees		***LnAFEES***	The natural log of total audit fees (in Jordanian dinars JD).
The presence of fair-valued assets	(+)	***FVA***	Dummy variable coded as 1 if firm's assets are reported in fair values, 0 otherwise.
The proportion of fair-valued assets	(+)	***FVA_TA***	Firm's total fair-valued assets deflated by total assets.
The proportion of fair-valued assets using level 1	(+)	***FVA1_TA***	Firm's total fair-valued assets using Level 1 deflated by fair-valued assets.
The proportion of fair-valued assets using level 2	(+)	***FVA2_TA***	Firm's total fair-valued assets using Level 2 deflated by fair-valued assets.
The proportion of fair-valued assets using level 3	(+)	***FVA3_TA***	Firm's total fair-valued assets using Level 3 deflated by fair-valued assets.
The aggregate fair-valued assets using level 2 and 3	(+)	***FVA23_TA***	Firm's total fair-valued assets using aggregate Level 2 and Level 3 deflated by fair-valued assets.
Family Ownership	(±)	***FAMILY_OWN***	The percentage of the *(This Table is continued on the next page)* investors of the total number of a firm's shares.
Government Ownership	(±)	***GOV_OWN***	The percentage of the number of total shares held by government investors of the total number of a firm's shares.
Financial institution Ownership	(±)	***FIN_INST_OWN***	The percentage of the number of total shares held by financial institutional investors of the total number of a firm's shares.
Auditor industry specialisation: Auditor Market Share (enhanced fee scenario)	(±)	***ISPEC1***	*ISPEC1* is a dummy variable coded as 1 if *ISPEC1* percentage is higher than the market share cut-off (10%) of the industry's total audit fees, 0 otherwise calculated as follows: *ISPEC1* = $\frac{\sum_{J=1}^{Jik} \mathrm{Xijk}}{\sum_{i=1}^{Ik}\sum_{j=1}^{Jik} Xijk}$ Where: *ISPEC1* market share of audit firm *i* in industry *k; X* = audit fees*;* *i*= auditor; *k*= industry; *and j*= client.
Auditor industry specialisation: Client Portfolio Share (reduced fee scenario)	(±)	***ISPEC2***	*ISPEC2* is a continuous variable measuring the auditor's percentage of each industry group's total audit fees measured as follows: *ISPEC2* = $\frac{\sum_{J=1}^{Jik} \mathrm{Xijk}}{\sum_{K=1}^{k}\sum_{j=1}^{Jik} Xijk}$ Where: *ISPEC2* portfolio share of industry *k* for auditor *i*; *X* = audit fees; *i*= auditor; *k*= industry; and *j*= client.

(This Table is continued on the next page)

(*Table 3.5. Continued)*

Variable	Expected sign	Label	Definition
Weighted MS	(±)	***WMS-Cutoff***	*WMSCutoff = WMS > [ISPEC1_Cut-off] * (ISPEC2_PS Cut-off),* Where: *WMS= ISPEC1* ISPEC2* *ISPEC1_Cut-off =(1/N) * 1.2* *ISPEC2_PS Cut-off = (1/K)* Where, *N* = number of audit firms in a given industry; *K* = number of industries that an audit firm serves. *WMS-Cutoff* in the current study is a dummy variable coded as 1 if (*ISPEC1* ISPEC2)* higher than (*ISPEC1_Cut-off * ISPEC2_PS Cut-off),* 0 otherwise.
Corporate industry type	(±)	***INDS***	Dummy variable coded as 1 if the firm is financial institution, 0 other otherwise.
GFC	(-)	***PRECRISIS***	Dummy variables coded as 1 the for the pre-crisis period (2005-2007), 0 otherwise.
GFC	(+)	***POSTCRISIS***	Dummy variables coded as 1 the for the post-crisis period (2010-2018), 0 otherwise.
Client size	(+)	***LnASSET***	The natural Log of a firm's total assets
Number of subsidiaries	(+)	***SUBS***	The number of firm's s*(This Table is continued on the next page)*
Loss	(+)	***LOSS***	Dummy variable coded as 1 for firms with a net income less than 0, 0 otherwise.
Return on investment	(+)	***ROI***	Net income by total investments
Leverage	(+)	***LEV***	Total debt divided by the total assets
Growth ratio	(-)	***GROWTH***	Current year's sales to last year's sales.
Big 4 audit firms	(+)	***BIG4***	Dummy variable coded as 1 if the audit firm is one of the Big 4 audit firms (PwC, KPMG, Deloitte, and E&Y), 0 otherwise.
Auditor tenure	(+)	***CHANGE***	Auditor tenure of three years, coded 1 if the audit firm did not change, 0 otherwise.
Unqualified opinion	(-)	***UNQUALIFIED***	Dummy variable coded 1 if the firm receives an unqualified opinion, 0 otherwise.
IndFE			Industry fixed effects
YearFE			Year fixed effects
ε.			Error term

3.8. Summary

This chapter discussed and justified the study's chosen philosophy and methods and how they used to achieve the research aim. Empirical evidence is provided on the nature of the relationship between FVD on one hand and the impact of several moderators on this relationship on the other. Moderators include such factors as ownership structure, auditor industry specialisation, corporate industry type and the GFC. The chapter also explains the sample selection procedures and the final number of accepted observations for the designated study period (2005 - 2018). The number of accepted firms reached 222 firm over these 14 years (3108 firm-year observations). The following chapters analyse the relationship between FVD and audit fees using various statistical tests that are employed by prior literature.

CHAPTER 4: FAIR VALUE DISCLOSURE AND AUDIT FEES: RESULTS AND DISCUSSION

4.1. Introduction

This chapter presents the empirical analysis results and discussion on four objectives of the current study, specifically the relationship between FVD and audit fees. Moreover, examining the variance in the relationship across various industries and the crisis periods to identify predictable differences in audit fees accordingly.[19] Descriptive statistics, univariate analysis, correlation matrix and multivariate analysis using OLS regression are all used to meet the objectives of the current study. Moreover, a number of robustness checks were employed to improve the validity of the main analysis and robustness of the regression results. The chapter is organised as follows: Section 4.2. Descriptive Statistics; Section 4.3. Univariate Analysis; Section 4.4. Correlation Matrix; Section 4.5. Multivariate Analysis; Section 4.6. Additional analysis and robustness checks; and Section 4.7. Summary.

4.2. Descriptive Statistics

Table 4.1 summarises the descriptive statistics including mean, median, standard deviation, minimum, maximum, skewness and kurtosis of all variables used in the empirical analysis (pooled for years 2005–2018). The dependent variable is audit fees (*LnAFEES). LnAFEES* has a mean value of 9.127 and median value of 9.048 with a low standard deviation 1.009. Whereas the average *LnAFEES* ranged from 12.412 to 6.908, suggesting that any variation in audit fees amongst Jordanian listed firms is in fact modest[20]. With respect to the independent experimental variables, the result regarding the presence of FVA variable (*FVA*) shows that almost 0.78 of Jordanian firms are fair value-oriented; however, 0.22 have not yet adopted FVA, but rather still employ the HC model (see Figure 4.1).

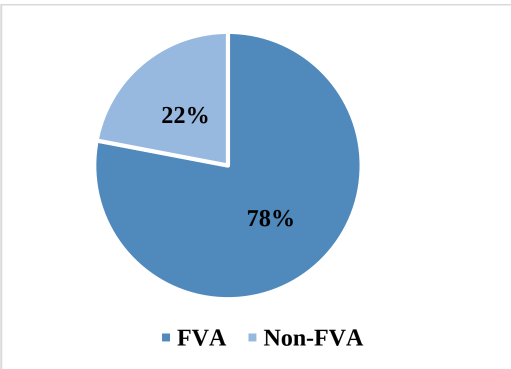

Figure 4.1. Fair Value Application Status by the Sample

[19] This chapter emphasises testing research objectives 1, 2, 5 and 6.
[20] The mean of the total audit fees over the study period is JD31,273 which equates to US$44,109.

The proportion of total fair-valued assets (*FVA_TA*) has a mean of 0.096 and median value of 0.024 with a low standard deviation 0.163, whereas the maximum and minimum values are 0.804 and 0[21]. The results suggest the magnitude of fair-valued assets in Jordanian firms is almost 0.10, which is lower than those reported by Ettredge et al. (2014) in the US and Alexeyeva and Mejia-Likosova (2016) in the EU who reported 0.17 and 0.31, respectively, where the capital market is substantially different than in a small and developing nation like Jordan. Moreover, Ettredge et al.'s (2014) and Alexeyeva and Mejia-Likosova's (2016) studies are cross-country in nature, covering the US and EU. Thus, the mean of *FVA_TA* has to be higher than the mean of the current study which focused solely on Jordan.

Regarding the proportion of total fair-valued assets through the three level hierarchy inputs, the mean values of Level 1 (*FVA1_TA*), Level 2 (*FVA2_TA*), and Level 3 (*FVA3_TA*) are 0.072, 0.008, and 0.002 and median values of 0.006, 0.000, and 0.000, respectively. On average the maximum and minimum values ranged as follows: Level 1: 0.663 and 0, Level 2: 0.220 and 0, and Level 3: 0.072 and 0. Accordingly, Level 1 assets constitute the overwhelming type of fair-valued assets held by Jordanian firms followed by Level 2 and lastly Level 3 (see Figure 2.4). The aggregated variable *FVA23_TA* has mean value of 0.013 with 0.000 median. Hierarchy average values are close to the values of *FVA1_TA*, *FVA2_TA*, and *FVA3_TA*: 0.09, 0.07, and 0.02, respectively, reported in Lin et al. (2017) and 0.06, 0.07, and 0.01, respectively, addressed by Huang et al. (2020). Likewise, hierarchy magnitudes presented in the current study are consistent with Alexeyeva and Mejia-Likosova (2016) who reported that the mean of the proportion of fair-valued assets is 0.31 broken down into 0.17 Level 1, 0.10 Level 2 and 0.05 Level 3. The values reported in other studies are relatively higher than those presented in Table 4.1 due to a number of institutional environmental factors, such as culture, religion, jurisdictional contexts, laws, and governmental regulations that control the quantity and quality of FVD (Busso 2014; Sundgren et al. 2018).

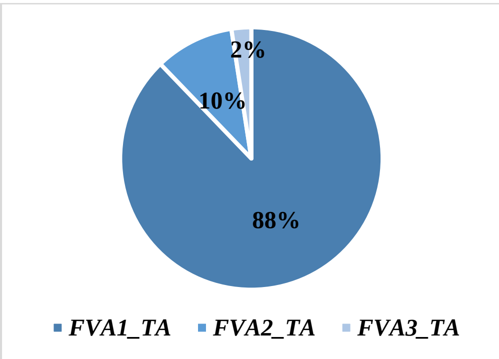

Figure 4.2. Fair Value Inputs Percentage of Total Proportion of Fair-Valued Assets

[21] *FVA_TA* reflects the sum of financial assets measured with the fair value model. Financial assets disclosed by Jordanian firms are classified under either: AFS, AFT and FVO. Similar to Fiechter and Novotny-Farkas's (2017) analysis, the untabulated descriptive analysis confirms that AFS assets constitute the majority of financial assets at 70%, then AFT assets at 22%, and lastly FVO at 8%.

Regarding the corporate industry type (*INDS*) variable the analysis confirms that 0.54 of the sample belongs to the finance industry, while 0.46 is part of the non-finance industry (see Figure 4.3 below). Correspondingly, the finance industry is the predominant one of the whole sample. Noticeably, the majority of the sample is in the post-crisis period (*PRECRISIS*) at 0.64; however, 0.21 is in the pre-crisis (*POSTCRISIS*) phase.

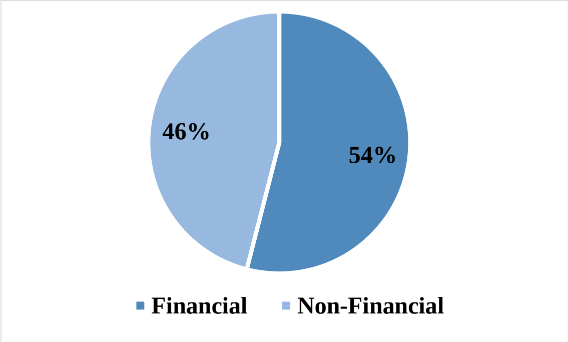

Figure 4.3. Sample Distribution by Industry

With respect to the control variables, following Hay et al. (2006) they are grouped into three main categories: client attributes, auditor attributes and engagement attributes. First, for client attributes the logarithm firm size (*LnASSET*) is widely dispersed, ranging from 0.13 to 0.22 with a mean value of 17.145, a median value of 16.918 and a low standard deviation 1.724. The mean values of return-on-investment ratio (*ROI*), leverage ratio (*LEV*) and sales growth ratio (*GROWTH*) are 1329, 1378, and 1.405 and the median values are 1319, 1358, and 1.002, respectively. The result of loss (*LOSS*) reveals that around 0.37 firms in the total sample report loss relative to 0.43 which report a profit for the fiscal year. The analysis confirms that the average subsidiaries ranged between 0 – 17 subsidiaries. Second, for auditor attributes (*BIG4*), the analysis asserts that about 0.37 of the sample firms are audited by Big4 compared to those audited by non-Big 4 including: international affiliations or local audit firms of 0.63. Third, for engagement attributes, it appears that Jordanian companies that change (*CHANGE*) their auditor every three years is around 0.55. This result is consistent with the JSC instructions which required audit firms to rotate the head of the audit team at least once every four years to ensure auditor independence (Abdullatif & Al-Rahahleh 2020). Concerning auditor opinion, i.e. (*UNQUALIFIED*) variable, the result emphasises that 0.85 of Jordanian businesses received an unqualified audit opinion relative to 0.15 those that received a qualified one with mean value of 0.847 and median value of 1 and low standard deviation of 0.360.

Table 4.1. Descriptive Statistics

Variable	Obs	Mean	Median	Std. Dev.	Min	Max	Skewness	Kurtosis
Experimental Variables*								
LnAFEES	3,108	9.127	9.048	1.009	6.908	12.412	0.820	4.572
FVA	3,108	0.775	1.000	0.418	0.000	1.000	-1.316	2.731
FVA_TA	3,108	0.096	0.024	0.163	0.000	0.804	0.308	3.691
FVA1_TA	3,108	0.072	0.006	0.136	0.000	0.663	0.083	2.550
FVA2_TA	3,108	0.008	0.000	0.033	0.000	0.220	0.267	3.726
FVA3_TA	3,108	0.002	0.000	0.010	0.000	0.072	0.197	4.011
FVA23_TA	3,108	0.013	0.000	0.052	0.000	0.815	0.412	0.531
INDS	3,108	0.536	1.000	0.499	0.000	1.000	-0.145	1.021
PRECRISIS	3,108	0.214*	0.000	0.410	0.000	1.000	1.393	2.939
POSTCRISIS	3,108	0.643	1.000	0.479	0.000	1.000	-0.596	1.356
Control Variables*								
LnASSET	3,108	17.145	16.918	1.724	13.185	22.076	0.664	3.780
ROI	3,108	1329	1319	756.705	29.000	2590	-0.028	1.808
LEV	3,108	1378	1358	811.801	32.000	2763	0.035	1.782
GROWTH	3,108	1.405	1.002	0.926	-2.865	22.530	-0.395	4.659
LOSS	3,108	0.368	0.000	0.482	0.000	1.000	0.546	1.298
SUBS	3,108	1.841	1.000	0.828	0.000	17.000	0.746	2.690
BIG4	3,108	0.368	0.000	0.482	0.000	1.000	0.548	1.301
CHANGE	3,108	0.545	1.000	0.498	0.000	1.000	-0.181	1.033
UNQUALIFIED	3,108	0.847	1.000	0.360	0.000	1.000	-1.926	4.710

Note: *following Ettredge et al. (2014) and Alexeyeva and Mejia-Likosova (2016) and for the purpose of the current study, all continuous variables are winsorized at the 1% and 99% levels each year to reduce the influence of potential outliers in the sample.*
** 14% of the sample placed in the during-crisis period which is intentionally excluded from the regression as this period indicates uncertain time for analysis and may lead to bias analysis results (Alexeyeva & Svanström 2015; Tama-Sweet & Zhang 2015).*
Where: FVA= dummy variable coded as 1 if firm's assets are reported in fair values, 0 otherwise. FVA_TA = Firm's total fair-valued assets deflated by total assets. FVA1_TA, FVA2_TA, FVA3_TA = Firm's total fair-valued assets using Level 1, Level 2, and Level 3 inputs deflated by total assets. FVA23_TA = the sum of firm's total fair-valued assets using (Level 2, and Level 3 inputs) deflated by total assets.
All variables are defined in Table 3.5 of Chapter 3.

4.3. Univariate Analysis

4.3.1. Univariate Analysis: Fair Value vs Non-Fair Value Firms

Table 4.2 presents the univariate analysis results using both the parametric independent t – test (Welch's approximation) and nonparametric (Mann-Whitney U–test)[22] presenting the significant difference (*p* – value) in mean and mean rank values of a range of variables amongst two sub-samples: fair value model versus cost model firms using *FVA* variable [23]. Following Yao et al. (2015), Sangchan et al. (2020) and Lin et al. (2017), Table 4.2 highlights the significant differences in the mean and mean rank of the dependent variable *LnAFEES* and all control variables (*LnASSET, ROI, LOSS, LEV, GROWTH, SUBS, BIG4, CHANGE, UNQUALIFIED*) across the two sub-samples. Based on the analysis results, there are 172 (77% of total sample)

[22] Untabulated two-sample Wilcoxon rank-sum (Mann-Whitney) test is conducted and confirmed the results presented in Table 4.2.
[23] The Univariate test is conducted using *IBM SPSS Statistics 25 software*.

fair value model firms, whereas 50 (23% of total sample) are cost model firms listed on the ASE throughout the study period (2005 – 2018).

Based on the analysis, the mean and mean rank difference of audit fees are highly significant (*t – value = -20.313, z – value = -20.409*). The mean of audit fees of fair value sample is 9.33% which is significantly higher than the cost sample at 8.47%. This result is consistent with agency theory where higher risks of inherent uncertainties emerged following the application of the fair value model caused by management bias. Therefore, auditors respond to this greater complexity and risk in auditing fair values by spending additional time and effort, ultimately demanding higher audit fees (Stice 1991; Ettredge et al. 2014a).

Regarding the control variables, first, the client attributes including client complexity and risk characteristics. Starting with client complexity indicators, here the mean difference of the log of assets of fair value model sample is 17.31%, higher than cost model sample 16.62%. Fair value firms typically have larger assets, and the log of assets is found to be highly significant (*t – value = -9.265, z – value = -8.473)*. This finding supports the fact that large firms are more likely to adopt the fair value model to attract investors and increase their capital through sending positive signals to stakeholders on their stated compliance with IAAS (Sangchan et al. 2020). The findings, moreover, confirm that fair value model firms are more likely to have higher subsidiaries compared to cost model firms, where the mean of the subsidiaries for the fair value sample is 2.06% which is statistically higher than the cost model of 1.25% (*t – value = -5.812, z – value =-6.546*).

With respect to client risk characteristics, the mean and mean rank difference of return on investment, leverage, sales growth ratios and loss between the two sub-samples are significant. The outcome indicates that fair value firms are more likely to have higher return on investment (*t – value = -7.358, z – value = -6.283*) compared to cost model firms, where the mean of return on investment of fair value model firms' is 1382, higher than cost model firms' 1145. Higher leverage (sales growth) ratio also documented for the fair value model firms compared to cost model firms, where the mean leverage (sales growth) ratios of fair value model firms are 1421 (1.47) which is considered significantly greater than the cost model at 1230 (1.19). The mean difference of the ratios is significant with *t – value = -5.5082, z – value = -3.289* (*t – value = -2.300, z – value = -3.896*). Conversely, higher loss mean is documented to cost model firms at 43% compared to the fair value model firms at 35% and statistically significant with *t – value = 3.846, z – value = -3.838*. These findings highlight the fact that firms making profits are more likely to embrace the fair value model than firms that do not. This is because of their going concern attitude and their ability to deal with complex issues and the additional costs brought about by this adaptation (Hay et al. 2006; Sangchan et al. 2020). This supports the fact that larger, more complex, and financially successful firms are more likely to adopt FVA to have a uniform financial reporting framework. Doing so shows stakeholders the high-quality financial information and therefore, increases the opportunity of getting additional funding (Abdullatif & Al-Rahahleh 2020).

Second, the auditor attributes, specifically, auditor type known as Big4 audit firms is found with a higher mean and mean rank for the fair value model firms 39% compared to cost model firms at 28%. The difference between the two sub-samples is statistically significant (*t – value = -5.225, z – value = -5.203*). The result is consistent with the fact that fair value firms are more likely to hire Big4 audit firms to get high-quality audits to constrain any information asymmetry problems which might compromise the quality of published financial information. Specifically, Big4 audit firms have highly qualified, expert, and well-trained auditors to deal with the complexity of fair value figures. In this respect and according to Keefe et al. (1994), Big4 auditors provide high quality accounts because they comply with IAS. Third, the engagement attributes, the mean and mean rank of auditor tenure (unqualified opinion) are higher for fair value model firms at 55% (85%) compared to cost model firms at 54% (83%); however, they are not statistically significant *t – value = -0.48, z – value = -0.477 (t – value = -1.05, z – value = -1.048).* As expected, unqualified opinion is an indicator of reliable firms' financial information, implying that such types of firms are more likely to comply with IAAS disclosure requirements including the fair value model to signal their high-quality financial information to stakeholders (Sangchan et al. 2020). Moreover, since auditor tenure impacts are considered to be a key information quality indicator, most firms that employ auditors for three years belong to the fair value sample where expert auditors produce high-quality audits (Almutairi et al. 2009).

Table 4.2. Univariate Analysis: Presence of Fair Value Disclosure

Variable	Mean		*t* – value (sig)	Mean Rank		*z* - value (sig)
	Fair Value Model (*FVA = 1*) N = 172 firm	**Cost Model (*FVA = 0*) N = 50 firm**		**Fair Value Model (*FVA = 1*) N = 172 firm**	**Cost Model (*FVA = 0*) N = 50 firm**	
LnAFEES	9.330	8.470	***-20.313****	1732	946	***-20.409****
LnASSET	17.310	16.620	***-9.265****	1628	1302	***-8.473****
ROI	1382	1145	***-7.358****	1609	1367	***-6.283****
LOSS	0.350	0.430	***3.846****	1527	1650	***-3.838****
LEV	1421	1230	***-5.508****	1583	1456	***-3.289****
GROWTH	1.470	1.190	***-2.300***	1588	1438	***-3.896****
SUBS	2.060	1.250	***-5.812****	1608	1369	***-6.546****
BIG4	0.390	0.280	***-5.225****	1592	1425	***-5.203****
CHANGE	0.550	0.540	-0.480	1558	1542	*-0.477*
UNQUALIFIED	0.850	0.830	-1.050	1560	1535	*-1.048*

, ** and * denote significance at the 0.10, 0.05 and 0.01 levels, respectively.*
Where: FVA= dummy variable coded as 1 if firm's assets are reported in fair values, 0 otherwise.
All variables are defined in Table 3.5 of Chapter 3.

4.3.2. Univariate Analysis: Audit Fees Difference

Table 4.3 refers to the univariate analysis and it summarises the independent *t* – test (Welch's approximation) and two sample *z* – test of the mean difference in log of audit fees among various sub-samples and time periods, such as fair value voluntary versus compulsory and financial versus non-financial industry[24].

Panel A shows the univariate analysis results amongst the two periods; fair value voluntary versus compulsory using *FVA_COMPULSORY* variable to identify the two sub-samples. *FVA_COMPULSORY* dummy variable coded as 1 for the compulsory application of FVA over the period (2009 – 2018), 0 otherwise (the voluntary application of FVA over the period 2005 – 2008). The period of 2005 – 2008 was the first application of fair value by Jordanian firms following IAS 39. During this period, IAS 39 required using FVA without obligations, thus fair value was a voluntary decision taken by businesses in Jordan and mostly used by the finance industry (see Alexeyeva & Mejia-Likosova 2016; Chapter 1, section 1.2.2 for more insights). However, since 2009 the application of FVA has dramatically expanded following releasing the modified version of IFRS 7 which forced firms to provide detailed disclosure on FVMs through the three levels hierarchy (Level 1, Level 2 and Level 3). Correspondingly, hierarchy disclosure became compulsory since that time. Obviously, the mean of the log of audit fees of the compulsory period is 9.16% which is higher than the voluntary period 9.00%. Statistically, the difference on audit fees mean is highly significant (*t – value = -3.47, z – value = -3.494*). Hence, based on this result it can be said that higher audit fees are paid by Jordanian firms during the period following the amended IFRS 7 (Tahat et al. 2016). This outcome supports the fact that the greater FVD led to more intentional and/or unintentional misstatement and fraud by managers. In this respect, when the agency problem exists, auditors need more time to ensure managers' evaluations regarding the uncertain FVE are correct, and therefore require expensive audit fees (Griffith et al. 2015; Glover et al. 2019).

Following Lin et al. (2017) and Huang et al. (2020), *Panel B* presents the univariate analysis results amongst the two sub-samples (financial versus non-financial industry) using *INDS* variable. Here, there are 119 firms (54% of the total sample) of the sample belonging to the finance industry, while 103 (46% of the total sample) are in the non-finance industry. Statistically, the mean difference between each sub-sample is highly significant (*t – value = -7.834, z – value = -8.168*). The mean of the financial sample is 9.273% which is higher than the non-financial 8.979%. This result supports the fact that higher audit fees are paid by the finance industry where a high level of fair value standards application and a greater level of IFRS compliance occurs. This is in addition to the higher usage of financial instruments in this industry, particularly

[24] The univariate analysis for audit fees is conducted using *Stata software*.

financial assets (Tahat et al. 2016, 2018). Collectively, this leads to a high level of audit complexity and risk, and time-consuming work for auditors (Simunic 1980; Matthews & Peel 2003; Hay et al. 2006; Stein et al. 1994). This finding agrees with some scholars who suggest that financial companies are more complex than non-financial ones concerning the application of FVA where the agency problem is evident (Lin et al. 2017; Taylor & Simon 1999).

Table 4.3. Univariate Analysis: Audit Fees

	Mean	**SD**	**Mean**	**SD**			
Panel A: Fair Value Voluntary vs. Compulsory							
DV	**Compulsory** *FVA_ COMPULSORY = 1* N = 10 years		**Voluntary** *FVA_ COMPULSORY = 0* N = 4 years		**Mean difference**	***t* - stat**	***z* - stat**
LnAFEES	9.16	0.021	9.00	0.917	-0.153	***-3.47****	***-3.494 ****
Panel B: Financial vs. Non-Financial Industry Firms in Relation to Audit Fees							
DV	**Financial** *INDS= 1* N = 119		**Non-financial** *INDS= 0* N = 103		**Mean difference**	***t* - stat**	***z* - stat**
LnAFEES	9.273	1.161	8.979	0.887	-0.294	***-7.834****	***-8.168****

, ** and * denote significance at the 0.10, 0.05 and 0.01 levels, respectively.*
Where: FVA_COMPULSORY= dummy variable coded as 1 for the IFRS 7 period (2009 – 2018), 0 otherwise. INDS= dummy variable coded as 1 if firm belongs to financial industry, 0 otherwise.

4.4. Correlation Matrix

Table 4.4 below presents the Pearson and Spearman correlation matrix results amongst the dependent and independent variables to examine the bivariate association between the sample variables. As preceding the multivariate analysis, the test for multicollinearity ensures there is no correlation problem between the independent variables used in each model (Chen 2012). For this purpose, the correlation coefficients between the independent variables below 80% should not cause bias in regression estimates due to multicollinearity (Alexeyeva & Mejia-Likosova, 2016). As shown in Table 4.4 below, the bivariate analysis confirms that the correlation coefficients of *LnAFEES* with fair value variables (*FVA, FVA_TA, FVA1_TA, FVA2_TA, FVA3_TA*) are all significant and positive. The analysis also confirms that corporate industry type (*INDS*) and both crisis proxies employed in this study (*PRECRISIS* and *POSTCRISIS*) are significantly associated with the magnitude of audit fees. Correlation analysis further shows that other control variables (*LnASSET, ROI, LOSS, LEV, GROWTH, SUBS, BIG4, CHANGE*) are significantly associated with audit fees while, the correlation is not significant in relation to the *UNQUALIFIED* variable. Interestingly, the correlation coefficient between the independent variables used in each model confirms that the independent variables are generally not correlated. However, the highest correlation is found between *LOSS* and *ROI* (-0.576); while the mean of the Variance Inflation Factor (VIF) test does not show any potentially serious multicollinearity problem, where the mean VIF of each model is below 2.

Table 4.4. Correlation Matrix

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	***LnAFEES***	*1*	*.352***	*.012*	*.001*	*.115***	*.074***	*.141***	*-.062***	*.038**	*.718***	*.235***	*-.186***	*.421***	*-.051***	*.271***	*.487***	*.096***	*-.027*
2.	***FVA***	*.366***	*1*	*.318***	*.286***	*.135***	*.121***	*.277***	*.000*	*.000*	*.165***	*.131***	*-.069***	*.098***	*.041**	*.105***	*.093***	*.009*	*-0.019*
3.	***FVA_TA***	*.209***	*.728***	*1*	*.862***	*.404***	*.215***	*.225***	*.110***	*-.108***	*-.132***	*.036**	*-.006*	*-.084***	*.062***	*-.027*	*-.037**	*-.002*	*-.067***
4.	***FVA1_TA***	*.210***	*.577***	*.807***	*1*	*.179***	*.125***	*.298***	*.132***	*-.128***	*-.175***	*.030*	*-.003*	*-.058***	*.063***	*-.020*	*-.054***	*.005*	*-.074***
5.	***FVA2_TA***	*.269***	*.340***	*.426***	*.434***	*1*	*.133***	*.120***	*-.005*	*-.003*	*.089***	*.026*	*-.010*	*.031*	*.004*	*-.004*	*.107***	*.032*	*.024*
6.	***FVA3_TA***	*.252***	*.195***	*.179***	*.143***	*.209***	*1*	*.137***	*-.015*	*-.002*	*.038**	*-.029*	*.039**	*.003*	*.011*	*.090***	*.047***	*-.019*	*-.005*
7.	***INDS***	*.110***	*.277***	*.371***	*.541***	*.433***	*.208***	*1*	*.000*	*.000*	*.041**	*-.166***	*.123***	*.120***	*.079***	*.117***	*.038**	*-.040**	*-.067***
8.	***PRECRISIS***	*-.105***	*.000*	*.098***	*.079***	*-.057***	*-.081***	*.000*	*1*	*-.701***	*-.045**	*.097***	*-.122***	*-.079***	*.079***	*-.104***	*-.138***	*-.361***	*-.120***
9.	***POSTCRISIS***	*.079***	*.000*	*-.112***	*-.090***	*.044**	*.091***	*.000*	*-.701***	*1*	*.030*	*-.094***	*.118***	*.083***	*-.076***	*.109***	*.113***	*.355***	*.149***
10.	***LnASSET***	*.609***	*.152***	*-0.017*	*-.065***	*.141***	*.200***	*-.006*	*-.055***	*.033*	*1*	*.278***	*-.263***	*.417***	*-.040**	*.325***	*.455***	*.097***	*.001*
11.	***ROI***	*.222***	*.131***	*.075***	*.036**	*.052***	*.029*	*-.166***	*.097***	*-.093***	*.257***	*1*	*-.576***	*.110***	*.039**	*-.108***	*.148***	*.028*	*-.139***
12.	***LOSS***	*-.169***	*-.069***	*-.036**	*-.022*	*-.030*	*-.004*	*.123***	*-.122***	*.118***	*-.233***	*-.576***	*1*	*-.086***	*-.042**	*.091***	*-.096***	*-.062***	*.192***
13.	***LEV***	*.376***	*.098***	*.004*	*.043**	*.184***	*.077***	*.118***	*-.078***	*.082***	*.349***	*.111***	*-.086***	*1*	*-.008*	*.013*	*.191***	*.086***	*.041**
14.	***GROWTH***	*.081***	*.070***	*.024*	*.045**	*.061***	*.009*	*.008*	*.130***	*-.133***	*.126***	*.274***	*-.292***	*.097***	*1*	*-.007*	*-.046**	*-.046***	*-.037**
15.	***SUBS***	*.319***	*.117***	*.038**	*.054***	*.087***	*.194***	*.093***	*-.135***	*.141***	*.387***	*-.073***	*.085***	*.061***	*-.032*	*1*	*.140***	*.058***	*.191***
16.	***BIG4***	*.487***	*.093***	*.017*	*.020*	*.171***	*.165***	*.038**	*-.138***	*.113***	*.430***	*.149***	*-.096***	*.190***	*.038**	*.167***	*1*	*-.048***	*-.017*
17.	***CHANGE***	*.101***	*.009*	*-.024*	*-.003*	*.007*	*-.010*	*-.040**	*-.361***	*.355***	*.099***	*.029*	*-.062***	*.086***	*-.055***	*.050***	*-.048***	*1*	*-.013*
18.	***UNQUALIFIED***	*.009*	*-.019*	*-.075***	*-.099***	*-.017*	*.014*	*-.067***	*-.120***	*.149***	*.038**	*-.140***	*.192***	*.041**	*-.113***	*.224***	*-.017*	*-.013*	*1*

Note: *this table presents both Pearson (upper catercorner) and Spearman (lower catercorner) correlation matrix results amongst the dependent and independent variables.*
***, * Correlation is significant at the 0.01, 0.05 level (2-tailed), respectively.*
All variables are defined in Table 3.5 of Chapter 3.

4.5. Multivariate Analysis

Since the deductive positivist approach recognises a preceding theoretical framework, regression analysis is used here as the primary tool to test the hypotheses. In this sense, the multiple linear regression seeks to test the effects of independent variables on the dependent variable. Particularly, it is the likelihood association between these variables. The initial equation of linear regression is as follows:

$$Y=\alpha + \beta X + \textit{error term}$$

Where:
Y is the dependent variable
α is the intercept
β is the coefficient of the estimate
X is the independent variables being investigated

Since the current study's main aim is to explore the relationship between FVD and audit fees, the study follows recent research which examined this relationship using the OLS regression technique (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a; Goncharov et al. 2014; Huang et al. 2020; Sangchan et al. 2020; Yao et al. 2015)[25]. OLS regression aims to reduce the value of residuals to the least possible. The OLS model pools all the observations and estimates the overall regression with a single overall intercept term, ignoring the cross-section and time series nature of the data and neglecting its panel (Gujarati & Porter 2009; Henderson & Kaplan 2000). OLS regression is superior to panel regression as the latter has some problems regarding estimation and inference, such as heteroscedasticity and autocorrelation (Wooldridge 2009). Although there are benefits of the panel data approach, it has not been used by most prior studies on the association between fair value and audit fees.

To conduct the OLS regression, the research data (pooled sample 2005 – 2018) has to meet five essential assumptions to be valid for the regression analysis (Chen et al. 2003; Hair et al. 2010). Regression assumptions tests include: first, Normality which assumes the normal distribution of the error terms (residuals); second, Linearity which indicates that the association between dependent and explanatory variables should be linear; third, Homoscedasticity which assumes constant error variance (Osborne 2010); fourth, Independent which indicates independence of error terms; and fifth, Multicollinearity which refers to non-exact collinearity among explanatory variables. The previous literature also stated that in the case of a large sample size, any mild violations of the OLS regression assumptions tests are robust and unaffected in various conditions (Glass 1996; Newman et al. 1989).

[25] To confirm the best estimator for the current analysis, the models were tested using panel data. First, the Hausman test chooses between fixed and random effects but it fails to reject the null hypothesis and confirms that random effects model is more appropriate where *P* – value of each model is highly insignificant and greater than 5% (untabulated Hausman *prob>chi2* ranged 0.34 to 0.78) (see *Appendix E: examples of Hausman test Stata outputs*). Then Breusch–Pagan Lagrange Multiplier test (LM) has been conducted to decide whether random effects or simple OLS regression is more appropriate for the multivariate analysis. Untabulated LM test *p* – value is highly insignificant and greater than 5% ($P = 0.1037$). Therefore, it is obvious that pooled data using the simple OLS regression is better for the multivariate analysis of the current study.

Therefore, to ensure the validity of the data to the OLS regression analysis, regression assumption tests are employed as follows. First, normal distribution of the data has been checked using a number of statistical graphical and numerical tools. The graphical tools test whether the data are normality distributed, such as P-P plot and Box plot (see *Appendix D, Figure D.1.1*)[26]. Additional visual examination is also performed using the plotted histogram for the normal distribution of the error terms (residuals) and the dependent variable (*LnAFEES)*. These results indicate that the data were approximately normally distributed. The residuals and dependent variable were closest to normal distribution (see *Appendix D, Figures D.1.2 – D.1.3*). The numerical tool and many statistical procedures are commonly used to evaluate the normality of the data in accounting literature, and often the Shapiro-Wilk test for normality is employed. The test assesses the hypothesis that data is normality distributed. The null hypothesis in this test is H0 = the distribution of residuals is normal (significant at the 5% level) (Shapiro & Wilk 1965). The test failed to reject the null hypothesis, untabulated *P – value* greater than 5% (*p-value* > 0.09812), given that the distribution of the residuals is normal.

Furthermore, the skewness and kurtosis were checked for all continuous variables[27] and presented in the descriptive statistics section above (see Table 4.1 of section 4.2)[28]. The examination of both statistics shows that the values of Skewness were within the acceptable range of -1.926 to 1.393 (Doane & Seward 2011). The Kurtosis values ranged from 1.021 to 4.710. These values are within the acceptable range to support normal distribution hypothesis (West et al. 1995). Importantly and following the fair value and audit fees literature (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a), all continuous variables are winsorized at the 1% and 99% levels each year to reduce the influence of potential outliers.

Second, this study also conducted a Scatterplot test of residuals to test for homoscedasticity, linearity, and independence error terms. The autocorrelation plot graph of the residuals was developed (see *Appendix D*, figures D.2.1)[29]. This result ensures that the assumptions of independence and homoscedasticity are satisfied. Finally, to test the potential of multicollinearity between the independent variables, both correlation matrix (i.e., Pearson and Spearman) and VIF tests are conducted before implementing the regression as discussed in section 4.4 (see Table 4.4). Overall, the correlation coefficients matrix confirms the independent variables are generally not correlated, and the values of VIFs of all regressions are less than 2. This leads to the conclusion that multicollinearity did not exist, and therefore the test for lack of multicollinearity is strongly satisfied.

Generally, the multivariate analysis is basically conducted using OLS multivariate regression technique controlling for the clustered-adjusted and robust standard errors using Stata software. Therefore,

[26] P-P plot is a graphical tool commonly used to compare two probability distributions by plotting their quantities against each other. The data to be normality distributed, the plotted points should approximately lie on a straight-line variable.

[27] According to Osborne (2010) the dummy variables are not subject to the normal distribution problem.

[28] The skewness and kurtosis are statistical tools used to test whether a distribution deviates significantly from the standard normal distribution (Osborne 2010).

[29] Figure D.2.1 of *Appendix D* shows the scatterplot of fitted values on residuals for the dependent variable (audit fees). Clearly, the figure shows that the errors have constant variance, with the residuals scattered randomly around zero. Moreover, figures (D.2.2 – D. 2.5) of *Appendix D* depict the plot of selected independent variables and regression residuals. The plotted points are evenly and randomly dispersed around the plot, thus indicating that the assumption of independence was satisfied.

following several studies (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. Li 2014; Goncharov et al. 2014; Huang et al. 2016; Sangchan et al. 2020; Yao et al. 2015) the conducted OLS regression models are all controlled by year and industry fixed effects to control for a potential variation in audit fees over time and amongst sector level (Alexeyeva & Mejia-Likosova 2016; Badia et al. 2017; De George et al. 2013; Ettredge et al. 2014a; Lin et al. 2017; Sangchan et al. 2020). To improve the validity of the OLS multivariate regression results, a number of robustness analyses and additional checks are carried out and presented in the following sections.

4.5.1. The Presence of Fair Value Disclosure: Regression Results and Discussion

Table 4.5 below summarises the results of the OLS regression analysis on the relationship between the presence of FVD and audit fees. The dependent variable used is the natural logarithm of total audit fees (*LnAFEES*) paid by the sample during the study period. The independent variable of interest is the presence of FVD (*FVA*). The *P* – value of the model is highly significant at the 0.01 level ($F = 25$). The fit of the regression model is relatively high (R^2 = 63%) suggesting good explanatory power of the current study model. The R^2 value of the current model is relatively high and similar to Sangchan et al. (2020) and Yao et al. (2015). It also compares well with those models of developing economies (see Khan et al. 2011; Abu Risheh and Al-Saeed 2014; Alhababsah 2019)[30]. Diagnostics do not suggest that a multicollinearity problem exists. The mean VIF of the tested model is less than 2, which significantly satisfied the collinearity condition for OLS regression (see Gujrati 2003, p. 339). Generally, the main aim of this analysis is to test the following hypothesis:

H1: There is a positive relationship between the presence of fair-valued assets and audit fees among Jordanian listed firms.

As expected, the regression results shown in Model (1) of Table 4.5 confirm that *FVA* has a significant positive coefficient at the 0.01 level *(Coeff. = 0.525, Robust t =17.08)* which confirms the fact that the presence of FVD by Jordanian firms' is positively significantly associated with audit fees. Consistent with auditing theory, the result confirms that the compliance with FVD requirements increases the complexity in the auditing process and wields a higher information load on auditors due to the risks of inherent uncertainties. For this reason, auditors respond to this greater complexity and risk in auditing fair values by offering additional time, effort and in some cases, they use their own valuation specialists, ultimately bearing higher auditing costs (Bradley & Sun 2021).

This result also compares well with previous scholars (see Sangchan et al. 2020; Yao et al. 2015) who came to the same conclusion. However, this finding is inconsistent with Goncharov et al.'s (2014) conclusion in the UK and US real estate industries. The inconsistent findings could be caused by the difference in the nature of fair-valued accounts examined here (financial assets) and in previous studies (non-current assets). Furthermore, the results may be driven by the nature of the real estate industry in the developed economies where most operating firms there are fair value-oriented. In this case, auditors

[30] According to Naser and Nuseibeh (2008), the accepted R^2 in audit fees research is between (60% – 80%).

are prepared well as they may be more familiar with auditing such controversial accounts for a long time. Thus, higher audit fees in such contexts might not be driven by the fact of auditing complexity and risk of fair values. In the real estate industry, the major audit risk is driven by the complex depression and impairment tests obligated by HC model, which require additional time and effort from auditors, ultimately leading to more expensive audit fees (Goncharov et al. 2014).

In relation to theory, the regression outcome is aligned with the integration of both agency and signalling theories, suggesting that the adoption of FVD results in raised agency costs since audit fees are considered to be an agency cost (Oyewo et al. 2020; Oyewo 2020). Auditors came under additional burden to provide an assurance of fair values prepared by managers to eliminate the information asymmetry problem to the least possible (Griffith 2020; Bradley & Sun 2021). They are acting as a monitoring tool that sends signals to stakeholders for the purpose of decision making. Consequently, auditors ask for expensive audit fees to compensate for their extra effort to assess reputational risks and confirm FVEs. Overall, the statistical result confirms the argument that implementing FVA is more challenging in developing countries including Jordan (He et al. 2012; Abdullatif & Al-Rahahleh 2020).

The nature of the relationship between FVD and audit fees in Jordan is significantly positive. The result is consistent with the remarkable improvements in the Jordanian government's application of FVA and the compliance with the disclosure requirements. As mentioned in previous chapters (see Chapter 1, section 1.3.2), the application of FVA caused significant problems in Jordan's capital market. The government responded to this situation with new legislation and improving the existing legislation in relation to the auditing profession and emphasis on FVA supervision. Such efforts have increased the workload of auditors and the complexity and the risk of auditing fair values which means expensive audit fees being charged. The overall result is consistent with the univariate analysis discussed above (see Table 4.2 of Section 4.3.1) implying that audit fees paid by fair value-oriented firms are statistically higher than those paid by historical cost-oriented firms in Jordan (Abdullatif 2016). Hence, *H1* is accepted[31].

Concerning the control variables, the magnitude and signs of all control variables are generally in line with previous literature (Sangchan et al. 2020; Alhababsah 2019; Abernathy et al. 2019). First, client attributes; client size (*LnASSET*), which is considered one of the major client complexity indicators, has a very significant positive coefficient at the 0.01 level (*Coeff. = 0.291, Robust t =26.74*) which supports the prior studies' assertion that auditors need to spend much time and effort in auditing such clients due to the large agency problem caused by the decentralised nature of these corporations (Ahmed & Goyal 2005). Furthermore, such corporations take more care of their superior reputation to get more loans from banks and the only way to guarantee continued funding is appointing high-quality auditors and paying audit premiums which sends a positive signal to stakeholders and improves disclosed financial

[31] Following Ettredge et al. (2014) and Abernathy et al. (2019), the analysis is also repeated using panel data analysis to exploit a strongly balanced panel methodology. The Random effects model controlled by year and industry fixed effects is selected to re-test *H1* using panel data regression (the *P – value* of Hausman test was never significant, see *Appendix E*). All results remain unchanged with those reported in the primary analyses where *FVA* was found significant with positive sign at the 0.01 level (*Coeff. = 0.546, Robust t =20.03*).

statements (Abernathy et al. 2019; MohammadRezaei et al. 2018; Ng et al. 2018). In Jordan, most large businesses are more likely to be controlled by the government which, in turn, causes paying higher audit fees to ensure a very low information asymmetry problem (Alzoubi 2018; Naser & Nuseibeh 2008; Alhababsah 2019).

The regression analysis of clients' subsidiaries (*SUBS*), which reflects another client complexity indicator, confirms a significant positive relationship at the 0.01 level (*Coeff. = 0.021, Robust t =4.89*) between *SUBS* and audit fees. The result confirms this kind of relationship since complex clients are more likely to be harder to audit. This, in turn, leads auditors to spending more time and effort to compensate for their time taken to understand client's diverse disclosure requirements, risk of financial misstatements, such as litigation risk and reputation impairment, and so they command higher fees (Simunic 1980). This stream of research (Hay 2013; Bryan & Mason 2016; Joshi & Al-Bastaki 2000; Carson et al. 2004) also asserted that clients who have subsidiaries operating in other countries are sophisticated operations and thus need more effort and time for auditors to go through the numerous auditee's locations where different financial reporting and disclosure frameworks exist. The regression results are in line with scholars who investigated developing countries including Jordan (MohammadRezaei et al. 2018; Naser & Hassan 2016; Hassan & Naser 2013; Naser & Nuseibeh 2008). Such scholars stated that auditing firms' branches operating in other countries require additional auditing tests and assurance to confirm that the consolidated financial statements are of high quality; this ultimately drives audit fees up.

With respect to the balance sheet ratios and client risk indicators, such as return on investment (*ROI*), leverage (*LEV*), client loss (*LOSS*), and growth ratio (*GROWTH*), the regression results support the theoretical evidence confirmed in the auditing literature. The regression analysis finds a significant positive (negative) association between *ROI*, *LOSS*, *LEV* and (*GROWTH*) and audit fees with *Coeff. = 0.000, 0.070, 0.000* and *(-0.012), Robust t = 3.13, 2.04, 10.65* and *(-2.51),* respectively. Regarding *ROI, LOSS* and *GROWTH* which refer to client profitability status, the current regression findings support the existing audit fees literature regarding the nature of profitability's (*ROI* & *LOSS*) association with audit fees; firms reporting high profits are more likely to pay larger fees (Joshi & Al-Bastaki 2000; Francis et al. 2017; Salehi et al. 2019). Such firms are subject to provide additional disclosures on their financial metrics to convey their profitable performance and reduce agency costs. In this sense, disclosing further information required further effort, time, and expense from the auditors' side. Profitable firms in Jordan attempt to bear higher audit fees, in an attempt to signal their profitability to stakeholders (Al-Harshani 2008; Abu Risheh and Al-Saeed 2014). In the same vein, sales growth ratio (*GROWTH)* refers to a low level of risk for auditor clients which resulted in low audit fees (Hay et al. 2006; Minutti-Meza 2013). Firms with high *GROWTH* are more likely pay lower audit fees as a trade-off for auditor's litigation risk (Alhadab 2018; Cahan & Sun 2015; Sikalidis & Leventis 2017).

On the other hand, several analyses (Abernathy et al. 2019; Craswell et al. 1995; Francis et al. 2017; Huang et al. 2016; Lin et al. 2009; Simunic 1980) confirm that clients performing poorly (*LOSS*) lead to a higher level of risk for the auditor, which eventually leads to the auditor being more cautious and spending more effort and time which results in larger audit fees; this is the case of Jordanian firms (Afify 2009; Alhababsah 2019). With respect to leverage ratio, the regression findings are in line with the majority of prior studies' findings reported a significant positive association between clients having suffered high leverage and audit fees (Chaney et al. 2004; Chen et al. 2007; Evans et al. 2014; Hay & Knechel 2010; Hay et al. 2006; Ittonen & Peni 2012; Kumarasiri & Fisher 2011; Shan & Troshani 2016). Clients with high leverage requiring special attention from auditors when assessing audit risk. Thus, auditors in this case attempt to spend more time for the additional effort provided to avoid audit risk linked with their clients who suffer a poor financial position. So, auditors ask for an audit fee premium to be paid for such risks. The same conclusions found by prior studies are relevant to Jordan (Naser & Nuseibeh 2008; Abu Risheh & Al-Saeed 2014).

Second, auditors' attributes, Big4 audit firm variable (*BIG4*) were found to be highly significant and positive at the 0.01 level (*Coeff. = 0.424, Robust t =15.85*). *BIG4* is widely tested in the audit fees literature, and most published work confirms almost the same findings. The current regression result support findings (Alzoubi 2016; Huang et al. 2016; Francis et al. 2017; Salehi et al. 2019; Wang et al. 2014) in different contexts including developing countries, like Jordan. Big4 firms are more likely to ask for expensive audit fees for many reasons, such as maintaining their reputation, avoiding litigation risks, maintaining existing clients and increasing the number of clients. Such firms are more likely to provide high-quality audits because of their regular training programmes and expertise.

Third, engagement attributes, auditor tenure (*CHANGE*) has been found to be significant and positively associated with audit fees (*Coeff. = -0.098, Robust t =-3.77).* In line with the most studies on audit fees, the current study, again supports them on this finding as well because auditors with long tenure gain client-specific knowledge which leads to better-quality audits and then earning higher fees (Ball et al. 2015; Salehi et al. 2019; Almutairi et al. 2009; Chi et al. 2009; MohammadRezaei et al. 2018). The Unqualified auditor opinion (*UNQUALIFIED*) is found to be significant and negatively *(Coeff.* = -0.080, *Robust t* = -*2.20*) associated with audit fees. This result agrees with most audit fees studies. This stream of research considered unqualified auditor opinion is a way that reflects audit client risk (Abernathy et al. 2019; Kausar & Lennox 2017). Unqualified opinion confirms the fact that clients' financial statements are prepared fairly; thus, auditors need less time and effort in auditing process, lower audit fees are charged correspondingly (Cahan & Sun 2015; Leventis et al. 2013). In Jordan, the majority of firms are family-owned ones where the agency conflict is limited; therefore, releasing a qualified opinion is less likely to happen. Ultimately, there is less incentive for auditors to spend more effort and time and this leads to lower audit fees (Abdullatif & Al-Rahahleh 2020).

Table 4.5. Result of OLS Regression: The Presence of Fair Value Disclosure

DV = *LnAFEES*	**Model (1)**
Variables	***Coeff. (Robust t)***
Intercept	***3.202*** ***(17.88)****
FVA	0.525 (17.08)***
LnASSET	0.291 (26.74)***
ROI	0.000 (3.13)**
LOSS	0.070 (2.04)**
LEV	0.000 (10.65)***
GROWTH	-0.012 (-2.51)**
SUBS	0.021 (4.89)***
BIG4	0.424 (15.85)***
CHANGE	0.098 (3.77)***
UNQUALIFIED	-0.080 (-2.50)**
Robust	***Yes***
Industry Fixed Effects	***Yes***
Year Fixed Effects	***Yes***
N	***3108***
Prob>F	***0.000***
F - Statistic	***(25)****
R^2	***62.70 %***
Mean VIF	***1.76***

Note: *this table presents the OLS regression of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on the presence fair value disclosure on firms' annual reports with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5, Chapter 3.

4.5.2. The Proportion of Fair Value Disclosure

Models (2 – 3) of Table 4.6 below provide the summary results of two regression models. Model (2) tests the relationship between the proportion of fair valued assets (*FVA_TA*) and audit fees (*LnAFEES*) paid by the sample during the study period. Model (3) tests the relationship by breaking the proportion of fair-valued assets (*FVA_TA*) into three fair value level inputs: (*FVA1_TA)*, (*FVA2_TA)* and (*FVA3_TA*) variables. Table 4.6 shows that the *P* – value of Model 2 (Model 3) is highly significant at the 0.01 level $F = 25$ ($F = 27$). The R^2 for the models ranged from 59% to 60% which indicates the models wielded reasonable explanatory power. The current models' R^2 compare well pervious literature (see Sangchan et al. 2020; Alhababsah 2019). Diagnostics do not suggest that a multicollinearity problem exists. The mean VIF of the tested models is less than 2, which significantly satisfy the collinearity condition for OLS regression. Generally, the current regression analysis tests the following hypotheses:

Hypothesis 2_A: There is a positive relationship between fair-valued assets and audit fees among Jordanian listed firms.

Hypothesis 2_B: The relationship between fair-valued assets and audit fees is stronger for firms with greater ratios of the subjective fair-valued assets (Level 2 and Level 3) among Jordanian listed firms.

The regression results presented in Model (2) of Table 4.6 confirms that the association between the proportion of fair-valued assets and audit fees is highly significant at the 0.01 level (*Coeff. = 0.334, Robust t =4.66*). This result is aligned with the univariate analysis findings discussed above (see Panel A of Table 4.3 in section 4.3.2 above). The regression finding is also in line with previous studies' conclusion, such as Ettredge et al. (2014) and Yao et al. (2015). Collectively, with the passage of FVA, greater disclosures are required; thus, further time and effort to consider this inherent risks and complexity is correspondingly required from the auditors (McDonough et al. 2020). In contrast, this result is inconsistent with Alexeyeva and Mejia-Likosova (2016), Sangchan et al. (2020) and Goncharov et al. (2014). Specifically, Alexeyeva and Mejia-Likosova (2016) failed to find a significant relationship between the proportions of fair-valued assets on audit fees. In the meantime, Sangchan et al. (2020) and Goncharov et al. (2014) confirmed a significant association with a negative sign. The main cause of the ambiguous results is that such analyses used differently structured fair-valued assets from those employed in the current study (Ettredge et al. 2014a).

The result supports the agency theory notion in that auditors applying FVDs are the main party responsible for diminishing the risk of assets overestimated caused by the agency conflict (Bradley & Sun 2021; He et al. 2020). This finding indicates that auditors in Jordan expend more time and effort in evaluating fair-valued assets due to the complexity and risks they face. Furthermore, the result supports Abdullatif's (2016) and Abdullatif and AL-Rahahleh's (2020) arguments who asserted that fair value is aggressively used by Jordanian firms to serve managers' interests due to the agency problem. Consequently, this abuse caused significant problems in the Jordanian capital market and increased the volatility in share prices traded there. The reason behind this fraud and abuse is the lack of Jordanian active markets, weak corporate governance systems and the non-availability of guidelines on how fair value is to be measured and audited (Siam & Abdullatif 2011).

As discussed previously in Chapter 1, the situation of the lack of reliable FVMs that encouraged the government to establish specific regulations in relation to FVA may be the main reason behind the positive effect of the proportions of fair value on external audit fees (see Section 1.3.2 of Chapter 1). Releasing the new fair value regulations by the end of 2007, their modifications in 2011 and a much better auditing profession in Jordan 2014 all increased the workload of auditors and the complexity of dealing with controversial fair values. Therefore, Jordanian auditors spend more time detecting management fraud and misstatements. Increasing the credibility of a firm's financial reporting quality is considered to be a positive signal that helps stakeholders make decisions. Since the most controversial aspect of IFRSs is FVA (Ball 2016; Khlif & Achek 2016), this finding similarly consistent with Abu Risheh and Al-Saeed's (2014) conclusion that the audit fees paid by Jordanian firms are significantly associated with the application of IFRS. Thus, $H2_A$ is accepted.

Model (3) of Table 4.6 shows the statistical nature of the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees. The regression analysis confirms that fair value Level 1(Level 3) input is highly significant with a positive sign at the 0.01 (0.05) level with *Coeff. = 0.643, Robust t =8.12* (*Coeff. = 1.740, Robust t =2.04*). However, the regression analysis failed to find a significant association between the proportion of total fair-valued assets using Level 2 and audit fees with a positive coefficient (*Coeff. = 0.399, Robust t =1.410*). These results are highly aligned with the recent evidence by Huang et al. (2020) who confirmed the significant role of both Level 1 and Level 3 assets on accounting restatement. Likewise, Lin et al. (2017) concluded that reporting the less reliable fair values of financial assets (Level 3) causes significant risks of managerial manipulation and errors which subsequently leads to accounting restatement. Unlike the US banking industry evidence provided by Ettredge et al. (2014), where most complex and risky fair-valued asset inputs are those belonging to Level 2, the current study finds that the total portfolio of fair-valued assets is dominated by Level 1 which is in line with Alexeyeva and Mejia-Likosova (2016). Following Ettredge et al. (2014), fair value input level with a higher mean is more likely to have a strong explanatory power regarding audit fee. Consistently, the result means that Jordanian firms using Level 1 increases audit fees and the descriptive statistics above demonstrates that the mean of Level 1 is higher than both Level 2 and Level 3 (see Table 4.1 above).

Consistent with other research (Alexeyeva & Mejia-Likosova, 2016; Ettredge et al., 2014; Goncharov et al., 2014; Sangchan et al., 2020), Level 3 assets are significant with a positive sign. However, the finding in relation to Level 2 assets is quite similar to (Alexeyeva & Mejia-Likosova, 2016). The current finding is driven by two main facts: first, that Level 1 assets are the predominant type used in fair value portfolios of Jordanian firms; and second, regardless of the low mean of Level 3 assets, this is the most complex input level relative to Level 1 and Level 2 as confirmed recently (Sangchan et al. 2020; Huang et al. 2020; Oyewo 2020; Oyewo et al. 2020). In fact, due to the agency conflict between managers and owners, Level 3 assets are the fair value inputs requiring additional agency costs.

To identify whether there is a significant difference in the coefficients of fair value input levels, F – test has been undertaken following Alexeyeva and Mejia-Likosova (2016) and Ettredge et al. (2014). As shown in Table 4.6 below, the F – test confirms the highly significant difference between the three levels. Consistent with previous evidence (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a), F- test suggests that the coefficients of the three variables are not equal (*p-value = 0.000*). This means that fair-valued assets measured using different fair value input levels exert a different impact on audit fees in Jordan. F – test confirms that the coefficients on *FVA1_TA* and *FVA2_TA* are not distinguishable from each other's (*p-value = 0.429*). This agrees with other research (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a; Huang et al. 2020) that failed to find a significant difference between Level 1 and Level 2 assets. The coefficient on *FVA3_TA* is greater than Level 1 (Level 2) *p*-value = 0.000 (*p-value = 0.0446*). This conclusion supports prior researchs' conclusions (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a; Huang et al. 2020) in which low and highly uncertain fair-valued assets exert a different impact on audit fees paid by Jordanian firms.

Referring to theory, it can be concluded that the regression results are in line with agency theory where using highly uncertain and subjective fair values, such as Level 3 leads to rising agency costs, resulting in greater auditor effort to assess reputation and litigation risk (Griffith 2020; Bradley & Sun 2021). In such a case, auditors are more likely to hire valuation specialists due to their lack of valuation knowledge and experience in such complex accounts, especially in developing countries like Jordan (Abdullatif & Al-Rahahleh 2020). This situation leads to auditors bearing additional costs and litigation risks (Bratten et al. 2013; Sangchan et al. 2020). Overall, in Jordan, the risk of auditing uncertain FVMs has the potential to raise auditors' workload and audit prices, particularly for the less verifiable fair value inputs which increases auditors' burden and drives audit prices up (Abdullatif 2016). Hence, $H2_B$ is accepted[32].

Table 4.6. Result of OLS Regression: The Proportion of Fair Value Disclosure

DV = *LnAFEES* **Variables**	**Model (2)** ***Coeff. (Robust t)***	**Model (3)** ***Coeff. (Robust t)***
Intercept	***3.236*** ***(17.85)******	***3.086*** ***(16.81)******
FVA_TA	0.334 (4.66)***	
FVA1_TA		0.643 (8.12)***
FVA2_TA		0.399 (1.410)
FVA3_TA		1.740 (2.04)**
LnASSET	0.307 (27.29)***	0.314 (27.61)***
ROI	0.000 (5.29)***	0.000 (4.88)***
LOSS	0.110 (2.97)**	0.105 (2.84)**
LEV	0.000 (10.60)***	0.000 (10.54)***
GROWTH	-0.011 (-2.28)**	-0.011 (-2.33)**
SUBS	0.024 (5.50)***	0.023 (5.21)***
BIG4	0.423 (14.67)***	0.414 (14.47)***
CHANGE	0.098 (3.55)***	0.087 (3.16)**
UNQUALIFIED	-0.079 (-2.20)*	-0.079 (-2.19)*
Robust	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***
N	***3108***	***3108***
Prob>F	***0.000***	***0.000***
F - Statistic	***(25)******	***(27)******
R^2	***%58.86***	***%59.73***
Mean VIF	***1.77***	***1.73***

(This Table is continued on the next page)

[32] 1- Following Ettredge et al. (2014) and Abernathy et al. (2019), the analysis is also repeated using panel data analysis to exploit a strongly balanced panel methodology. The Random effects model controlled by year and industry fixed effects is selected to re-test $H2_{A\&B}$ using panel data regression (the *P – value* of Hausman test was never significant, see *Appendix E*). All results remain unchanged with those reported in the primary analyses where *FVA_TA* was found significant with positive sign at the 0.01 level *(Coeff. = 0.478, Robust t =6.56).*

2- It is worth mention that $H2_{A\&B}$ were re-tested excluding HC firms from the total sample. Untabulated regression results were not substantially different from ones reported in the main analysis. Moreover, following Lin et al. (2017) and Lawrence et al. (2011), as a robustness test, propensity-score matched research design (PSM) is employed to address the sample selection bias issue. The PSM is obtained through two steps. First, Model (1) used to predict the likelihood of a firm reporting non-zero *FVA*. Second, Model (2) matched each treatment firm (i.e., firms apply FVA) with a control firm (i.e., firms apply HC) with the closest propensity-score obtained in the first step. Untabulated results show similar evidence to the main analysis after controlling for the potential sample selection bias.

3- The coefficients of the control variables of both models (2 & 3) have the expected magnitude and signs consistent with prior literature.

(Table 4.6. Continued)

Coefficient comparisons for Model (3)	***F-stat***	***P-value***
FVA1_TA = FVA2_TA= FVA3_TA	***(29.33)******	***0.0000***
FVA1_TA = FVA2_TA	***(00.63)***	***0.4290***
FVA2_TA = FVA3_TA	***(03.11)*****	***0.0446***
FVA1_TA = FVA3_TA	***(38.60)******	***0.0000***

Note: *this table presents the OLS regression of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on the proportion of fair value assets and hierarchy inputs with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

4.5.2.1. DFBETA Analysis

Similar to Alexeyeva and Mejia-Likosova (2016); Ettredge et al. (2014)[33], it is noted that the coefficient of *FV3_TA* asserts that audit fees increase around 1.74% if the proportion *FVA3_TA* assets increase from 0 to 100%. This might appear high in this case[34].Therefore, DFBETA has been performed, which was proposed by Kohler and Kreuter (2012), to identify observations with the highest influence on the coefficient. Consequently, ten observations have been excluded from the total sample observations. Table 4.7 presents the regression analysis results after excluding these observations. It appears that the *P – value* of Model (3) is highly significant at the 0.01 level (*F = 12*). Diagnostics do not suggest that a multicollinearity problem exists. The mean VIF is less than 2. The R^2 for the model indicates a reasonable explanatory power of the model where at 59% (Alexeyeva & Mejia-Likosova 2016). Fair value Level 1 (Level 3) remains significant and positive at the 0.01 (0.05) level, where *Coeff. = 0.787, t-value = 8.76* (*Coeff. = 2.325, t-value = 1.97*). Moreover, fair value Level 2 holds as insignificant and positive where *Coeff. = 0.591, t-value = 1.640*[35]. In general, the main regression results excluding observations with high coefficients are qualitatively similar with the main analysis results. Thus, $H2_B$ is supported again.

Table 4.7. Result of OLS Regression: The Proportion of Fair Value Disclosure (DFBETA)

DV = *LnAFEES* **Variables**	**Model (3) *DFBETA*** ***Coeff. (t-value)*** **Kohler and Kreuter (2012)**
Intercept	***2.924*** ***(19.35)******
FVA1_TA	0.787 (8.76)***
FVA2_TA	0.591 (1.640)
FVA3_TA	2.325 (1.97)**
LnASSET	0.321 (34.61)***
ROI	0.000 (4.00)***
LOSS	0.101 (2.61)***
LEV	0.000 (11.91)***
GROWTH	-0.009 (-1.950)*
SUBS	0.023

(This Table is continued on the next page)

[33] In Alexeyeva and Mejia-Likosova (2016) and Ettredge et al. (2014), *FV3_TA* coefficients are 0.81 and 7.48, respectively, which are higher than *FVA1_TA*(*FVA2_TA)* which have been found to be -0.50 and 0.50 (-0.22 and 0.51) in their studies, respectively.
[34] Following Ettredge et al. (2014) to address this issue, Model (3) has been re-tested using the alternative variable, the dichotomous Level 3 variable (coded as 1 if the firm- year has a non-zero value of *FVA3_TA* and coded as 0 otherwise). Model (3) has been modified as follows: $LnAFEES = \delta 0 + \delta 1 FVA1\_TA + \delta 2 FVA2\_TA + \delta 3 FVA3\_dummy + \delta 4 LnASSET + \delta 5 SUBS + \delta 6 LOSS + \delta 7 ROI + \delta 8 LEV + \delta 9 GROWTH + \delta 10 BIG4 + \delta 11 CHANGE + \delta 12 UNQUALIFIED + IndFE + YearFE + \varepsilon$. Untabulated regression results are qualitatively similar to the main analysis findings.
[35] The magnitudes and signs of control variables coefficients are generally consistent as expected with the main analysis.

(Table 4.7. Continued)

DV = *LnAFEES* **Variables**	**Model (3) *DFBETA*** ***Coeff. (t-value)*** **Kohler and Kreuter (2012)**
	(5.43)***
BIG4	0.402
	(14.76)***
CHANGE	0.070
	(2.96)***
UNQUALIFIED	-0.105
	(-3.14)***
Robust	***Yes***
Industry Fixed Effects	***Yes***
Year Fixed Effects	***Yes***
N	***3098***
Prob>F	***0.000***
F - Statistic	***(12)******
R^2	***59.17%***
Mean VIF	***1.44***

Note: *this table presents the OLS regression of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on the proportion of fair-valued assets through the hierarchy level inputs on firms' annual reports after omitting observations with the highest influence on the coefficient as proposed by Kohler and Kreuter (2012) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

4.5.2.2. Change Analysis

In an attempt to mitigate concerns about potential problems of correlated omitted variables, change analysis is also conducted (Bryan & Mason 2016; Ettredge et al. 2014a; Kim et al. 2012; Reid et al. 2019; Yao et al. 2015)[36]. Table 4.8 shows the results of OLS estimation of change analysis for Models (1 – 3). The purpose of this test is to find whether the regression results suffer from a correlated omitted variable problem[37]. Change analysis is a popular way used in fair value and audit fees literature to consider the OLS omitted variables problem[38]. Models (1 – 3) are modified by including change variables. In modifying models, the change values for all continuous variables are defined[39].

Table 4.8 suggests that the *P – value* of Model (1) is highly significant at the 0.01 level (*F = 24),* while Models (2) and (3) are significant at the 0.05 level, *F = 21* and *23*, respectively. The R^2 for the models ranged from 16.50% to 17.26% which indicate reasonable explanatory power of the models. Although the reduction in R^2 of change analysis models is evident, the R^2 for the models are consistent with Ettredge et al. (2014). According to Ettredge et al. (2014) and Abernathy et al. (2019), change analysis models naturally have lower R^2 than original OLS models. Diagnostics do not suggest that a multicollinearity problem exists. The mean VIF in all models is lower than 2.

[36] Khan et al. (2015) stated that audit fees models in developing countries may be subject to the omitted variable problem.
[37] The high adjusted R^2 for models presented in Table 4.5 and Table 4.6 suggest omitted variables are unlikely to be problematic. Nevertheless, change analysis has been conducted intended to address potential omitted variables bias.
[38] Ramsey RESET test is conducted to check for omitted variables in the pooled OLS regression following Lawrence et al. (2011), the Ho: model has no omitted variables. Untabulated P – value is found to be less than 5% (*p – value= 0.0003*); therefore, the test rejects the null hypothesis. Moreover, the equivalent manual version with 3 powers of the predicted variable is conducted. The untabulated P – value of F – test also was found to be significant (*P – value= 0.0025*).
[39] According to Ettredge et al. (2014), dichotomous variables are not subject to the omitted variables problem.

To test Model (1), the analysis conducted for the period from 2006–2018 (2005 has been omitted due to the change specification/ transition year to fair value model following *IAS 39*). The first application of fair value brought great complexities and risks from the auditor perspective, such as learning and understanding the new FVA standards and the additional reconciliation costs concerning the previous year of application (Cairns et al. 2011; Cameran & Perotti 2014; Ferguson & Stokes 2002). Thus, the analysis of Model (1) includes 2885 firm-year observations. However, Models (2 & 3) are tested over the period from 2009–2018 (years 2005 – 2008 are excluded due to the change specification/ year transition to compulsory fair value hierarchy disclosures following *IFRS 7*). Thus, the analysis of Models (2 – 3) includes 2219 firm-year observations.

Model (1) of Table 4.8 asserts that the coefficient of the presence of fair value disclosure (*FVA)* is highly significant and positive at the 0. 01 level (*Coeff. = 0.117, Robust t = 7.39*), consistent with a scenario in which fair-valued assets cost more to audit than other types of assets. It is noticeable that the result of change analysis is consistent with the original analysis and confirms the fact that moving towards fair value model leads to higher audit effort and cost which ultimately leads to expensive audit fees to be paid. Hence, *H1* is supported again.

Model (2) of Table 4.8 shows that the coefficient on the change in proportions of total fair-valued assets (*ΔFVA_TA)* is highly significant and positive at the 0.05 level (*Coeff. = 0.305, Robust t = 2.17*), consistent with the fact that the greater use of fair-valued assets, the greater audit cost required to meet auditor's effort and time spent in auditing the complex values. Hence, $H2_A$ is supported again.

The last set of results columns in Table 4.8 tests Model (3) in a change model specification by breaking *ΔFVA_TA* into *ΔFVA1_TA*, *ΔFVA2_TA* and *ΔFVA3_TA* and testing whether the coefficients on these variables differ. As in the original test models, the *Coeff* and the *Robust – t* increase monotonically as inputs used for FVMs become less reliable (Ettredge et al. 2014a). Specifically, the *Coeff.* (*Robust – t*) of *ΔFVA1_TA*, *ΔFVA2_TA* and *ΔFVA3_TA* are as follows, respectively; *0.688 (5.71)*, *0.112 (0.420)* and *1.466 (1.850)*. Fair value using Level 1 (Level 3) remains significantly positive at the 0.01 level (0.10), whereas Level 2 coefficient remains insignificant and consistent with the original analysis shown in Table 4.7. F – test has been conducted to find coefficients' differences between the hierarchy levels. F – test rejects the null hypothesis that the coefficients of the changes in the three input level proportions are equal at the 0.05 level (*P – value = 0.0296*). F-test results reveal that the coefficients on *ΔFVA1_TA* and *ΔFVA2_TA* do not differ from each other (*P – value = 0.6846*). In the separate F-tests, the coefficient on *ΔFVA3_TA* is distinguishable from the coefficients on *ΔFVA1_TA* (*P – value = 0.0158)*. However, the coefficient on *ΔFVA3_TA* is not distinguishable from the coefficients on *ΔFVA2_TA* (*P – value = 0.1485*). The results support the original analysis findings where using highly uncertain fair values increases the complexity and risk levels in auditing, eventually, leading to higher audit fees. Hence, $H2_B$ is supported again.

In terms of the control variables, according to Ettredge et al. (2014), most of the dummy variables used in change analysis might have insignificant coefficients. Consequently, *CHANGE* and *UNQUALIFIED* are found to be insignificant since year-to-year changes to auditors and auditor opinion of a different class are rare. Moreover, the coefficient of the dummy variables *SUBS*, *LOSS* and the continuous variable *GROWTH* are found to be insignificant in the change analysis as loss and sales growth ratio could be non-zero because their values can change from year to year. Generally, the magnitudes and signs of the rest of the control variables coefficients are generally consistent with all models in the change analysis.

The results of the change analysis provide additional evidence that the FVD and audit fees paid by Jordanian firms are significantly associated with the new FVDs requirements following *IAS 39*. Here, fair value application was optional and voluntarily employed by Jordanian firms, and *IFRS 7* where fair value application and hierarchy disclosures were compulsorily required.

Table 4.8. Result of OLS Regression: The Proportion of Fair Value Disclosure (Change Analysis)

DV =Δ *LnAFEES* **Variables**	**Model (1)** ***Coeff. (robust t)***	**Model (2)** ***Coeff. (robust t)***	**Model (3)** ***Coeff. (robust t)***
Intercept	***-0.219*** ***(-3.35)******	***-0.133*** ***(-2.11)*****	***-0.187*** ***(-2.47)*****
FVA	0.117 (7.39)***		
Δ*FVA_TA*		0.305 (2.17)**	
Δ*FVA1_TA*			0.688 (5.71)***
Δ*FVA2_TA*			0.112 0.420
Δ*FVA3_TA*			1.466 (1.850)*
Δ*LnASSET*	0.274 (8.72)***	0.282 (9.05)***	0.366 (30.71)***
Δ*ROI*	0.000 (2.92)***	0.000 (4.34)***	0.000 (6.02)***
LOSS	-0.006 -0.380	-0.015 -0.990	0.102 (2.00)*
Δ*LEV*	0.000 (2.92)***	0.000 (2.99)**	0.000 (8.91)***
Δ*GROWTH*	-0.004 -1.920	-0.004 -1.910	-0.000 -1.780
Δ*SUBS*	-0.001 -0.390	0.000 -0.010	0.001 1.35
BIG4	0.043 (3.00)***	0.050 (3.44)**	0.388 (8.56)***
CHANGE	0.032 2.04	0.035 2.20	0.066 -1.430
UNQUALIFIED	-0.021 -1.060	-0.021 -1.070	-0.071 -1.210
Robust	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***
N	***2885***	***2219***	***2219***
Prob>F	***0.000***	***0.000***	***0.000***
F - Statistic	***(24)******	***(21)******	***(23)******
R^2	***17.29%***	***16.50%***	***16.77%***
Mean VIF	***1.60***	***1.49***	***1.46***

Coefficient comparisons for Model 4	***F-stat***	***P-value***
FVA1_TA = FVA2_TA= FVA3_TA	***(3.52)*****	***0.0296***
FVA1_TA = FVA2_TA	***(0.17)***	***0.6846***
FVA2_TA = FVA3_TA	***(2.09)***	***0.1485***
FVA1_TA = FVA3_TA	***(5.83)*****	***0.0158***

Note: *this table presents the OLS regressions of a change in variables model specification of Models (1 – 3) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*

(This Table is continued on the next page)

Model (1): Δ LnAFEES= δ0 + δ1ΔFVA_TA+ δ2ΔLnASSET + δ3ΔSUBS + δ4LOSS + δ5ΔROI + δ6ΔLEV +δ7ΔGROWTH + δ8BIG4 + δ9CHANGE + δ10UNQUALIFIED + IndFE + YearFE+ ε.
Model (2): Δ LnAFEES= δ0 + δ1ΔFVA_TA+ δ2ΔLnASSET + δ3ΔSUBS + δ4LOSSit + δ5ΔROI + δ6ΔLEV +δ7ΔGROWTH + δ8BIG4 + δ9CHANGE + δ10UNQUALIFIED + IndFE + YearFE+ ε.
Model (3): ΔLnAFEES= δ0 + δ1ΔFVA1_TA+ δ2ΔFVA2_TA+ δ3ΔFVA3_TA+ δ4ΔLnASSET + δ5ΔSUBS+δ6LOSS+ δ7ΔROI+ δ8ΔLEV+ δ9ΔGROWTH +δ10BIG4+ δ11CHANGE+δ12UNQUALIFIED+ IndFE+ YearFE+ ε.
Where: ΔFVA_TA = the change in firm's total proportion of fair-valued assets, change from t to (t-1). ΔFVA1_TA, FVA2_TA, FVA3_TA = the change in firm's total fair-valued assets using Level 1, Level 2, and Level 3, change from t to (t-4).
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5, Chapter 3.

4.5.3. Dealing with Endogeneity in Relation to Auditor Self-selection Bias

The OLS regression estimates of the determinants of audit fee resulting from the application of fair value model and other controls work well, as long as the choice of auditor type holds random[40]. However, auditor choice is related to certain client-specific attributes (Chaney et al. 2004). In the latter case, Big 4 choice is an endogenous decision for clients and factors that determine Big 4 choice can affect audit fees along with fair value metrics[41]. To account for the potential self-selection bias (i.e., Endogeneity in this study) of Big 4 in the primary audit fees models, Heckman two-stage estimator is performed (Heckman 1979). The Heckman test is popular in auditing and fair value research as a robustness test for auditor selection bias (Goncharov et al. 2014, Sangchan et al. 2020; Behn et al. 2008; Yao et al. 2015).

Following prior literature on auditing and FVA (Goncharove et al. 2014; Sangchan et al. 2020; Yao et al. 2015), *BIG4* dependent variable was included separately in the first-stage probit regression model. The choice of audit firm is regressed using the dummy variable of *BIG4* on some of the likely determinants of the auditor choice decision[42]. Then, Models (1 – 3) are modified in the second-stage of the Heckman test by adding inverse Mills ratio variable (*INVMILLS*) computed from the probit regression in the first-stage to control for self-selection issue[43].

The first column of Table 4.9 shows the result of probit regression analysis. The dependent variable is *BIG4*. The independent variables of interest are auditor type attributes: natural logarithm of total assets (*LnASSET*), return on investment (*ROI*), firm loss (*LOSS*), leverage (*LEV*), growth ratio (*GROWTH*), number of subsidiaries (*SUBS*), asset turnover (*ATURN*) and current ratio (*CURR*). As shown in the table below the *P* – value of the probit model is highly significant at the 0.01 level (*Prob > chi2= 0.000*) with reasonable explanatory power where the Pseudo R^2 of 19%. Models (1 – 3) of Table 4.9 show the result of the OLS regression analysis (including inverse *INVMILLS* variable computed in the probit regression). The dependent variable is the log of audit fees (*LnAFEES*). The independent variables of

[40] Following Hay et al. (2006), auditors do not provide higher or lower levels of assurance but instead provide the desired level of assurance conditional on the nature of the client. Auditor type may create an endogenous demand that leads to higher audit fees.
[41] Client attributes mainly grouped into several variables as presented by Hay et al. (2006) as follows; size, complexity, inherent risk, profitability, leverage, internal control, etc.
[42] The first-stage probit regression is similar to Chaney et al.'s (2004) model which was later employed by Goncharove et al. (2014) and Sangchan et al. (2020) who examine the effect of fair value on audit fees in the US and Australian real estate industries, respectively. Chaney et al.'s (2004) model obtains the probability of Big4 selection bias where the dependent variable is a dummy variable coded 1 for clients employing a Big4 audit firm, 0 otherwise as follows:
BIG4 (0,1) =δ0+ δ2LnASSET + δ3SUBS+ δ4LOSS+ δ5ROI+ δ6LEV + δ7GROWTH+ δ3ATURN+δ4CURR+IndFE+ YearFE + ε.
Where: ATURN = sales/total assets, *CURR* = current assets/current liabilities, the rest variables are previously defined in table 3.3, chapter 3.
[43] The first stage includes a set of control variables that are excluded from the second stage regression (namely *ATURN and CURR*) following Lawrence et al. (2011) and Behn et al. (2008).

interest are the proportion of fair-valued assets (*FVA_TA*) and fair value level inputs (*FVA1_TA*, *FVA2_TA*, *FVA3_TA*). As shown in the table below the *P – value* of the tested models (1 – 3) is highly significant at the 0.01 level (*Prob.>F = 0.000)* with reasonable explanatory power of each model ranging from 61% to 65%. The mean VIF of the probit regression and the second-stage regression models of Heckman (1979) is less than 4[44]. The reported results in Table 4.9 significantly satisfied the collinearity condition for OLS regression.

The findings of the second-stage estimation reported in Table 4.9 (Models 1–3), the sign and coefficients of the presence and the proportion of fair-valued assets and hierarchy disclosure variables (Levels 1-3) remain unchanged after considering selection bias. Outcomes of the second-stage estimation robust the primary analysis findings and confirm the outcomes of the main analysis are not driven by auditor-self-selection bias.

Table 4.9. Pooled Regression Results with Controlling for Possible Endogeneity

Variables	***Probit Regression*** *Coeff. (z)*	**Model (1)** *Coeff. (Robust t)*	**Model (2)** *Coeff. (Robust t)*	**Model (3)** *Coeff. (Robust t)*
Intercept	***-8.256 (-22.32)******	***-7.913 (-7.18)******	***-7.338 (-7.51)******	***-7.602 (-7.67)******
FVA		0.540 (17.99)***		
FVA_TA			0.334 (4.65)***	
FVA1_TA				0.642 (8.00)***
FVA2_TA				0.463 (1.680)
FVA3_TA				2.334 (2.94)***
LnASSET	0.415 (19.58)***	0.767 (15.84)***	0.760 (17.63)***	0.772 (17.64)***
ROI	0.000 (4.19)***	0.000 (10.18)***	0.000 (11.64)***	0.000 (11.36)***
LOSS	0.293 (3.54)***	0.423 (9.12)***	0.447 (9.65)***	0.445 (9.58)***
LEV	-0.000 (-1.110)	0.000 (5.95)***	0.000 (6.46)***	0.000 (6.32)***
GROWTH	-0.013 (-1.210)	-0.030 (-6.34)***	-0.029 (-5.93)***	-0.029 (-6.06)***
SUBS	-0.013 (-1.520)	0.007 (1.590)	0.011 (2.49)**	0.010 (2.14)**
BIG4		0.399 (14.95)***	0.399 (13.99)***	0.388 (13.72)***
CHANGE		0.102 (4.01)***	0.101 (3.75)***	0.091 (3.36)***
UNQUALIFIED		-0.051 (-1.610)	-0.051 (-1.430)	-0.051 (-1.430)
ATURN	0.018 (2.87)***			
CURR	0.000 (0.140)			
INVMILLS		1.795 (10.52)***	1.708 (11.31)***	1.727 (11.27)***
Pseudo R^2	***19.39%***			
Log likelihood	***-1647.90***			
Wald chi2	***(23)******			
Prob > chi2	***0.000***			
Robust	***Yes***	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
N	***3108***	***3108***	***3108***	***3108***
Prob>F		***0.000***	***0.000***	***0.000***
F - Statistic		***(26)******	***(26)******	***(28)******

(This Table is continued on the next page)

[44] The highest VIF mean was documented for *INVMILLS* in the second-stage of the Heckman regression.

(Table 4.9. Continued)

Variables	*Probit Regression*	Model (1)	Model (2)	Model (3)	
	Coeff. (z)	*Coeff. (Robust t)*	*Coeff. (Robust t)*	*Coeff. (Robust t)*	
R^2		*65.16%*	*61.10%*	*61.60%*	
Mean VIF		*3.75*	*3.75*	*3.51*	
Coefficient comparisons for Model (3)				***F-stat***	***P-value***
FVA1_TA = FVA2_TA = FVA3_TA * PRECRISIS				*(2.55)**	*0.0785*
FVA1_TA = FVA2_TA				*(0.54)*	*0.4612*
FVA2_TA = FVA3_TA				*(5.08)***	*0.0243*
FVA1_TA = FVA3_TA				*(4.26)***	*0.0392*

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) on the proportions of fair-valued assets (by input Level) after controlling for potential auditor self-selection bias with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*

Model(1):LnAFEES=δ0+δ1FVA+δ2LnASSET+δ3SUBS+δ4LOSS+δ5ROI+δ6LEV+δ7GROWTH+δ8BIG4+δ9CHANGE+δ10UNQUALIFIED+ δ11INVMILLS + IndFE+ YearFE+ ε.

Model(2):LnAFEES=δ0+δ1FVA_TA+δ2LnASSET+δ3SUBS+δ4LOSS+δ5ROI+δ6LEV+δ7GROWTH+δ8BIG4+δ9CHANGE+δ10UNQUALIFIED+ δ11INVMILLS + IndFE+ YearFE+ ε.

Model(3):LnAFEES=δ0+δ1FVA_TA+ δ2FVA_TA+ δ3FVA_TA+δ4LnASSET+δ5SUBS+δ6LOSS+δ7ROA+δ8LEV+δ9GROWTH+ δ10BIG4 +δ11CHANGE+δ12UNQUALIFIED+ δ13INVMILLS + IndFE+ YearFE+ ε.

Where: FVA_TA = Firm's total fair-valued assets deflated by total assets. FVA1_TA, FVA2_TA, FVA3_TA = Firm's total fair-valued assets using Level 1, Level 2, and Level 3 inputs deflated by total assets. INVMILLS = The inverse Mills ratio calculated from the first stage probit regression on the probability of employing industry specialist auditors.

****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*

All variables are defined in Table 3.5 of Chapter 3.

4.5.4. Moderating Corporate Industry Type

Table 4.10 below presents the OLS multivariate regression results for the moderating role of the corporate industry type (*INDS*) (finance versus non-finance) on the relationship between the proportion of fair-valued assets (and the three fair value level inputs) and audit fees paid by the sample during the study period. The table has the results of two basic models: Model (4) shows the moderating role of the corporate industry type on the relationship between the proportion of fair-valued assets and audit fees, and Model (5) shows the moderating role of the corporate industry type on the relationship between the proportion of fair-valued assets through the three hierarchy levels of fair value inputs (Level 1, Level 2 and Level 3) and audit fees. The *P – values* of Model (4) and Model (5) are highly significant at the 0.01 level, with *F = 26* and *F = 30* and reasonable explanatory ranging between 59% and 60%, respectively. Diagnostics do not suggest that a multicollinearity problem exists. The mean VIF in all models is lower than 2. Generally, the current regression analysis tests the following hypotheses:

$H7_A$: There is no significant impact of corporate industry type on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.

$H7_B$: There is no significant impact of corporate industry type on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.

Not surprisingly, Model (4) of Table 4.10 indicates that the moderating role of (*INDS*) is significant and positive at the 0.05 level (*Coeff. = 0.422, Robust t =2.69*), indicating audit fees arising from FVD vary between finance vs. non-finance industry[45]. Specifically, the finance industry is more likely to pay higher audit fees. One reason for this is due to the fact the industry holds the highest ratios of fair-valued

[45] As an additional analysis, the moderating effect of *INDS* on *FVA* variable and *LnAFFES* is conducted by modifying model (4) into the following model:
*LnAFEES=δ0+δ1INDS+δ2FVA+δ3FVA*INDS+δ4LnASSET+δ5SUBS+δ6LOSS+δ7ROA+δ8LEV+δ9QGROWTH+δ10BIG4+δ11CHANGE + δ12UNQUALIFIED + IndFE + YearFE+ ε.*
Untabulated result confirms that the interaction term of *INDS* and *FVA* is found highly significant with positive sign at the level 0.01 (*Coeff. = 0.322, Robust t = 5.03*). The results support the primary analysis and confirm the fact that the audit fees paid by FVA firms vs non-FVA firms differ based on industry type, where financial firms charged higher audit fees vs non-financial firms.

financial assets (Badia et al. 2017). Therefore, companies operating in this industry bear greater audit fees relative to non-finance industry firms. Higher FVMs leads to a high-level agency problem and increases audit risk which required additional auditing tests and complex auditing process from the auditors. These difficulties vary based on the corporate industry type[46]. In this respect, auditors are expected to have advanced experience and knowledge; thus, expensive audit prices are being charged correspondingly (Griffith 2020; Lin et al. 2017). This outcome is consistent with the univariate analysis results discussed above, as the mean of *FVA_TA* is found significantly higher in the finance industry relative to the non- finance industry, where the mean of *FVA_TA* assets in the finance industry is also higher at 0.15 compared to 0.09 for the non-finance industry (see Panel B of Table 4.3 in section 4.3.2 above). The analysis result might be driven by the fact that the finance industry constitutes the overwhelming industry type in the current study sample[47] and holds fair-valued financial instruments as the largest of all assets, the industry bears greater audit fees relative to their counterparts in the non-finance industry[48]. This in turn, elevates the level of complexity in external auditors' work and they are dealing with subjective accounting metrics prepared by managers (Badia et al. 2017). The high level of agency problem increases the audit risk and requires additional auditing tests and advanced auditor experience and knowledge.

The result is comparable with Glover et al. (2017) who came to the same conclusion in the FVA and accounting restatement knowledge. Also, it aligns with Taylor and Simon (1999), Chung and Narasimhan (2002), Karim and Moizer (1996), Stein et al. (1994) and Alexeyeva and Mejia-Likosova (2016) who documented a positive association between the finance industry and audit fees. The result is linked to the fact that the high level of FVA compliance in Jordan is found by the finance industry where the first application of FVA was done by the finance industry (Abdullatif & Al-Rahahleh 2020). This finding is also in line with the nature of the finance industry in Jordan as it follows strict regulations and supervision by CBI, which require high audit-quality, and expensive audit fees to be charged accordingly (Alhababsah 2019). Moreover, although finance firms have simpler asset structures than the non-finance firms, more offices are found for the former, and as a result, this industry requires more auditing procedures. Conversely, the result is inconsistent with Hay et al. (2006), Craswell et al. (1995) and Stein et al. (1994) who found the opposite in different contexts. Scholars who followed this line of thought argued that although finance institutions have extensive assets, they are easier to audit than other companies that have large inventories and receivables. These firms demand a higher audit quality level since these firms suffer higher agency costs. Therefore, they are more likely to disclose more information which means bearing expensive audit prices.

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[46] It is noticed also that the direct effect of corporate industry type with audit fees paid by Jordanian firms is a very significant and positive at the 0.01 level (*Coeff. = 0.137, Robust t =3.59*). This result supports the fact that specific industries may be risky, more complex or time-consuming for auditors, than other industries (Simunic 1980; Matthews and Peel 2003; Hay et al. 2006; Stein, Simunic & O'Keefe 1994).
[47] The finance industry constitutes 54% of the total sample while the non-finance industry represents 46% (see Table 4.1 above).
[48] Untabulated t – test indicates that the mean of *FVA-TA* in financial vs non- finance industry is significant at the 0.01 level (*t = -12.28, p – value= 0.000*). The mean of *FVA-TA* assets in finance industry is 13% vs 6% for the non-finance industry.

Similarly, in one developing country, Bangladesh, Karim and Molzer (1996) find that auditing finance firms is different compared to those firms operating in non-finance industries. Finance firms have simpler assets structures than non-finance firms (e.g., manufacturing) since the latter hold stock and are more likely to have more plants and equipment assets. However, more offices are found for finance firms, and as a result, this industry requires more elements in the auditing process. This finding is also supported by Karim and Molzer's (1996) conclusion in that finance firms pay more audit fees compared to non-finance firms. This is due to the additional volume of audit effort and time spent in auditing firms' branches.

In relation to theory, auditing FVEs is complex, and a large amount of disclosures regarding fair value require extra auditing procedures due to the agency problem (Huang et al. 2016). Therefore, higher audit fees are expected to send positive signals to financial report users (McDonough et al. 2020). The finance industry in Jordan is subject to high audit quality to control financial reporting and eliminate asymmetric information problems. Expensive audit prices are expected to be requested from auditors to compensate for complex accounting metrics-related tasks. Paying expensive audit fees reflects the quality of audits, in turn, sends positive signals to stakeholders to encourage further investments (Abdullatif & Al-Rahahleh 2020). Accordingly, Jordan's finance industry is more likely to be well-organised, structured, developed and consistent with the corporate governance code compared with other industries (Alzoubi 2018). Strict regulations and strong supervision from the CBJ are applied to ensure a high level of monitoring and ultimately greater application of FVA. Subsequently, the result of the regression analysis rejects the null $H7_A$.

Model (5) of Table 4.9 below presents the analysis result of the moderating role of corporate industry type through the hierarchy levels of fair value inputs. Therefore, the proportion of fair-valued assets (*FVA_TA*) has been breaking into the three fair value input levels (*FVA1_TA, FVA2_TA, FVA3_TA*). As shown below a negative significant effect of the moderating *INDS* on the association between Level 1 assets and audit fees is confirmed at the 0.05 level (*Coeff. = -0.914, Robust t =-3.86*). Significant positive coefficient was documented for the moderating effect of *INDS* on the association between Level 2 assets and audit fees at the 0.05 level (*Coeff. = 3.072, Robust t =4.24*). However, the analysis regarding the moderating *INDS* on the association between Level 3 assets and audit fees was never significant (*Coeff. = -2.602, Robust t =-1.000*).

In general, the results indicate there is a significant difference in audit fees paid by corporates from financial vs non-financial industry in relation to Level 1 and Level 2 assets; whereas there is no difference in audit fees paid by both industries when it comes to Level 3 assets. To put more emphasis on this, higher audit fees in relation to Level 1 assets are spent by the non-finance industry. The result is consistent with previous findings in that Level 1 assets are the predominant type of fair valued inputs in the Jordanian economy. This outcome agrees with (Hay 2006; Craswell et al. 1995) who asserted that manufacturing industries have complicated assets structures where FVM and auditing need complex valuation tests. According to Hay et al. (2006) the majority of conducted studies on audit fees confirmed the significant and positive association between utilities and manufacturing industries and audit fees, since auditing challenges escalate as large inventory of plant and equipment measured by fair value. By contrast, higher audit fee in relation to Level 2 assets spend by the finance industry. Therefore, the current analysis confirmed the fact that high uncertain fair value (Level 2) is more complex and riskier in the finance industry relative to the non-finance industry. This conclusion is due to the fact that auditing subjective fair values used to measure the complicated assets naturally leads to higher audit fees to compensate for the increased audit difficulty and efforts linked with verifying complicated fair values (Abdullatif & Al-Rahahleh 2020). The majority of Level 2 assets is mainly used by the finance industry vs non-finance industry. Thus, having more uncertain fair values leads to bearing higher monitoring costs. Auditors face greater risk and complexity due to the considerable disclosures regarding the subjective FVDs (Huang et al. 2020). Correspondingly, auditors respond to this situation by investing additional effort and time in which ultimately leads to expensive audit fees (Sangchan et al. 2020). Not surprisingly, the result of moderating industry type in relation to Level 3 is found to be insignificant due to the lower level of compliance with Level 3 fair-valued assets by Jordanian firms in both industries[49]. Consequently, the analysis rejects the null $H7_B$[50].

Table 4.10. Result of OLS Regression: Moderating Corporate Industry Type

DV = *LnAFEES* **Variables**	**Model (4)** ***Coeff. (Robust t)***	**Model (5)** ***Coeff. (Robust t)***
Intercept	***3.045 (17.26)****	***2.893 (16.27)****
FVA_TA	0.062 (0.460)*	
INDS	0.137 (3.59)***	0.172 (4.45)***
*INDS * FVA_TA*	0.422 (2.69)***	
FVA1_TA		1.458 (6.73)***
FVA2_TA		-2.374 (3.66)***
FVA3_TA		3.913 -1.610
*FVA1_TA * INDS*		-0.914 (-3.86)***
*FVA2_TA * INDS*		3.072 (4.24)***
*FVA3_TA * INDS*		-2.602 (-1.000)
LnASSET	0.309 (27.38)***	0.316 (27.86)***
ROI	0.000	0.000

(This Table is continued on the next page)

[49] Following Alexeyeva & Mejia-Likosova (2016) and Ettredge et al. (2014), untabulated t-test confirms that the mean difference in fair value hierarchy amongst various industries is highly associated with the regression findings with insignificant coefficient for Level 3 assets. Again and consistent with the descriptive analysis above, the mean of Level 3 is the lowest value relative to Level 1 and Level 2.

[50] 1- Following Ettredge et al. (2014) and Abernathy et al. (2019), the analysis is also repeated using panel data analysis to exploit a strongly balanced panel methodology. The Random effects model controlled by year and industry fixed effects is selected to re-test $H7_{A\&B}$ using panel data regression (the *P – value* of Hausman test was never significant, see *Appendix E*). All results remain unchanged with those reported in the primary analyses where the interaction term of *INDS and FVA_TA (*and each *FVA1_TA, FVA2_TA, and FVA3_TA) was* found significant with positive sign at the 0.01 level *Coeff. = 0.433, Robust t =2.79 (Coeff. = -0.898, Robust t =-3.45, Coeff. = 3.159, Robust t =3.09, and Coeff. = -2.747, Robust t =-0.880, respectively).*

2- It is worth mention that $H7_{A\&B}$ were re-tested excluding HC firms from the total sample. Untabulated regression results were not substantially different from ones reported in the main analysis. Moreover, following Lin et al. (2017) and Lawrence et al. (2011), as a robustness test, propensity-score matched research design (PSM) is employed to address the sample selection bias issue. The PSM is obtained through two steps. First, Model (1) used to predict the likelihood of a firm reporting non-zero *FVA*. Second, Model (2) matched each treatment firm (i.e., firms apply FVA) with a control firm (i.e., firms apply HC) with the closest propensity-score obtained in the first step. Untabulated results show similar evidence to the main analysis after controlling for the potential sample selection bias.

3- The magnitudes and signs of the rest control variables coefficients are generally consistent with all models in change analysis.

(Table 4.10. Continued)

DV = *LnAFEES*	**Model (4)**	**Model (5)**
Variables	***Coeff. (Robust t)***	***Coeff. (Robust t)***
	(5.35)***	(4.92)***
LOSS	0.110	0.105
	(2.96)***	(2.82)***
LEV	0.000	0.000
	(10.55)***	(10.42)***
GROWTH	-0.011	-0.011
	(-2.33)**	(2.27)**
SUBS	0.024	0.023
	(5.38)***	(5.28)***
BIG4	0.426	0.404
	(14.71)***	(14.15)***
CHANGE	0.094	0.087
	(3.42)***	(3.17)***
UNQUALIFIED	-0.069	-0.074
	(-1.920)*	(2.00)**
Robust	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***
N	***3108***	***3108***
Prob>F	***0.000***	***0.000***
F - Statistic	***(26)******	***(30)******
R^2	***58.96%***	***59.52%***
Mean VIF	***1.80***	***1.76***

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) on the interaction corporate industry type variable with the proportions of fair-valued assets (by input Level) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

4.5.5. The Moderating Global Financial Crisis (GFC)

Table 4.11 below shows the regression results regarding the moderating role of the GFC (pre-crisis (*PRECRISIS*) and post-crisis (*POSTCRISIS*)) on the association between the proportion of fair-valued assets and audit fees and looks closely to its moderating effect on the association between of each fair value hierarchy level and audit fees. Four models are employed to clearly examine the crisis effect following the application of fair value standards by the sample during the study period. Models (6 – 7) tested the moderating role of the crisis periods on the proportion of fair-valued assets and audit fees; however, Models (8 – 9) tested the moderating role of the crisis periods through the hierarchy level inputs. The table shows that the *P* – values of Models (6 – 9) are highly significant at the 0.01 level, while *F = 26*, *F = 26*, *F = 30*, and *F = 30* with reasonable explanatory power ranged between 59% and 60%. Diagnostics do not suggest that a multicollinearity problem exists. The mean VIF in all models is lower than 2. Generally, this analysis aims to test the following hypotheses:

Hypothesis 8_A: There is no significant impact of the GFC on the proportion of fair-valued assets and audit fees among Jordanian listed firms.

Hypothesis 8_B: There is no significant impact of the GFC on the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.

As predicted, Models (6 – 7) confirm the significant negative (positive) effect of the pre-crisis (post-crisis) period on the relationship between the proportion of fair-valued assets and audit fees at the 0.01 (0.05) level where *Coeff. = -0.497, Robust t =-3.11* (*Coeff. = 0.334, Robust t =2.43*). Specifically, this means that the relationship between fair value and audit fees weakens at the time before the crisis begins (pre-crisis); however, the relationship strengthens following the crisis period (post-crisis) due to considerable criticism of the FVA model[51]. In this respect, some commentators stated that most of the GFC-related problems were caused by the sheer complexity and ambiguity of financial instruments once IAS 39 was in place (Allen & Carletti 2008b; Plantin et al. 2008). This in turn weakened supervision of auditors and managers (Huang et al. 2016), confirming the arguments that mark-to-market accounting practices resulted in escalating the credit crisis through increasing market earnings volatility (Haswell & Evans 2018). This was due to assets whose values had fallen dramatically. The regression analysis result may be driven by the fact that following the GFC the global accounting institutions and regulatory authorities' rules continued to include FVA projects.

As stated earlier, for the purpose of reducing information asymmetry and as a response to the crisis, new accounting and auditing standards were developed by the IASB and FASB. For example, in 2009, the ISA 540 was enacted by IAASB (IAASB 2009b). ISA 540 increased the responsibilities of external auditors and underlines the typical audit approach for auditing FVEs. Later, IFRS 13 was issued to improve fair value application and emphasise the hierarchy disclosures (IAS Plus 2019c). The effort in updating IFRS 13 and the continuous emphasis of IFRS over the development of FVA with important related issues of FVM in the absence of an active market has not ended the debate on the fair value model (Huang et al. 2020). The requirements regarding 'fair value hierarchy' multiplied the complexity of FVEs which also continue to raise concerns and correspondingly increase the audit prices (McDonough et al. 2020; Oyewo et al. 2020; Griffith 2020). More effort is needed to ensure the validity of fair value figures to diminish the agency problem (Alharasis et al. 2020).

In general these conclusions support the agency theory as auditing profession was further emphasised by accounting bodies universally due to their triggered contiburion to the crisis. Expensive audit fees are linked with the further reforms released following the crisis to deal with the huge market volatility. Such reforms have increased the individual auditor's burdens and therefore, additional time and effort is needed to ensure the validity of fair value figures to diminish the information asymmetric problem[52] (Alexeyeva & Mejia-Likosova 2016). Therefore, the analysis rejects the null $H8_A$.

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[51] Surprisingly, the result is never significant for the direct effect of both crisis periods pre-crisis (post-crisis) on audit fees with unexpected positive (negative) coefficient signs; *Coeff. = 0.117, Robust t =1.740 (Coeff. = -0.093, Robust t =-1.270*). This result may be due to the difference in the severity of the GFC's damage to various countries (Zhang & Huang 2013). The current result, moreover, supports the argument that the association between the crisis periods and audit fees could be mediated by applying IFRS/fair value factors. The positive sign of pre-crisis period is in line with other research (Cairns et al. 2011; Cameran & Perotti 2014; Ferguson & Stokes 2002) who suggested that the high complexity in transition to IFRS resulted in greater audit fees paid by firms. Importantly, the pre-crisis period overlaps with the transition year towards fair value model following IAS 39 in 2005 which comes with high audit risk and complexities. As for the post-crisis period indicates low audit risk following the enhancement and improvement in institutions' governance systems and monitoring procedures. Such reforms and developments in financial reporting systems reduce the agency problem and have a negative consequence for information asymmetry, which means less time and effort in audit services, and therefore lower audit fees (Haswell & Evans 2018; Alharasis et al. 2020; Groff et al. 2017).

[52] As an additional analysis, the moderating effect of *PRECRISIS* and *POSTCRISIS* on *FVA* variable and *LnAFFES* is conducted by modifying Models (6 and 7) into two the following models:

*LnAFEES= δ0+δ1PRECRISIS+ δ2FVA+ δ3 FVA*PRECRISIS(or POSTCRISIS)+δ4LnASSET+δ5SUBS+δ6LOSS+δ7ROA+ δ8LEV+*

Models (8 – 9) of Table 4.11 present the regression result of the moderating role of the two crisis periods on the association between fair value hierarchy levels (Level 1, Level 2 and level 3) and audit fees paid by Jordanian firms. As predicted, and based on the results, Model (8) confirms the significant negative effect of the pre-crisis period on the relationship between the proportion of fair-valued assets through Level 1, Level 2 and Level 3 and audit fees at the 0.01 level for Level 1 and Level 2, and 0.05 for Level 3 where: Level 1 has *Coeff. = -0.516, Robust t = -3.26,* Level 2 *has Coeff.* = -1.646, *Robust t = -2.18,* and Level 3 has *Coeff. = -4.58, Robust t = -2.30*. The findings are in line with Models (6 & 7) analysis results. The F- test confirms that the coefficient of the interaction of the pre-crisis period with each hierarchy level is not equal (*p-value = 0.0512*). The test also finds that the coefficients on the interaction of the pre-crisis period with *FVA2_TA* cannot be differentiated from the interaction with Level 1 (Level 3) where: p-value = 0.1615 (*p-value = 0.1754*). The coefficient on *FVA3_TA* is significantly greater than the coefficients of Level 1 where *p-value = 0.0442*. Collectively, F – test confirms that the association between the low and high uncertainty fair-valued assets and audit fees are affected in different ways by the pre-crisis period.

Model (9) confirms the significant positive effect of the post-crisis period on the relationship between the proportion of fair-valued assets through Level 1 and audit fees at the 0.01 level with *Coeff. = 0.362, Robust t = 2.42,* whereas failed to find any significance effect of the post-crisis with a positive sign in relation to Level 2 where *Coeff.* = 0.905, *Robust t = 1.440* and Level 3 where *Coeff.* = 2.517, *Robust t = 1.450.* The F- test also confirms that the coefficient of the interaction term of the post-crisis period with each hierarchy level is not equal (*p-value = 0.0032*). The test also confirms that the coefficients on the interaction of the post-crisis period with *FVA2_TA* are not distinguishable from the interaction with Level 1 (Level 3) where: *p-value = 0.4200* (*p-value = 0.1075*). The coefficient on *FVA3_TA* is greater than the coefficients of Level 1 with *p-value = 0.0106*. This result is in line with several scholars (Alexeyeva & Svanström 2015; Xu et al. 2013; Zhang & Huang 2013) that the GFC led to greater market volatility which endangered the reliability of FVMs. The belief is consistent with Bratten et al. (2013) who stated that fair value audit risk became higher, particularly for Level 3 fair value inputs. Consequently, auditors' burdens increased and eventually drove audit prices up (Xu et al. 2013). Therefore, the analysis provides evidence that the audit fees paid by Jordanian firms that have Level 1 assets relative to Level 2 and Level 3 assets rise significantly following the crisis period.

In relation to theory, the GFC brought in its wake many abuses including FVA fraud practiced by managers to enhance their owners' confidence in their firms' financial performance (de Jager 2014; Ryan 2008). Consequently, several reforms were implemented to mitigate the damage wrought by the crisis (Alexeyeva & Svanström 2015; Abdullatif 2016; Griffith 2020). Some reforms concerned the audit profession regarding FVEs and thus increased auditors' efforts, meaning an increase in audit fees.

$\delta 9QGROWTH+\delta 10BIG4+\delta 11CHANGE+\ \delta 12UNQUALIFIED + IndFE + YearFE+ \varepsilon$.
Untabulated regression analysis confirm that the interaction term of *PRECRISIS* and *FVA* is found highly significant with negative sign at the level 0.01 (*Coeff. = -0.853, Robust t = -13.97*); while the interaction term of *POSTCRISIS* and *FVA* is found highly significant with positive sign at the level 0.01 (*Coeff. = 0.800, Robust t = 14.57*). The results support the primary analysis and confirm the fact that the effects of the GFC vary between FVA firms vs HC firms.

The previous literature has found empirical evidence that the adoption of FVA was one of the causes of the GFC due to the increased usage of uncertain estimates prepared by company managers (Haswell & Evans 2018). This complexity and risk resulted in higher audit prices. Additional instructions and requirements were issued by the Jordanian government through the CBJ during the end of 2007. Regulations issued at the end of 2007 were subsequently revised in 2011 to overcome volatility in the market resulting from the application of FVA. Moreover, the regulation enacted by JSC in 2014 also emphasised the need for the audit profession to improve (Abdullatif & Al-Rahahleh 2020). The main concern of these instructions was related to the use of FVA (see Chapter 1, sections 1.2.2–1.2.3). The main purpose for such instructions is to keep Jordanian banks operating and eventually prepare reliable and high-quality financial reports to protect local and foreign investors (Alharasis et al. 2020). These reforms have triggered expensive audit fees being paid for checking fair values following the recent disclosure requirements. Therefore, the analysis rejects the null hypotheses $H8_B$[53]

Table 4.11. Result of OLS Regression: Moderating the Global Financial Crisis

DV = *LnAFEES* **Variables**	**Model (6)** ***Coeff. (Robust t)***	**Model (7)** ***Coeff. (Robust t)***	**Model (8)** ***Coeff. (Robust t)***	**Model (9)** ***Coeff. (Robust t)***
Intercept	***3.163*** ***(20.20)******	***3.255*** ***(17.95)******	***3.017*** ***(16.29)******	***3.090*** ***(16.82)******
PRECRISIS	0.117 (1.740)		0.100 (1.360)	
POSTCRISIS		-0.093 (-1.270)		-0.072 (-0.980)
FVA_TA	0.475 (5.40)***	0.141 (1.370)**		
*FVA_TA * PRECRISIS*	-0.497 (-3.11)***			
*FVA_TA * POSTCRISIS*		0.334 (2.43)**		
FVA1_TA			0.824 (8.68)***	0.456 (4.22)***
FVA2_TA			0.682 (2.28)**	0.236 (0.430)
FVA3_TA			2.733 (2.95)***	0.242 (0.170)*
*FVA1_TA * PRECRISIS*			-0.516 (-3.26)***	
*FVA2_TA * PRECRISIS*			-1.646 (-2.18)**	
*FVA3_TA * PRECRISIS*			-4.580 (-2.30)**	
*FVA1_TA * POSTCRISIS*				0.362 (2.42)***
*FVA2_TA * POSTCRISIS*				0.905 (1.440)
*FVA3_TA * POSTCRISIS*				2.517 (1.450)

(This Table is continued on the next page)

[53] 1- Following Ettredge et al. (2014) and Abernathy et al. (2019), the analysis is also repeated using panel data analysis to exploit a strongly balanced panel methodology. The Random effects model controlled by year and industry fixed effects is selected to re-test $H8_{A\&B}$ using panel data regression (the *P – value* of Hausman test was never significant, see *Appendix E*). All results remain unchanged with those reported in the primary analyses where the interaction term of *PRECRISIS (or POSTCRISIS) and FVA_TA, was* found significant with negative (positive) sign *Coeff. = -0.484, Robust t =-3.02(Coeff. = 0.320, Robust t =2.18).* Furthermore, the interaction term of *PRECRISIS (or POSTCRISIS) and* each *FVA1_TA, FVA2_TA, and FVA3_TA was* found significant with negative (positive) sign for all input levels (Level 1 assets only) *Coeff. = -0.521, Robust t =-2.77, Coeff. = -1.747, Robust t =-1.950, and Coeff. = 0.-4.920, Robust t =-1.700 (Coeff. =0.369, Robust t =2.08, Coeff. = 0.908, Robust t =1.200, and Coeff. = 2.804, Robust t =1.170), respectively.*

2- It is worth mention that $H8_{A\&B}$ were re-tested excluding HC firms from the total sample. Untabulated regression results were not substantially different from ones reported in the main analysis. Moreover, following Lin et al. (2017) and Lawrence et al. (2011), as a robustness test, propensity-score matched research design (PSM) is employed to address the sample selection bias issue. The PSM is obtained through two steps. First, Model (1) used to predict the likelihood of a firm reporting non-zero *FVA*. Second, Model (2) matched each treatment firm (i.e., firms apply FVA) with a control firm (i.e., firms apply HC) with the closest propensity-score obtained in the first step. Untabulated results show similar evidence to the main analysis after controlling for the potential sample selection bias.

3- The magnitudes and signs of the rest control variables coefficients are generally consistent with all models in change analysis.

(Table 4.11. Continued)

DV = *LnAFEES*	**Model (6)**	**Model (7)**	**Model (8)**	**Model (9)**
Variables	***Coeff. (Robust t)***	***Coeff. (Robust t)***	***Coeff. (Robust t)***	***Coeff. (Robust t)***
LnASSET	0.307	0.307	0.315	0.315
	(33.10)***	(27.28)***	(27.65)***	(27.62)***
ROI	0.000	0.000	0.000	0.000
	(5.27)***	(5.32)***	(4.96)***	(4.95)***
LOSS	0.112	0.112	0.109	0.108
	(2.84)***	(3.01)***	(2.94)***	(2.92)***
LEV	0.000	0.000	0.000	0.000
	(11.48)***	(10.64)***	(10.61)***	(10.58)***
GROWTH	-0.011	-0.011	-0.011	-0.011
	(-2.57)**	(-2.23)**	(-2.26)**	(-2.27)**
SUBS	0.024	0.024	0.022	0.022
	(5.61)***	(5.45)***	(5.09)***	(5.07)***
BIG4	0.423	0.424	0.413	0.415
	(15.14)***	(14.75)***	(14.45)***	(14.53)***
CHANGE	0.098	0.098	0.088	0.087
	(3.67)***	(3.55)***	(3.20)***	(3.14)***
UNQUALIFIED	-0.074	-0.074	-0.073	-0.074
	(-2.15)**	(-2.06)**	(-2.01)**	(-2.03)**
Robust	***Yes***	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
N	***3108***	***3108***	***3108***	***3108***
Prob>F	***0.000***	***0.000***	***0.000***	***0.000***
F - Statistic	***(26)******	***(26)******	***(30)******	***(30)******
R^2	***58.99%***	***58.93%***	***59.56%***	***59.44%***
Mean VIF	***1.83***	***1.91***	***1.79***	***1.86***

Coefficient comparisons for Models (7 – 8)	***F-stat***	***P-value***	***F-stat***	***P-value***
FVA1_TA * PRECRISIS= FVA2_TA * PRE/POSTCRISIS= FVA3_TA * PRECRISIS	***(2.97)****	***0.0512***	***(4.60)******	***0.0032***
FVA1_TA * PRECRISIS= FVA2_TA * PRE/POSTCRISIS	***(1.96)***	***0.1615***	***(0.65)***	***0.4200***
FVA2_TA * PRECRISIS= FVA3_TA * PRE/POSTCRISIS	***(1.84)***	***0.1754***	***(2.23)***	***0.1075***
FVA1_TA * PRECRISIS= FVA3_TA * PRE/POSTCRISIS	***(4.05)*****	***0.0442***	***(4.55)******	***0.0106***

Note: *this table presents the results of OLS regression of the log of audit fees (LnAFEES) on the interaction pre-crisis and post-crisis variables with the proportions of fair-valued assets (by input Level) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 percent levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

4.6. Additional Analysis and Robustness Checks

To improve the validity of the analysed results, a number of robust analyses and additional checks are carried out in the following sub-sections.

4.6.1. Bootstrap Standard Error

Following Lawrence et al. (2011) and Minutti-Meza (2013), to check the accuracy and stability of the OLS analysis results, bootstrapping analysis has been conducted[54]. The benchmark models were the OLS, the results of which were checked and confirmed by bootstrapping analysis. By bootstrapping the original sample, nonparametric robust estimates of the standard errors and confidence intervals of the parameters considered under the OLS analysis can be derived (Efron 1981). According to Chiqueto et al. (2015) the bootstrapping approach serves as an alternative to asymptotic approximations for obtaining standard errors, confidence intervals and *p-values* for test statistics (Wooldridge 2002). Essentially, the observed sample is viewed as the population, and the bootstrap is a method to obtain multiple samples from it (Cameron & Trivedi 2010). Similar to Prencipe et al. (2014), Jiraporn and DaDalt (2009), González and García-Meca (2014), Athanasakou et al. (2007), this thesis re-runs the

[54] The bootstrap is a computer-based technique for estimating standard errors, biases, confidence intervals and other measures of statistical accuracy (Efron 1981).

regression models using bootstrap standard errors to ensure the regression results are not driven by sampling error or data mining. Bootstrapping analysis has been conducted using a random drawing of one set of data points at a time, with replacement, from the original sample.

The OLS regressions with standard errors corrected by bootstrap approach are employed for all models (1 – 9) using randomised sample repeated 3108 times (i.e., the total number of observations in the original sample to come up with a new resample). Then this resampling process is repeated 100, 200, 500 and 1000 times to develop estimates of the standard errors and confidence intervals of the parameters shown. Table 4.12 shows the results for the resampling procedure repeated 1000 times following Minutti-Meza (2013). As shown in the table the P – value of the tested models (1 – 9) is highly significant at the 0.01 level (*Prob > chi2 = 0.000*) with reasonable explanatory power of each model ranging from 58% to 63%. Overall, the results of the bootstrapping approach analyses produce qualitatively similar outcomes as those documented in the primary analysis[55].

Table 4.12. Bootstrapping (1000 times) OLS Analysis

DV = *LnAFEES* **Variables**	**Model (1) Coffe. (bootstrapping *z*)**	**Model (2) Coffe. (bootstrapping *z*)**	**Model (3) Coffe. (bootstrapping *z*)**	**Model (4) Coffe. (bootstrapping *z*)**	**Model (5) Coffe. (bootstrapping *z*)**	**Model (6) Coffe. (bootstrapping *z*)**	**Model (7) Coffe. (bootstrapping *z*)**	**Model (8) Coffe. (bootstrapping *z*)**	**Model (9) Coffe. (bootstrapping *z*)**
Intercept	***3.202*** ***(17.86)******	***3.236*** ***(18.09)******	***3.086*** ***(17.63)******	***3.045*** ***(17.29)******	***2.893*** ***(16.57)******	***3.163*** ***(16.72)******	***3.255*** ***(17.47)******	***3.017*** ***(16.69)******	***3.090*** ***(17.03)******
FVA	0.525 (16.77)***								
FVA_TA		0.334 (4.63)**		0.062 (0.460)		0.475 (5.56)***	0.141 (1.340)		
FVA1_TA			0.643 (8.32)***		1.458 (6.60)***			0.824 (8.56)***	0.456 (4.25)***
FVA2_TA			0.399 (1.430)		2.374 (3.58)***			0.682 (2.31)**	-0.236 (-0.420)
FVA3_TA			1.740 (2.12)**		3.913 (1.520)			2.733 (3.03)***	0.242 (0.160)
INDS				0.137 (3.71)***	0.172 (4.53)***				
*FVA_TA * INDS*				0.422 (2.66)***					
*FVA1_TA * INDS*					-0.914 (-3.77)***				
*FVA2_TA * INDS*					3.072 (4.16)***				
*FVA3_TA * INDS*					-2.602 (-0.950)				
PRECRISIS						0.117 (1.630)		0.100 (1.320)	
POSTCRISIS							-0.093 (-1.270)		
*FVA_TA * PRECRISIS*						-0.497 (3.28)***			
*FVA_TA * POSTCRISIS*							0.334 (2.42)**		
*FVA1_TA * PRECRISIS*								-0.516 (-3.29)***	
*FVA2_TA * PRECRISIS*								-1.646 (-2.11)**	
*FVA3_TA * PRECRISIS*								-4.580 (-2.10)**	
*FVA1_TA * POSTCRISIS*									0.362 (2.52)**
*FVA2_TA * POSTCRISIS*									0.905 (1.410)
*FVA3_TA * POSTCRISIS*									2.517

(This Table is continued on the next page)

[55] All factors of the control variables remain the same as in the original models.

(Table 4.12. Continued)

DV = *LnAFEES* **Variables**	**Model (1) Coffe. (bootstrap ping *z*)**	**Model (2) Coffe. (bootstrap ping *z*)**	**Model (3) Coffe. (bootstrap ping *z*)**	**Model (4) Coffe. (bootstrap ping *z*)**	**Model (5) Coffe. (bootstrap ping *z*)**	**Model (6) Coffe. (bootstrap ping *z*)**	**Model (7) Coffe. (bootstrap ping *z*)**	**Model (8) Coffe. (bootstrap ping *z*)**	**Model (9) Coffe. (bootstrap ping *z*)**
									(1.380)
LnASSET	0.291	0.307	0.314	0.309	0.316	0.307	0.307	0.315	0.315
	(26.97)***	(27.35)**	(29.23)***	(27.35)***	(28.22)***	(26.34)***	(26.75)***	(27.89)***	(28.09)***
ROI	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(3.23)***	(5.50)**	(5.04)***	(5.21)***	(5.13)***	(5.46)***	(5.60)***	(5.05)***	(5.05)***
LOSS	0.070	0.110	0.105	0.110	0.105	0.112	0.112	0.109	0.108
	(2.10)**	(2.98)**	(2.90)***	(2.92)***	(2.89)***	(3.14)***	(3.06)***	(3.07)***	(2.93)***
LEV	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(10.45)***	(10.80)**	(10.24)***	(10.41)***	(10.25)***	(10.84)***	(10.70)***	(10.55)***	(10.58)***
GROWTH	-0.012	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011
	(-2.48)**	(-2.33)*	(-2.31)**	(-2.30)**	(-2.30)**	(-2.31)**	(-2.18)**	(-2.17)**	(-2.30)**
SUBS	0.021	0.024	0.023	0.024	0.023	0.024	0.024	0.022	0.022
	(4.97)***	(5.58)**	(5.19)***	(5.26)***	(5.22)***	(5.24)***	(5.20)***	(5.07)***	(5.04)***
BIG4	0.424	0.423	0.414	0.426	0.404	0.423	0.424	0.413	0.415
	(15.55)***	(15.11)**	(14.46)***	(15.03)***	(14.57)***	(14.74)***	(15.43)***	(14.60)***	(14.65)***
CHANGE	0.098	0.098	0.087	0.094	0.087	0.098	0.098	0.088	0.087
	(3.74)***	(3.55)**	(3.15)***	(3.26)***	(3.15)***	(3.55)***	(3.52)***	(3.22)***	(3.10)***
UNQUALIFIED	-0.080	-0.079	-0.079	-0.069	-0.074	-0.074	-0.074	-0.073	-0.074
	(-2.54)**	(-2.17)*	(-2.15)**	(-2.01)**	(-2.00)**	(-1.96)***	(-2.03)**	(-1.98)**	(-1.99)**
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
N	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***
Replications	***1000***	***1000***	***1000***	***1000***	***1000***	***1000***	***1000***	***1000***	***1000***
Wald chi2	***(10)******	***(10)******	***(12)******	***(12)******	***(16)******	***(12)******	***(12)******	***(16)******	***(16)******
Prob > chi2	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***
R^2	***62.48%***	***58.19%***	***58.92%***	***58.90%***	***59.48%***	***58.33%***	***58.31%***	***59.18%***	***59.08%***
Adj. R^2	***62.36%***	***58.05%***	***58.76%***	***58.74%***	***59.27%***	***58.17%***	***58.15%***	***58.97%***	***58.87%***

Coefficient comparisons for Model (3)	***F-stat***	***P-value***
FVA1_TA = FVA2_TA= FVA3_TA	***(84.32)******	***0.000***
FVA1_TA = FVA2_TA	***(00.61)***	***0.4352***
FVA2_TA = FVA3_TA	***(5.81)****	***0.0548***
FVA1_TA = FVA3_TA	***(75.36)******	***0.000***

Note: *this table presents the OLS regressions with standard errors corrected by bootstrap replications (1000) of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on FVD and the interaction of corporate industry type and pre-crisis and post-crisis variables with the proportions of fair-valued assets (by input Level).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5, Chapter 3.

4.6.2. Huber/White Standard Error

The residuals of all tested models passed through several tests for heteroscedasticity and non-normality as discussed above (see section 4.6). The Breusch-Pagan/ Cook-Weisberg test is conducted to test for the existence of heteroscedasticity. Untabulated *p*-value indicates it is in the linear model ($p - value >$ 0.0235). Following Chambers et al. (2007) and Alhababsah (2019), the robust standard error method with Huber-White's sandwich estimator is employed to diagnose this issue reliably to produce a robust regression in the presence of heteroscedasticity. Huber-White's standard error is an additional econometric issue in this setting to overcome the potential serial correlation in the pooled regression residuals across the sample firms. As discussed by Gleason and Lee (2003), the calculation of each regression model's t-statistics is conducted using the Huber–White estimator (Diggle et al. 1994).

Table 4.13 below presents the pooled regression results from the estimated audit fees regressions with Huber–White t-statistics. As shown in the table the $P - value$ of the tested models (1 – 9) is highly significant at the 0.01 level (*Prob.>F = 0.000)* with reasonable explanatory power of each model ranging from 66% to 68%. Overall, the outcome of Huber-White's sandwich estimator produces qualitatively similar results as those documented in the main analysis[56].

[56] All factors of the control variables remain the same as in the original models.

Table 4.13. Pooled Regression Results with Huber–White t-statistics

DV = *LnAFEES* Variables	Model (1) Coffe. (Robust *t*)	Model (2) Coffe. (Robust *t*)	Model (3) Coffe. (Robust *t*)	Model (4) Coffe. (Robust *t*)	Model (5) Coffe. (Robust *t*)	Model (6) Coffe. (Robust *t*)	Model (7) Coffe. (Robust *t*)	Model (8) Coffe. (Robust *t*)	Model (9) Coffe. (Robust *t*)
Intercept	***2.746***	***2.882***	***2.798***	***2.838***	***2.666***	***2.853***	***2.896***	***2.794***	***2.754***
	(20.55)***	***(20.65)******	***(20.51)******	***(20.22)******	***(18.72)******	***(20.47)******	***(20.69)******	***(19.86)******	***(19.33)******
FVA	0.485								
	(18.79)***								
FVA_TA		0.219		0.148		0.346	0.092		
		(3.28)***		(1.330)		(4.41)***	(0.920)		
FVA1_TA			1.400		0.985			0.676	0.353
			(1.310)***		(4.55)***			(6.62)***	(3.01)**
FVA2_TA			0.024		2.026			0.002	-0.691
			(0.070)		(2.42)**			(0.000)*	(-1.260)*
FVA3_TA			0.639		2.873			1.266	0.244
			(7.87)*		(1.130)			(-1.060)**	(0.150)
INDS				0.095	0.122				
				(3.77)***	(4.87)***				
*FVA_TA * INDS*				0.544					
				(3.92)***					
*FVA1_TA * INDS*					-0.495				
					(-2.11)**				
*FVA2_TA * INDS*					2.288				
					(2.50)**				
*FVA3_TA * INDS*					-2.426				
					(-0.860)				
PRECRISIS						0.000		0.016	
						(0.000)		(0.270)	
POSTCRISIS							-0.032		-0.045
							(-0.540)		(-0.760)
*FVA_TA * PRECRISIS*						-0.405			
						(-2.84)***			
*FVA_TA * POSTCRISIS*							0.229		
							(1.770)*		
*FVA1_TA * PRECRISIS*								-0.471	
								(-2.81)***	
*FVA2_TA * PRECRISIS*								-1.303	
								(-1.640)*	
*FVA3_TA * PRECRISIS*								-2.516	
								(-0.980)**	
*FVA1_TA * POSTCRISIS*									0.309
									(1.960)**
*FVA2_TA * POSTCRISIS*									0.662
									(0.990)
*FVA3_TA * POSTCRISIS*									0.758
									(0.360)
LnASSET	0.327	0.335	0.335	0.329	0.338	0.329	0.335	0.342	0.342
	(41.16)***	(40.85)***	(40.07)***	(39.64)***	(40.17)***	(39.82)***	(40.77)***	(40.97)***	(40.94)***
ROI	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(2.42)**	(4.66)***	(3.70)***	(4.87)***	(4.38)***	(4.86)***	(4.76)***	(4.36)***	(4.33)***
LOSS	0.049	0.090	0.096	0.101	0.095	0.101	0.092	0.092	0.091
	(1.450)	(2.59)***	(2.74)***	(2.87)***	(2.71)***	(2.89)***	(2.63)***	(2.64)***	(2.61)***
LEV	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(10.08)***	(10.53)***	(11.74)***	(10.94)***	(10.77)***	(10.87)***	(10.57)***	(10.73)***	(10.65)***
GROWTH	-0.008	-0.008	-0.007	-0.009	-0.009	-0.009	-0.008	-0.008	-0.008
	(-2.11)**	(-2.13)**	(-1.930)*	(-2.35)**	(-2.22)**	(-2.23)**	(-2.10)**	(-2.08)**	(-2.11)**
SUBS	0.015	0.018	0.020	0.017	0.017	0.018	0.018	0.017	0.017
	(3.96)***	(4.71)***	(5.12)***	(4.54)***	(4.48)***	(4.60)***	(4.72)***	(4.49)***	(4.47)***
BIG4	0.401	0.415	0.426	0.431	0.409	0.418	0.416	0.411	0.414
	(16.65)***	(16.79)***	(17.34)***	(17.24)***	(16.27)***	(16.72)***	(16.79)***	(16.59)***	(16.69)***
CHANGE	0.069	0.080	0.086	0.094	0.083	0.093	0.080	0.072	0.072
	(2.99)***	(3.36)***	(4.05)***	(3.93)***	(3.47)***	(3.88)***	(3.37)***	(3.02)***	(3.03)***
UNQUALIFIED	-0.079	-0.070	-0.099	-0.063	-0.066	-0.072	-0.067	-0.064	-0.064
	(-2.66)***	(-2.31)**	(-3.28)***	(-2.05)**	(-2.14)**	(-2.35)**	(-2.19)**	(-2.10)**	(-2.10)**
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
N	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***

(This Table is continued on the next page)

(Table 4.13 Continued)

DV = *LnAFEES* **Variables**	**Model (1) Coffe. (Robust *t*)**	**Model (2) Coffe. (Robust *t*)**	**Model (3) Coffe. (Robust *t*)**	**Model (4) Coffe. (Robust *t*)**	**Model (5) Coffe. (Robust *t*)**	**Model (6) Coffe. (Robust *t*)**	**Model (7) Coffe. (Robust *t*)**	**Model (8) Coffe. (Robust *t*)**	**Model (9) Coffe. (Robust *t*)**
Prob>F	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***
F - Statistic	***(25)******	***(25)******	***(27)******	***(26)******	***(30)******	***(26)******	***(26)******	***(30)******	***(30)******
R^2	***68%***	***66%***	***66%***	***66%***	***66%***	***66%***	***66%***	***66%***	***66%***
Mean VIF	***1.67***	***1.77***	***1.73***	***1.80***	***1.76***	***1.83***	***1.91***	***1.79***	***1.86***

Coefficient comparisons for Model (3)	***F-stat***	***P-value***
FVA1_TA = FVA2_TA= FVA3_TA	***(12.42)******	***0.000***
FVA1_TA = FVA2_TA	***(0.42)***	***0.6576***
FVA2_TA = FVA3_TA	***(17.81)******	***0.000***
FVA1_TA = FVA3_TA	***(18.51)******	***0.000***

Note: *this table presents the OLS regressions with Huber–White t-statistics of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on FVD and the interaction of corporate industry type and pre-crisis and post-crisis variables with the proportions of fair-valued assets (by input Level).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

4.6.3. Alternative Measure of the Subjective Fair Values through the Aggregate Level 2 and Level 3 Assets

Following recent evidence (Alexeyeva & Mejia-Likosova 2016; Goncharov et al. 2014) $H2_B$ has been re-tested using the aggregate Level 2 and Level 3 assets variable (*FVA23_TA*). Model (3) is modified into three models: Model (3.1) by excluding the proportion of fair-valued assets through Level 2 (*FVA2_TA*) and Level 3 (*FVA3_TA*) variables to capture the single effect of the low subjective fair values through Level 1 (*FVA1_TA*) variable on audit fees; Model (3.2) by replacing the proportion of fair-valued assets Level 2 (*FVA2_TA*) and Level 3 (*FVA3_TA*) variables with the aggregate variable (*FVA23_TA*) to capture the single effect of the less verifiable fair values through Level 2 (*FVA2_TA*) and Level 3 (*FVA3_TA*) assets on audit fees; Model (3.3) by including both the proportion of fair-valued assets through the Level 1 (*FVA1_TA*) and the aggregate (*FVA32_TA*) variables in one model.

Similar to the original model, the dependent variable is the natural log of audit fees (*LnAFEES*) and independent variables of interest are Level 1 assets (*FVA1_TA*) and the aggregate variable (*FVA23_TA*)[57]. As shown in the table below the *P* – value of the tested models (3.1 – 3.3) is highly significant at the 0.01 level, (*Prob > F = 0.000*) with reasonable explanatory power ranging from 58% to 59% which is quite similar to what others found (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a; Goncharov et al. 2014)[58]. As shown in Table 4.14, Model (3.1) confirms the primary analysis result which documented a significant positive association between Level 1 assets and audit fees at the 0.01 level (*Coeff. = 0.674, Robust t =8.77*). The analysis of Model (3.2) confirmed the positive and significant association between the aggregate Level 2 and Level 3 assets (*FVA23_TA*) and audit fees (*LnAFEES*) at the 0.01 level (*Coeff. = 0.897, Robust t =3.71*). The result is consistent with other work (Alexeyeva & Mejia-Likosova 2016; Goncharov et al. 2014) which confirmed the impact of the aggregate Level 2 and Level 3 assets on audit fees is significantly positive. Importantly, Model (3.3) supports the previous two analyses' conclusions where *FVA1_TA* assets (and *FVA23_TA*) is significantly associated with audit fees with positive sign at the 0.01 (0.05) level *Coeff. = 0.646, Robust*

[57] All factors of the control variables remain the same as in the original models.
[58] All regression models are tested for multicollinearity employing VIF. The mean VIF in all models is below 2.

t =8.15 (*Coeff. = 0.517, Robust t =2.13*). The F – test result suggests that the coefficients of the Level 1 assets and the aggregate assets are not equal (*p-value = 0.000*). This means that low and highly uncertain fair-valued assets exert a different impact on audit fees paid by Jordanian firms. The outcome supports the primary analysis results and taken together, they confirm the fact that increasing use of uncertain and subjective fair-valued assets (Level 2 and Level 3) generates higher audit fees. Overall, this result moreover confirms hypothesis $H2_B$ again.

Table 4.14. Result of OLS Regression: Aggregate Level 2 and Level 3 Assets Variable (*FVA23_TA*)

DV = *LnAFEES* **Variables**	**Model (3.1)** ***Coeff. (Robust t)***	**Model (3.2)** ***Coeff. (Robust t)***	**Model (3.3)** ***Coeff. (Robust t)***
Intercept	***3.068*** ***(16.85)******	***3.386*** ***(18.85)******	***3.089*** ***(16.82)******
FVA1_TA	0.674 (8.77)***		0.646 (8.15)***
FVA23_TA		0.897 (3.71) ***	0.517 (2.13)**
LnASSET	0.315 (28.01)***	0.300 (26.60)***	0.314 (27.57)***
ROI	0.000 (4.89)***	0.000 (5.70)***	0.000 (4.88)***
LOSS	0.107 (2.89)***	0.115 (3.10)**	0.106 (2.86)***
LEV	0.000 (10.50)***	0.000 (10.47)***	0.000 (10.53)***
GROWTH	-0.011 (-2.34)**	-0.011 (-2.16)**	-0.011 (-2.34)**
SUBS	0.023 (5.26)***	0.025 (5.67)***	0.023 (5.33)***
BIG4	0.417 (14.64)***	0.423 (14.55)***	0.414 (14.50)***
CHANGE	0.087 (3.15)***	0.104 (3.76)***	0.086 (3.12)***
UNQUALIFIED	-0.077 (-2.15)**	-0.086 (-2.37)**	-0.080 (-2.22)**
Robust	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***
N	***3108***	***3108***	***3108***
Prob>F	***0.000***	***0.000***	***0.000***
F - Statistic	***(25)******	***(25)******	***(26)******
R^2	***59.28%***	***58.76%***	***59.31%***
Mean VIF	***1.78***	***1.75***	***1.76***

Coefficient comparisons for Model (3.3):	***F – stat***	***P – value***
FVA1_TA = FVA23_TA	***(42.34)******	***0.0000***

***Note**: this table presents the OLS regression of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on the proportions of fair-valued assets through hierarchy levels (Level 1 and the aggregate Level 2 and Level 3) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
Modified Models:
Model (3.1): LnAFEES=δ0+δ1FVA1_TA+δ2LnASSET+δ3SUBS+δ4LOSS+δ5ROI+δ6LEV+δ7GROWTH+δ8BIG4+δ9CHANGE+ δ10UNQUALIFIED+ IndFE+ YearFE + ε.
Model (3.2): LnAFEES=δ0+δ1FVA23_TA+δ2LnASSET+δ3SUBS+δ4LOSS+δ5ROI+δ6LEV+δ7GROWTH+δ8BIG4+δ9CHANGE+ δ10UNQUALIFIED+ IndFE+ YearFE + ε.
Model (3.3): LnAFEES=δ0+ δ1FVA1_TA + δ2FVA23_TA+δ3LnASSET+δ4SUBS+δ5LOSS+δ6ROI+δ7LEV+δ8GROWTH+δ9BIG4+ δ10CHANGE+ δ11UNQUALIFIED+ IndFE+ YearFE + ε.
Where: FVA1_TA = Firm's total fair-valued assets through level 1 fair value inputs deflated by total assets. FVA23_TA = the sum of firm's total fair-valued assets using Level 2, and Level 3 inputs deflated by total assets.
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5, Chapter 3.

4.6.4. Excluding the Crisis Year of 2008

Since the current study's period (2005 – 2018) overlaps with the GFC (2008), additional analysis is conducted to assess the robustness of the main regression results to include a sample year potentially affected by the crisis. Following other work (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014; Sonu et al. 2017), the hypotheses were re-tested (Models 1 – 9) after excluding the firm-year observations for the crisis year (2008) from the total sample (222 firm-year observation). As shown in Table 4.15 below the *P* – value of the tested models (1 – 9) is highly significant at the 0.01 level (*Prob.>F = 0.000)* with reasonable explanatory power of each model ranging from 59% to 63%.[59] The regression results remain consistent with our primary analyses[60].

Table 4.15. Result of OLS Regression Excluding 2008 Year

DV = LnAFEES Variables	Model (1) Coffe. (robust t)	Model (2) Coffe. (robust t)	Model (3) Coffe. (robust t)	Model (4) Coffe. (robust t)	Model (5) Coffe. (robust t)	Model (6) Coffe. (robust t)	Model (7) Coffe. (robust t)	Model (8) Coffe. (robust t)	Model (9) Coffe. (robust t)
Intercept	**3.158 (17.19)*****	**3.211 (17.20)*****	**3.060 (16.20)*****	**3.017 (16.59)*****	**2.862 (15.63)*****	**3.139 (16.66)*****	**3.235 (17.33)*****	**2.988 (15.67)*****	**3.069 (16.24)*****
FVA	0.555 (17.27)***								
FVA_TA		0.332 (4.45)***		0.068 (0.490)*		0.485 (5.38)***	0.095 (0.850)*		
FVA1_TA			0.643 (7.69)***		1.507 (6.46)***			0.846 (8.21)***	0.413 (3.43)***
FVA2_TA			0.406 (1.370)		2.470 (3.53)***			0.705 (2.22)**	0.288 (0.450)
FVA3_TA			1.563 (1.800)*		4.017 (1.590)			2.643 (2.82)***	0.824 (0.530)
INDS				0.142 (3.55)***	0.175 (4.36)***				
FVA_TA * INDS				0.407 (2.48)**					
FVA1_TA * INDS					-0.969 (-3.82)***				
FVA2_TA * INDS					3.174 (4.07)***				
FVA3_TA * INDS					-2.837 (-1.050)				
PRECRISIS						0.114 (1.540)		0.097 (1.320)	
POSTCRISIS							-0.096 (-1.300)		-0.075 (-1.030)
FVA_TA * PRECRISIS						-0.508 (-3.37)***			
FVA1_TA * PRECRISIS								-0.539 (-3.30)***	
FVA2_TA * PRECRISIS								-1.672 (-2.20)**	
FVA3_TA * PRECRISIS								-4.462 (-2.22)**	
FVA_TA * POSTCRISIS							0.383 (2.65)***		
FVA1_TA * POSTCRISIS									0.414 (2.61)***
FVA2_TA * POSTCRISIS									0.939 (1.330)
FVA3_TA * POSTCRISIS									3.582 (1.960)

(This Table is continued on the next page)

[59] All regression models are tested for multicollinearity employing VIF. The mean VIF in all models is below 2.
[60] All factors of the control variables remain the same as in the original models.

(Table 4.15. Continued)

DV = *LnAFEES* Variables	Model (1) Coffe. (robust *t*)	Model (2) Coffe. (robust *t*)	Model (3) Coffe. (robust *t*)	Model (4) Coffe. (robust *t*)	Model (5) Coffe. (robust *t*)	Model (6) Coffe. (robust *t*)	Model (7) Coffe. (robust *t*)	Model (8) Coffe. (robust *t*)	Model (9) Coffe. (robust *t*)
LnASSET	0.293	0.308	0.315	0.310	0.317	0.309	0.309	0.317	0.317
	(25.99)***	(26.47)***	(26.80)***	(26.55)***	(27.03)***	(26.46)***	(26.45)***	(26.85)***	(26.81)***
ROI	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(2.98)***	(5.18)***	(4.78)***	(5.23)***	(4.84)***	(5.25)***	(5.23)***	(4.85)***	(4.87)***
LOSS	0.058	0.103	0.099	0.103	0.098	0.105	0.105	0.103	0.102
	(1.620)	(2.65)***	(2.54)**	(2.64)***	(2.53)**	(2.69)***	(2.69)***	(2.65)***	(2.63)***
LEV	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(9.96)***	(9.99)***	(9.92)***	(9.95)***	(9.78)***	(10.03)***	(10.03)***	(9.98)***	(9.98)***
GROWTH	-0.012	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011
	(-2.24)**	(-2.10)**	(-2.15)**	(-2.15)**	(-2.11)**	(-2.09)**	(-2.05)**	(-2.09)**	(-2.07)**
SUBS	0.020	0.024	0.022	0.023	0.023	0.024	0.024	0.022	0.022
	(4.54)***	(5.26)***	(4.97)***	(5.14)***	(5.05)***	(5.23)***	(5.21)***	(4.82)***	(4.83)***
BIG4	0.424	0.425	0.417	0.428	0.407	0.426	0.426	0.416	0.417
	(15.24)***	(14.06)***	(13.89)***	(14.10)***	(13.59)***	(14.10)***	(14.12)***	(13.90)***	(13.92)***
CHANGE	0.095	0.093	0.082	0.090	0.083	0.094	0.093	0.083	0.082
	(3.50)***	(3.22)***	(2.83)***	(3.10)***	(2.87)***	(3.24)***	(3.22)***	(2.87)***	(2.82)***
UNQUALIFIED	-0.068	-0.072	-0.071	-0.062	-0.067	-0.066	-0.067	-0.064	-0.066
	(-2.07)**	(-1.940)*	(-1.920)*	(-1.680)*	(-1.750)*	(-1.770)*	(-1.800)*	(-1.720)*	(-1.760)*
Robust	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
N	***2886***	***2886***	***2886***	***2886***	***2886***	***2886***	***2886***	***2886***	***2886***
Prob>F	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***
F - Statistic	***(23)******	***(23)******	***(25)******	***(24)******	***(28)******	***(24)******	***(24)******	***(28)******	***(28)******
R^2	***62.94%***	***58.69%***	***59.14%***	***58.78%***	***59.35%***	***58.83%***	***58.78%***	***59.39%***	***59.29%***
Mean VIF	***1.76***	***1.76***	***1.73***	***1.97***	***3.03***	***1.86***	***1.99***	***1.82***	***1.90***

Coefficient comparisons for Model (3)	***F-stat***	***P-value***
FVA1_TA = FVA2_TA= FVA3_TA	***(26.30)******	***0.0000***
FVA1_TA = FVA2_TA	***(34.11)******	***0.0000***
FVA2_TA = FVA3_TA	***(2.57)****	***0.0769***
FVA1_TA = FVA3_TA	***(34.51)******	***0.0000***

Note: *this table presents the OLS regression of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018)* on FVD and the interaction of corporate industry type and pre-crisis and post-crisis variables *with the proportions of fair-valued assets (by input Level) excluding the crisis year of 2008 with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 percent levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

4.6.5. Excluding BIG4 Variable

Similar to other scholars in the auditing literature (Ettredge et al. 2014a, 2014b; Goncharov et al. 2014), the research hypotheses are re-tested excluding the variable *BIG4* from each model to ensure that the main analysis results are not driven by an auditor type factor (*BIG4*). All results remain unchanged with those reported in the primary analyses.

4.6.6. Small Clients vs. Large Clients

Following Ettredge et al. (2014b) the regression models (2 – 3) are re-tested using client size variable to capture the difference in the association between FVD and audit fees. The sample is split into two sub-samples based on median client firm assets[61]: small versus large sample. Models (2 – 3) are re-tested separately and modified by adding the size variable (*SIZE*) interaction term to the proportion of fair-valued assets (*SIZE *FVA_TA*) in Model (2), and *SIZE* interaction term to each fair value hierarchy levels (*SIZE *FVA1_TA*, *SIZE *FVA2_TA*, *SIZE *FVA3_TA*) in Model (3). Untabulated results indicate the coefficient on the interaction of the client size dummy with the proportion of fair-valued assets (and

[61] The median of total assets in the current sample is 22,300,000JD with 284,000,000JD mean. Firms with greater than median assets are classified as larger clients while firms with less than median assets are classified as smaller clients following Ettredge et al. (2014b).

by input hierarchy Level) was not significant, suggesting the primary analysis findings hold unchanged in both sub-samples.

4.6.7. Alternative Measure of Audit Fees (Abnormal Audit Fees)

There are two types of audit fees: normal audit fees and abnormal audit fees. The former refers to auditor's effort and time spent in auditing and reflects labour costs and expected litigation risk losses (Asthana & Boone 2012; Choi et al. 2010; Simunic 1980). However, the latter captures the economic associations between auditors and their clients and therefore, includes abnormal audit profit (Choi et al. 2010). Specifically, abnormal audit fees signal either auditors 'efforts or vulnerable auditor independence. In the auditing literature, there are two contradictory views regarding the incentives towards abnormal audit fees; first, some scholars support the idea that abnormal audit fees harm auditor independence (Choi et al. 2010; Kinney & Libby 2002); and second, some conclusions confirm that abnormal audit fees signal greater audit effort (Blankley et al. 2012; Eshleman & Guo 2014).

Abnormal audit fees variable (*Abn_LnAFEES*) has been used as a dependent variable to test whether the OLS regression analysis results are robust to an alternative definition of audit fees (*LnAFEES*). In fact, abnormal audit fees variable is widely used by audit fees scholars as an additional sensitivity test to ensure the validity of findings, for instance Sonu et al. (2017) and Ettredge et al. (2014). It has been employed by Huang et al. (2016) who examined the impact of fair value Other Comprehensive Income on audit fees. Following Huang et al. (2016), the log of audit fees (*LnAFEES*) has been replaced by the standardised abnormal audit fees (*Abn_LnAFEES*) which is estimated here by the predicted value of Model (1) of Table 4.5 excluding fair value metrics variables. Then Models (1 – 9) are retested using abnormal audit fees as a dependent variable instead of *LnAFEES*. The standardised abnormal audit fees were defined by Sonu et al. (2017) and Ettredge et al. (2014), as the additional audit fees over the normal audit fees[62].

This analysis extends the understanding of abnormal audit fees following the implementation of FVA. While there are findings of abnormal audit fees mainly centred on specific topics, such as earnings management (Kanagaretnam et al. 2010), cost of capital (Hope et al. 2009), and financial restatements (Blankley et al. 2012; Jiang et al. 2015), it is strongly disregarded in the fair value research. Therefore, the current study is the first examination of its kind to test this relationship.

Table 4.16 shows the regression results of the association between FVD and abnormal audit fees paid by Jordanian firms pooled over (2005 – 2018). The *P – value* of some of the tested models is highly significant with reasonable explanatory power of each model ranging from 3% to 12%[63] which is quite similar to other research findings, such as Huang et al. (2016) and Mohrmann et al. (2013)[64]. The magnitude and signs of the independent variables remain unchanged with those reported in the primary

[62] All factors of the control variables remain the same as in the original models.
[63] It should be noted that *p – values* of some retested models shown in Table 4.17 below are not significant which is acceptable in the abnormal audit fees literature. Further, the low R^2 values are typical in this type of regressions (see Huang & Lin 2016).
[64] All regression models are tested for multicollinearity employing VIF. The mean VIF in all models is below 2.

analyses. To emphasise this more, the analysis results regarding abnormal audit fees confirm the original analysis findings discussion above. Specifically, Models (1 and 2) of Table 4.15 show that the presence of fair value disclosure (*FVA*) and the proportion of fair-valued assets (*FVA_TA*) by Jordanian firms lead to a kind of fee pressure due to the greater level of risk and measurement complexities brought about by the controversial fair valued metrics where both variables hold positive and highly significant at the 0.01 level (*FVA*: *Coeff. = 0.500, Robust t = 16.84, FVA_TA*: *Coeff.* = 0.319, *Robust t = 4.57*). The hierarchy measures the association with abnormal audit fees and support the primary analysis results where Level 1 and Level 3 assets are the variables with high explanatory power. As shown in Model (3) of Table 4.15 Level 1 (Level 3) assets remain significantly positive at the 0.01 level (0.05); Level 1 assets *Coeff. = 0.604, Robust t = 8.10;* meanwhile, Level 3 *Coeff. = 1.695, Robust t = 2.03.* Level 2 remains insignificant with *Coeff. = 0.438, Robust t = 1.690.* Following the F – test, it appears that the coefficients of the fair value hierarchy levels are not equal (*p – value= 0.000*). Consistent with the main analysis, the result supports the fact that low and high uncertainty fair-valued assets wield a different impact on audit fees where the coefficients of Level 1 and Level 2 assets are not distinguishable (*p – value= 0.5569*), while Level 3 assets are very different from either Level 1 (*p – value= 0.000*) and Level 2 (*p – value=0.0291*).

Model (4) confirms that the moderating effect of corporate industry type (*INDS*) over the proportion of fair-valued assets remain significant positive at the 0.05 level (*Coeff.* = 0.445, *Robust t = 3.03*). The result confirms the argument about higher abnormal audit fees paid by the finance industry compared to the non-finance industry in Jordan. This is due to the high level of fair value compliance by the former where greater potential of fraud and misstatement behaviour by managers can be detected. Specifically, the Model (5) shows that the moderating industry type over the hierarchy levels confirms the high level of fee payments made by the non-financial industry when it comes to Level 1 assets at the 0.01 level (*Coeff.* = -0.746, *Robust t =- 4.07*). However, the abnormal fees of Level 2 are attributed to the finance industry at the 0.01 level (*Coeff.* = 2.426, *Robust t = 4.21*). Meanwhile, no significant impact of industry type has been documented for Level 3 (*Coeff. = -2.620, Robust t = -1.060*).

Models (6 and 7) confirm that the moderating effect of the GFC over the proportion of fair-valued assets remains similar to the main analysis. The moderating pre-crisis (*PRECRISIS*) remains significant and negative at the 0.01 level (*Coeff.* = -0.490, *Robust t = -3.43*), while the post-crisis (*POSTCRISIS*) is significant and positive at the 0.05 level (*Coeff. = 0.327, Robust t = 2.47*). The result supports the main argument that the economic downturn resulted in higher audit fees payment over the standard level compared to the amounts paid before the crisis. Consistently, Models (8 and 9) negative and significant impacts of pre-crisis (*PRECRISIS*) confirmed the association between the proportion of fair-valued assets and abnormal audit fees through the three hierarchy levels (Level 1: *Coeff.* = -0.506, *Robust t = -3.39,* Level 2: *Coeff.* = -1.563, *Robust t = -2.12,* Level 3: *Coeff.* = -4.463, *Robust t = -2.31*). Conversely, the impact of post-crisis (*POSTCRISIS*) is significantly and positive over only Level 1 (*Coeff.* = 0.352, *Robust t = 2.47*) and never significant over Level 2 and Level 3 (Level 2: *Coeff.* = 0.836, *Robust t =*

1.400, Level 3: *Coeff.* = 2.422, *Robust t = 1.410*). The F – test confirms that both pre-crisis and post-crisis have different impacts on the low and highly uncertain fair valued estimates.

Overall, the significant association between abnormal audit fees and FVD metrics can be explained in other ways. First, the findings support the fact that subjective fair valued assets are more likely to lead to audit fees payments over the normal level where the high level of information asymmetry is caused by the agency problem (McDonough et al. 2020). Consistent with Huang et al. (2016), the application of FVA has led to charging the client abnormal audit fees (greater than the standardised level of fees) due to the greater complexity and risk brought by using such a controversial accounting model. Second, the application of fair value leads to higher risks of auditors losing their independence and using discretionary accruals to meet or beat the consensus earnings forecast caused by the agency conflict to fulfil managers' interests (Choi et al. 2010; Griffith 2020). Opinion shopping in the form of abnormal audit fee is also an incentive for auditors to give unqualified opinions. This can affect the independence and objectivity of the auditor and compromise the financial statements. The higher the abnormal audit fees the poorer the audit quality, and therefore there is more probability of a company getting an unqualified opinion (Abdullatif 2016). The results are robust with respect to this alternative specification of the dependent variable.

Table 4.16. Result of OLS regression: Abnormal Audit Fees

DV = ***Abn_LnAFEES*** **Variables**	**Model (1)** **Coffe.** **(robust *t*)**	**Model (2)** **Coffe.** **(robust *t*)**	**Model (3)** **Coffe.** **(robust *t*)**	**Model (4)** **Coffe.** **(robust *t*)**	**Model (5)** **Coffe.** **(robust *t*)**	**Model (6)** **Coffe.** **(robust *t*)**	**Model (7)** **Coffe.** **(robust *t*)**	**Model (8)** **Coffe.** **(robust *t*)**	**Model (9)** **Coffe.** **(robust *t*)**
Intercept	***-0.349*** ***(6.57)****	***0.035*** ***(-0.780)***	***-0.013*** ***(-0.290)***	***-0.097*** ***(2.01)*****	***-0.151*** ***(3.06)****	***-0.006*** ***(-0.110)***	***0.063*** ***(-1.370)***	***-0.040*** ***(-0.750)***	***0.016*** ***(-0.350)***
FVA	0.500 (16.84)***								
FVA_TA		0.319 (4.57)***		0.029 (0.240)*		0.457 (5.46)***	0.129 (1.310)**		
FVA1_TA			0.604 (8.10)***		1.266 (7.88)***			0.779 (8.48)***	0.419 (4.22)***
FVA2_TA			0.438 1.690		1.760 (3.63)***			0.715 (2.66)***	0.137 (0.260)
FVA3_TA			1.695 (2.03)**		3.891 (1.690)			2.658 (2.93)***	0.253 (0.180)
INDS				0.108 (3.18)***	0.145 (4.20)***				
*FVA_TA * INDS*				0.445 (3.03)**					
*FVA1_TA * INDS*					-0.746 (-4.07)***				
*FVA2_TA * INDS*					2.426 (4.21)***				
*FVA3_TA * INDS*					-2.620 (-1.060)				
PRECRISIS						0.093 (1.350)		0.081 (1.200)	
POSTCRISIS							-0.069 (-1.020)		-0.054 (-0.800)
*FVA_TA * PRECRISIS*						-0.490 (-3.43)***			
*FVA_TA * POSTCRISIS*							0.327 (2.47)**		
*FVA1_TA * PRECRISIS*								-0.506 (-3.39)***	

(This Table is continued on the next page)

(Table 4.16. Continued)

DV = *Abn_LnAFEES* Variables	Model (1) Coffe. (robust *t*)	Model (2) Coffe. (robust *t*)	Model (3) Coffe. (robust *t*)	Model (4) Coffe. (robust *t*)	Model (5) Coffe. (robust *t*)	Model (6) Coffe. (robust *t*)	Model (7) Coffe. (robust *t*)	Model (8) Coffe. (robust *t*)	Model (9) Coffe. (robust *t*)
*FVA2_TA * PRECRISIS*								-1.563 (-2.12)**	
*FVA3_TA * PRECRISIS*								-4.463 (-2.31)**	
*FVA1_TA * POSTCRISIS*									0.352 (2.47)**
*FVA2_TA * POSTCRISIS*									0.836 (1.400)
*FVA3_TA * POSTCRISIS*									2.422 (1.410)
Robust	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
N	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***
Prob>F	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***
F - Statistic	***(16)****	***(16)****	***(18)****	***(17)****	***(21)****	***(17)****	***(17)****	***(21)****	***(21)****
R^2	***12.44%***	***02.97%***	***04.11 %***	***03.25%***	***04.46 %***	***03.29 %***	***03.14 %***	***04.69 %***	***04.39 %***
Mean VIF	***1.72***	***1.73***	***1.66***	***2.02***	***2.31***	***1.96***	***2.16***	***1.86***	***2.26***

Coefficient comparisons for Model (3.1)	***F-stat***	***P-value***
FVA1_TA = FVA2_TA= FVA3_TA	***(28.81)****	***0.000***
FVA1_TA = FVA2_TA	***(0.35)***	***0.5569***
FVA2_TA = FVA3_TA	***(3.54)***	***0.0291***
FVA1_TA = FVA3_TA	***(37.41)****	***0.000***

Coefficient comparisons for Models (8.1 – 9.1)	***F-stat***	***P-value***	***F-stat***	***P-value***
FVA1_TA * PRECRISIS= FVA2_TA * PRECRISIS= FVA3_TA * PRECRISIS	***(2.88)****	***0.0564***	***(4.69)****	***0.0029***
FVA1_TA * PRECRISIS= FVA2_TA * PRECRISIS	***(1.80)***	***0.1803***	***(0.56)***	***0.4537***
FVA2_TA * PRECRISIS= FVA3_TA * PRECRISIS	***(1.93)***	***0.1646***	***(0.74)***	***0.3896***
FVA1_TA * PRECRISIS= FVA3_TA * PRECRISIS	***(4.10)****	***0.0429***	***(4.67)****	***0.0094***

Note: *this table presents the OLS regression of abnormal audit fees (Abn_LnAFEES) paid by Jordanian firms over the period (2005-2018)* on FVD and the interaction of corporate industry type and pre-crisis and post-crisis variables *with the proportions of fair-valued assets (by input Level) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
Where: Abn_LnAFEES= abnormal level of audit fees (the residuals).
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

4.7. Summary

This chapter examined the relationship between FVD and audit fees paid by Jordanian firms over the pooled period (2005 – 2018). Firms with fair value model constitute 78% of the sample, and the overall regression results indicate the presence of fair-valued assets and audit fees have a positive and significant association. The regression further confirms the association between the proportion of fair-valued assets and audit fees is significant with a positive sign, and using the controversial fair value model leads to more audit complexity and risk. The relationship between the proportions of fair-valued assets through the hierarchy levels are positive and significant for Level 1 and Level 3; meanwhile, the association was never significant for Level 2. F – Test confirms that more subjective fair values lead to more expensive audit fees being charged. These findings are consistent with the triangulation of the agency, signalling and stakeholder theories where high levels of compliance with FVA force external auditors to spend additional time and effort due to the high uncertainties surrounding FVA. Auditors are essential to protecting stakeholders' rights and interests, counteract the agency problem between the owners and managers and ensure adequate compliance with IAAS. Audit fees are a monitoring tool and indicate a firms' compliance with FVD requirements.

Confirmed here is the positive and significant impact of the moderating role of corporate industry type on the association between the proportion of fair valued assets and audit fees. The moderating role of industry type is positive in relation to Level 2 assets; its sign is negative for Level 1 and not significant for Level 3. The results support a negative (positive) moderating effect of the pre-crisis (post-crisis) on the association between the proportion of fair-valued assets and audit fees, and look closely to the impact of the pre-crisis (post-crisis) on the association between the proportion of fair-valued assets through the hierarchy levels and audit fees. The regression confirmed a negative impact of the moderating pre-crisis over the hierarchy levels, whereas a positive impact of post-crisis is documented and significant only for Level 1.

CHAPTER 5: THE MODERATING EFFECT OF OWNERSHIP STRUCTURE ON FAIR VALUE DISCLOSURE AND AUDIT FEES: RESULTS AND DISCUSSION

5.1. Introduction

This chapter presents the empirical analysis results and discussion concerning the moderating role of ownership structure (family, government, and financial institution ownership) on the relationship between the proportion of fair valued assets and audit fees. Descriptive statistics, univariate analysis, correlation matrix and multivariate analysis using OLS regression are all used to meet the research objectives and test the accompanying hypotheses. A number of robustness checks were employed to improve the validity of the main analysis and robust the regression results. The chapter is structured as follows: section 5.2. Descriptive Statistics; section 5.3. Univariate Analysis; section 5.4. Correlation Matrix; section 5.5. Multivariate Analysis; section 5.6. Additional analysis and robustness checks; and section 5.7. concludes the chapter.

5.2. Descriptive Statistics

Table 5.1 summarises the descriptive statistics including mean, median, standard deviation, minimum, maximum, skewness and kurtosis of all variables used in the empirical analysis[65] (pooled for years 2005–2018) [66]. The proportion of Family ownership (*FAMILY_OWN)* has a mean value of 0.225 and median value of 0.145 with a low standard deviation 0.238 and maximum and minimum value of 0.895 and 0.000, respectively, suggesting that, on average, shares owned by family members constitute almost 23% of the total sample shares. The proportion of government ownership (*GOV_OWN*) has a mean and median value of 0.058 and 0.000 with average values ranged between 0.680 and 0.000. The result suggests that the magnitude of firms' shares owned by the government do not exceed 6% of the total sample shares. The analysis asserts that the proportion of financial institution ownership (*FIN_INST_OWN*) has mean and median values of 0.238 and 0.141, respectively, with maximum and minimum values ranged between 0.950 and 0.000, respectively. This suggests that the average of shares owned by financial institutions are 24% of the total sample shares.

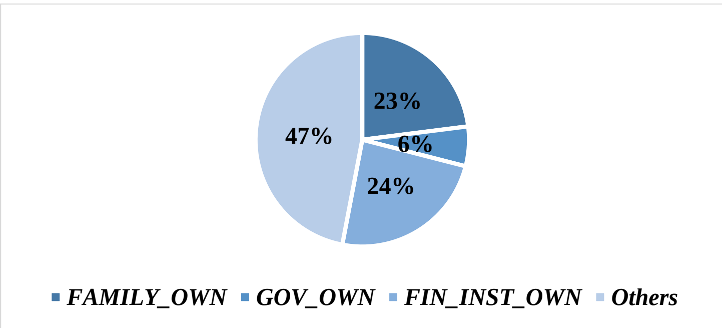

Figure 5.1. Ownership Structure Percentage

[65] In this chapter, the descriptive statistics discussion covers only ownership structure variables since the descriptive statistics for the remaining variables have been explained in the previous chapter (see Chapter 4, section 4.1).

[66] The current chapter's models employed the same dependent, independent and control variables in Chapter 4 and covers the same time period (2005 – 2018), which means the same number of observations, i.e., 3108 year-company observations. Where the dependent variable *LnAFEES;* independent variables are *FVA_TA*, *FVA1_TA*, *FVA2_TA* and *FVA3_TA*; the control variables are *LnASSET, ROI, LOSS, LEV, GROWTH, SUBS, Big4, CHANGE, UNQUALIFIED.*

In summary, the descriptive statistics results agree with some recent examinations conducted in Jordan by Haddad et al. (2015), Alhababsah (2019) and Nawaiseh et al. (2019) concerning non-financial, manufacturing and banking industries, respectively. The scholars documented less participation of state shares in Jordanian firms' total shares, while both institutional and family ownership elicited the most dominant participation in total operating firms' outstanding shares[67].

Table 5.1. Descriptive Statistics

Variable	Obs	Mean	Median	Std. Dev.	Min	Max	Skewness	Kurtosis
FAMILY_OWN	3,108	0.225	0.145	0.230	0.000	0.895	1.103	3.419
GOV_OWN	3,108	0.058	0.000	0.135	0.000	0.680	3.051	12.119
FIN_INST_OWN	3,108	0.238	0.141	0.266	0.000	0.950	1.159	3.327

Note: *following Ettredge et al. (2014) and Alexeyeva and Mejia-Likosova (2016) and for the purpose of the current study, all continuous variables are winsorized at the 1% and 99% levels each year to reduce the influence of potential outliers in the sample.*
Where: FAMILY_OWN = The percentage of family ownership in the firm. GOV_OWN = The percentage of government ownership in the firm. FIN_INST_OWN = The percentage of financial institutions ownership in the firm.

5.3. Univariate Analysis: Family vs. Non-Family Firm

In the ME countries, Jordan in particular, firms are characterised by a high level of family ownership and it is fairly concentrated (Alhababsah 2019; Abdullatif & Al-Rahahaleh 2020). Following Al-Akra and Hutchinson (2013), this analysis examines the difference between two sub-samples: family-owned vs non-family-owned firms using the *FAMILY_Dummy* variable[68] which is recently confirmed as a significant factor that influences audit fees in Jordan (Alhababsah 2019; Nawaiseh et al. 2019). Table 5.2 presents the univariate analysis results utilising both parametric independent t – test (Welch's approximation) and nonparametric (Mann-Whitney U–test). The analysis[69] highlights the significant differences (*p – value*) in the mean and mean rank of the dependent variable, natural log of audit fees (*LnAFEES*), independent variables (*FVA*, *FVA_TA*, *FVA1_TA*, *FVA2_TA* and *FVA3_TA*) and the control variables (*LnASSET, ROI, LOSS, LEV, GROWTH, SUBS, BIG4, CHANGE, UNQUALIFIED*) amongst the two sub-samples over the study period (2005 – 2018)[70].

Based on the analysis, there are 133 firms (60% of total sample) classified as family firms, whereas 89 firms (40% of total sample) are identified as non-family firms listed on the ASE throughout the study period. The analysis suggests that the mean and mean rank difference in audit fees is highly significant (*t – value = 3.7550*, *z – value = 5.820*), indicating that non-family firms are paying higher audit fees than family-owned firms. On average, the mean of *LnAFEES* is significantly higher in non-family firms 9.223 compared to 9.079 for family firms. This outcome is consistent with Khan et al. (2015) who came to the same conclusion. Although the majority of total sample firms are considered as family-controlled firms, such businesses bear lower audit prices due to the lack of the agency conflict between managers

[67] In general, any variation in presented ownership concentration values between the current study and the other published effort is mainly due to the long period of time covered by this thesis e current study and the emphasis on all the operating sectors in Jordan's capital market and in somehow the variations in measures to identify ownership ratios.
[68] *FAMILY_OWN_Dummy* is dichotomous variable coded 1 if the firm is mostly owned by family members, 0 otherwise.
[69] Untabulated two-sample Wilcoxon rank-sum (Mann-Whitney) test also conducted, and results are presented in Table 5.2.
[70] Univariate analysis, Mann-Whitney U–test, has been conducted using IBM SPSS Statistics 25 software.

and owners (Abdullatif 2016), where the key managerial and executive position-holders are more likely to appoint family members. In this sense, family firms are less motivated to get private benefits to satisfy the majority shareholders' interests (Ho & Kang 2013). This means higher earnings quality can be found in such firms relative to non-family-controlled firms (Sánchez et al. 2007) which eventually leads to lower audit fees being paid. This is due to less audit effort and time being spent on auditing (Ali et al. 2007; Jiraporn & DaDalt 2009; Wang 2006; Alhababsah 2019; Nawaiseh et al. 2019). This result is consistent with Wang (2006), Ali et al. (2007) and Jiraporn and DaDalt (2009) who empirically asserted that higher levels of earnings quality are found in the firms owned by families; hence, lower audit fees are paid. Paying higher audit fee by non-family-owned firms is an attempt to show stakeholders the high-quality financial information and therefore, increase the opportunity to obtain additional funding (Abdullatif & Al-Rahahaleh 2020).

With respect to FVA, it is noticed that the mean and mean ranks of the presence of FVD (*t – value = -4.0111, z – value = -4.001*) and the proportion of fair-valued assets (*t – value = -3.9106, z – value = -5.789*) variables are significantly higher in family-controlled firms than non-family-controlled ones. The mean and mean rank of the presence of FVD is high for the both samples confirming the fact that Jordanian firms are mostly fair value-oriented; however, the higher presence of fair values is recorded for the family sample. These findings are mainly driven by the total family sample being larger relative to the non-family sample within the total sample[71]. Therefore, the current conclusion is mainly based on the fact that closely-held firms are the majority of audit clients in the Jordanian economy where the agency problem caused by the separation between owners and managers is limited. Looking closely at the fair value hierarchy levels, Level 1, Level 2 and Level 3, the mean and mean rank of Level 1 assets is higher for the family sample (*t – value = -4.5138, z – value = -6.455*), while the higher uncertain fair values through Level 3 (*t – value = 1.6969, z – value = 0.757*) is significantly higher for the non-family sample. Level 2 has a higher mean and mean rank by non-family sample; however, the mean difference is never significant (*t – value = 1.075, z – value = 1.368*). These findings are driven by the fact that Level 1 assets are the predominant type of hierarchy input levels used by Jordanian firms. However, Level 2 and Level 3 are used more by firms with more agency conflict, especially non-family firms as reported by Lin et al. (2017).

Regarding control variables, the analysis confirms that large firms (*LnASSET*) are more likely to be owned by a wider range of stakeholders to maximise wealth and increase their capital (Sangchan et al. 2020). Consistent with client size indicator, non-family-controlled firms are more likely to have more subsidiaries (*SUBS*) compared to family-controlled enterprises. This supports the fact that larger and more complex firms are not subject to family ownership as the former are more likely to have spread ownership with more branches and locations of operating units, and diversified product lines. A high level of agency conflict and information asymmetric problems are found there (Al-Akra & Hutchinson 2013; Alzoubi 2015). Consistently, higher audit fees are being charged to those clients with higher

[71] Total proportion of family sample as part of the total sample over the study period is 0.60, and the rest is 0.40 for the non-family sample.

diversification, decentralisation, and complex financial reporting methods. Family-owned firms, moreover, are more likely to be profitable with low reported loss (*LOSS*) and leverage ratios (*LEV*). Unlike non-family firms, family-controlled firms perform better, where higher ratios of *ROI* and *GROWTH* are found higher for them. The analysis, consequently, confirmed that non-family firms are more likely to hire Big 4 audit firms (*BIG4*) to obtain high-quality audits as the information asymmetry problem might compromise the quality of published financial information. Family firms in a developing country tend to hire poorer quality auditors and pay a considerably lower audit fee compared to non-family firms because there is not much of an agency problem (Khan et al. 2015; Abdullatif 2016). Consequently, the analysis result confirms the fact that since auditor tenure (*CHANGE*) is considered to be a key information quality indicator, most firms that employ auditors for three years belong to the non-family sample where expert auditors produce high-quality audits (Almutairi et al. 2009). Since unqualified opinion (*UNQUALIFIED*) is an indicator of reliable firms' financial information, family business firms have higher earnings quality relative to non-family-controlled firms (Sánchez et al. 2007). This eventually suggests that family firms are more likely to prepare high quality financial information and receive unqualified audit opinions compared to the more complex firms with spread ownership which is evident in non-family firms (Abdullatif & Al-Rahahaleh 2020).

Table 5.2. Univariate Analysis: Family vs. Non-Family Firm

Variable	Mean		*t* – value(sig)	Mean Rank		*z* - value(sig)
	Family (*FAMILY _Dummy*=1) N = 133 firm	Non-Family (*FAMILY _Dummy*=0) N = 89 firm		Family (*FAMILY _Dummy*=1) N = 172 firm	Non-Family (*FAMILY _Dummy*=0) N = 50 firm	
LnAFEES	9.079	9.223	***3.7550****	1477.75	1668.73	***5.820****
FVA	0.800	0.738	***-4.0111****	1592.7	1497.65	***-4.001****
FVA_TA	0.107	0.083	***-3.9106****	1630.44	1441.47	***-5.789****
FVA1_TA	0.082	0.059	***-4.5138****	1636.84	1431.94	***-6.455****
FVA2_TA	0.009	0.011	*1.075*	1539.99	1576.1	*1.368*
FVA3_TA	0.003	0.004	***1.6969****	1548.94	1562.78	*0.757*
LnASSET	16.975	17.419	***6.9424****	1463.76	1689.55	***6.877****
ROI	1342	1310	*-1.154*	1583.51	1511.32	*-2.199***
LOSS	0.357	0.386	***1.6585****	1536.22	1581.7	***1.658****
LEV	1327	1454	***4.2952****	1538.11	1578.9	*1.242*
GROWTH	1.418	1.386	*-0.322*	1559.59	1546.92	*-0.386*
SUBS	1.790	2.008	***1.8232****	1503.02	1631.12	***4.107****
BIG4	0.286	0.490	***11.8382****	1426.88	1744.45	***11.582****
CHANGE	0.538	0.556	*0.973*	1543.43	1570.97	*0.973*
UNQUALIFIED	0.880	0.798	***-6.2038****	1605.25	1478.96	***-6.167****

, ** and * denote significance at the 0.10, 0.05 and 0.01 levels, respectively.*
Where: Family_Dummy= dummy variable would take one if a family or individual hold 10% or more of equity, 0 otherwise following (Hay et al. 2006).
All variables are defined in Table 3.5 of Chapter 3.

5.4. Correlation Matrix

Tables 5.3. below presents the Pearson and Spearman correlation matrix results for the dependent and independent variables. Like the multivariate analysis, the test for multicollinearity ensures there is no correlation problem between the independent variables used in the regression models (Chen 2012). For this purpose, the correlation coefficients between the independent variables below 80% should not cause bias in regression estimates due to multicollinearity. As shown in Table 4 below, the bivariate analysis confirms that the correlation coefficients of *LnAFEES* with all fair value variables (*FVA_TA*, *FVA1_TA*, *FVA2_TA*, *FVA3_TA*) are significant and positive. The bivariate analysis, moreover, confirms that the correlation coefficients of *LnAFEES* with ownership structure proxies (*FAMILY_OWN*, *GOV_OWN*, *FIN_INST_OWN*) are all significantly associated. The analysis confirms that both crisis proxies are significantly associated with the magnitude of audit fees. Correlation analysis further shows that other control variables (*LnASSET*, *ROI*, *LOSS*, *LEV*, *GROWTH*, *SUBS*, *BIG4*, *CHANGE*) are significantly associated with audit fees while, the correlation is not significant in relation to the *UNQUALIFIED* variable. The correlation coefficient between the independent variables used in each model confirms that the independent variables are generally not correlated. However, the highest correlation is found between *LOSS* and *ROI* (-0.576); while the mean of the VIF test does not show any potentially serious multicollinearity problem, where the mean VIF of each model is below 3.

Table 5.3. Correlation Matrix

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1.	LnAFEES	1	0.012*	0.001	.115**	.074**	.718**	.235**	-.186**	.421**	-.051**	.271**	.487**	.096**	-0.027	-.142**	.142**	-.111**
2.	FVA_TA	.209**	1	.862**	.404**	.215**	-.132**	.036*	-0.006	-.084**	.062**	-0.027	-.037*	-0.002	-.067**	0.026	-.103**	-.067**
3.	FVA1_TA	.210**	.807**	1	.179**	.125**	-.175**	0.030	-0.003	-.058**	.063**	-0.020	-.054**	0.005	-.074**	0.029	-.097**	-.066**
4.	FVA2_TA	.269**	.426**	.434**	1	.133**	.089**	0.026	-0.010	0.031	0.004	-0.004	.107**	0.032	0.024	-.072**	-0.031	-.038*
5.	FVA3_TA	.252**	.179**	.143**	.209**	1	.038*	-0.029	.039*	0.003	0.011	.090**	.047**	-0.019	-0.005	-.039*	.041*	-.058**
6.	LnASSET	.609**	-0.017	-.065**	.141**	.200**	1	.278**	-.263**	.417**	-.040*	.325**	.455**	.097**	0.001	-.201**	.212**	-0.005
7.	ROI	.222**	.075**	.036*	.052**	0.029	.257**	1	-.576**	.110**	.039*	-.108**	.148**	0.028	-.139**	0.024	.082**	-0.012
8.	LOSS	-.169**	-.036*	-0.022	-0.030	-0.004	-.233**	-.576**	1	-.086**	-.042*	.091**	-.096**	-.062**	.192**	-.058**	-.108**	.036*
9.	LEV	.376**	0.004	.043*	.184**	.077**	.349**	.111**	-.086**	1	-0.008	0.013	.191**	.086**	.041*	-.108**	.097**	-0.019
10.	GROWTH	.081**	0.024	.045*	.061**	0.009	.126**	.274**	-.292**	.097**	1	-0.007	-.046*	-.046**	-.037*	0.022	-0.015	-0.014
11.	SUBS	.319**	.038*	.054**	.087**	.194**	.387**	-.073**	.085**	.061**	-0.032	1	.140**	.058**	.191**	-.077**	0.033	-.061**
12.	BIG4	.487**	0.017	0.020	.171**	.165**	.430**	.149**	-.096**	.190**	.038*	.167**	1	-.048**	-0.017	-.190**	.222**	.048**
13.	CHANGE	.101**	-0.024	-0.003	0.007	-0.010	.099**	0.029	-.062**	.086**	-.055**	.050**	-.048**	1	-0.013	-0.025	-.037*	0.021
14.	UNQUALIFIED	0.009	-.075**	-.099**	-0.017	0.014	.038*	-.140**	.192**	.041*	-.113**	.224**	-0.017	-0.013	1	-.149**	-.048**	-.081**
15.	FAMILY_OWN	-.148**	.117**	.107**	-0.034	-.037*	-.216**	0.007	-0.027	-.112**	0.029	-.140**	-.237**	-0.028	-.147**	1	-.172**	-.060**
16.	GOV_OWN	.274**	-.055**	-0.024	0.024	.154**	.313**	.083**	-.095**	.191**	0.028	.085**	.274**	0.009	-0.022	-.215**	1	-.054**
17.	FIN_INST_OWN	-.067**	-0.012	-.046**	-.043*	-.045*	-.045*	-0.033	.073**	-.082**	-0.031	-.047**	0.025	-0.007	-.053**	.082**	-.045*	1

Note: *this table presents both Pearson (upper catercorner) and Spearman (lower catercorner) correlation matrix results amongst the dependent and independent variables.*
***, * Correlation is significant at the 0.01, 0.05 levels (2-tailed), respectively.*

5.5. Multivariate Analysis

As discussed in the previous chapter, the current study follows the work of recent scholars who have employed the OLS multivariate regression technique controlling for the clustered-adjusted and robust standard errors to discover the nature effect FVD on audit fees (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a; Goncharov et al. 2014; Sangchan et al. 2020; Yao et al. 2015)[72]. To conduct the OLS multiple regression, and similar to previous chapter, the research data (pooled sample 2005 – 2018) has to meet the essential assumptions to be valid for the regression analysis (Chen et al. 2003; Hair et al. 2010). Regression assumptions tests include: first, Normality[73], Linearity, Homoscedasticity. Independent and Multicollinearity. Therefore, to ensure the validity of the data to the OLS regression analysis, regression assumption tests are employed, and they confirmed the current data satisfies the OLS assumptions. For this analysis, the multivariate analysis is basically conducted using OLS multivariate regression technique controlled by cluster-adjusted and robust standard errors with year and industry fixed effects. Similar to the previous empirical analysis in Chapter 4, the dependent variable is the log of audit fees (*LnAFEES*). The independent variables of interest are the proportion of fair valued assets (*FVA_TA*) and the proportion of fair valued assets using Level 1, Level 2 and Level 3 fair value inputs (*FVA1_TA, FVA2_TA, FVA3_TA*). The moderating variable are ownership structure factors: family ownership (*FAMILY_OWN*), Government ownership (*GOV_OWN*) and financial institution ownership (*FIN_INST_OWN*). The same control variables in the previous analyses noted in Chapter 4 have also been utilised for this analysis[74]. To improve the validity of the OLS multivariate regression results, a number of robust analyses and additional checks are done and presented in the following sections.

5.5.1. The Moderating Family Ownership

Table 5.4 below presents the OLS multivariate regression results for the moderating role of family ownership (*FAMILY_OWN*) on the relationship between the proportion of fair-valued assets (and by input hierarchy Level) and audit fees paid by the sample during the study period. Table 5.4 shows the results of two basic models: Model (1) shows the moderating role of the family ownership on the relationship between the proportion of fair-valued assets and audit fees; and Model (2) shows the

[72] To confirm the best estimator of the current study, the models tested using panel data first, Hausman test chooses between fixed and random effects but it fails to reject the null hypothesis and confirms that random effects model is more appropriate than fixed effects where *P* – value of each model is highly insignificant and greater than 5% (untabulated Hausman *prob>chi2* ranged 0.78 to 0.89) (see *Appendix E: examples of Hausman test Stata outputs*). Then Breusch–Pagan Lagrange Multiplier test (LM) can help decide whether random effects or simple OLS regression is more appropriate for the multivariate analysis. Untabulated LM test *p* – value is highly insignificant and greater than 5% (*P = 0.1037*). Therefore, it is obvious that pooled data using the simple OLS regression is better for the multivariate analysis of the current study.

[73] The skewness and kurtosis were checked for all continuous variables and presented in the Descriptive statistics section, Table 5.1 above. The examination of both statistics shows that the values of Skewness were within the acceptable range of 1.103 to 3.051, and the values of the Kurtosis ranged from 3.327 to 12.119, which means these values are within the acceptable range to support normal distribution with the exception of *GOV_OWN* (Doane & Seward 2011; West et al.1995). In this case, for the variables that suffer from the non-normality problem, the natural logarithm was considered to overcome it. Therefore, the natural logarithm of *GOV_OWN* has been conducted and used for multivariate analysis for the possibility of non-normal data affecting the credibility of regression analysis results. Moreover, figures (D.3.1 – D.3.3) of *Appendix D* depict the plot of selected independent variables and regression residuals. The plotted points are evenly and randomly dispersed around the plot, thus indicating that the assumption of independence was satisfied. Furthermore, all continuous variables are winsorized at the 1% and 99% levels each year to remove outliers (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014).

[74] Control variables: Client attributes: *LnASSET, ROI, LOSS, LEV, GROWTH, SUBS*, auditor attributes: *BIG4*, and engagement attributes: *CHANGE, UNQUALIFIED.*

moderating role of the family ownership on the relationship between the proportion of fair-valued assets through the three level fair value inputs (Level 1, Level 2, and Level 3) and audit fees. The table shows that the *P – values* of Model (1) and Model (2) are highly significant at the 0.01 level, while *F = 27* and *F = 31*, respectively, with reasonable explanatory power of each model ranging between 59% and 60%, respectively, which is quite similar to Yao et al. (2015). Diagnostics do not suggest that a multicollinearity problem exists. The mean VIF of the tested models is less than 2, which significantly satisfied the collinearity condition for OLS regression.

Generally, the current regression analysis tests the following hypotheses:

$H3_A$ There is no significant impact of family ownership on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.

$H3_B$ There is no significant impact of family ownership on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.

Model (1) of Table 5.4 indicates that the moderating role of family ownership is significant and negative at the 0.05 level (*Coeff. = -1.379, Robust t = -5.01*)[75], indicating that the association between the proportion of fair-valued assets and audit fees is weakened in the case of family-owned firms. The result is consistent with the alignment perspective in that the supervision by family owners leads to reducing the opportunity of managers to manipulate earnings (Anderson & Reeb 2003; Jiraporn & DaDalt 2009). Therefore, family owners are more likely to maximise their wealth over a long period of time. Compared with those businesses that are not under family control, other firms are less motivated to get private benefits to satisfy the majority shareholders' interests. This means higher earnings quality can be found in firms controlled by family owners more than in non-family-controlled firms. This eventually leads to lower audit fees paid by those firms due to less audit time and effort spend in auditing process (Sanchez et al. 2007)[76].

Based on the agency theory and following the idea of application of fair value bringing about a high level of subjectivity and managerial fraud (Griffith 2020; Oyewo 2020; Oyewo et al. 2020), the analysis argues that ownership concentration is a significant factor leading to lower agency costs (Tosi & Gomez-Mejia 1989). In particular, family-controlled corporations usually have substantial incentives to confront the agency problem and its serious outcomes for majority and minority shareholders (Ali et al. 2007). Accordingly, the manipulation of earnings is less in firms that are family-owned; however, it is highest in non-family-controlled companies (Jiraporn & DaDalt 2009). In this respect, a higher level of earnings quality is more likely to be found in the former; hence, lower audit fees are paid (Wang 2006; Ali et al. 2007). Many scholars support the view that family owners contribute to reduced agency cost, such as

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[75] Surprisingly, the analysis indicates that the direct effect of the family ownership variable with audit fees paid by Jordanian firms is very significant and positive at the 0.01 level (*Coeff. = 0.230, Robust t = 3.68*). The result agrees with Hay et al. (2006), Alhababsah (2019) and Nawaiseh et al. (2019), Fan and Wong (2005) and Wang (2006). This conclusion refers to the agency problem between the majority and minority owners (agency problem type II). The possible shortcomings of family ownership are associated with the inherent separation between the controlling family owners and the firm's small shareholders. Consequently, this separation will impact on the trend to take less than desirable investment decisions (Fama and Jensen 1985) and appropriate occasions for personal advancement such as profiting from insider benefits, which goes against the interests of minority shareholders (Faccio et al. 2001).

[76] Consistent with the univariate analysis conducted above, family-controlled firms do better financially than non-family-controlled firms.

Anderson et al. (2003), Chrisman et al. (2004), Lim et al. (2014) and Niskanen et al. (2010). They assert that family ownership is a vital factor which could minimise any agency conflict. According to this perspective, there is no serious conflict of interests between powerful family owners and minority owners; thus, their interests are aligned and therefore the expropriation concern is minimised (Chrisman et al. 2004). In this case, the demand for a high-quality audit service is likely to be lower since the lowest level of information asymmetry problem means there is less complexity in auditing and less audit expenses (DeFond & Zhang 2014; Niskanen et al. 2010). In this respect, the finding is in line with Gebhardt and Novotny-Farkas (2011) who confirmed that ownership concentration negatively influences the effect of IFRS on the income smoothing practices. As the ownership concentration is deemed an important type of corporate governance, the result, moreover, agrees with Lin et al. (2017) who reported that the interaction term of corporate governance with FVA and the financial restatement is significantly negative. This is due to the fact that stronger corporate governance mechanisms including ownership concentration appear to have mitigate the likelihood of restatements following reporting the fair-valued assets.

Moreover, consistent with the univariate analysis discussed above (see Table 5.2 of Section 5.3), although the highest proportions of fair-valued assets are found in family firms vs non-family firms, it is noticed that the former are paying the smallest audit fees. This is consistent with Badertscher et al. (2011) and Lin et al. (2017), who confirmed that ownership concentration is an ideal way to reduce agency costs following the application of IAS. Likewise, the regression conclusion also supports Tama-Sweet and Zhang's (2015) argument in that ownership concentration leads to preparing more accurate fair value measures due to owners' sufficient knowledge and experience in the industry. Consequently, lower audit risk and complexity means less effort spent in auditing; ultimately, auditors are expected to charge lower audit fees (Soderstrom & Sun 2007; Griffith et al. 2015). Since ownership concentration is one of the crucial ways to strengthen corporate governance procedures (Shleifer & Vishny 1997), the regression analysis results also confirmed Yao et al.'s (2015) findings in that corporate governance leads to lower audit fees paid by fair value model firms.

In Jordan, the result accords with Alhababsah (2016) and Alzoubi (2016). Family owners in Jordan attempt to enhance their business success and maintain a high social status. Jordanian family business owners could feel shame if their business has failed, especially due to their competitors. Thus, those owners tend to boast about their position in society because in Jordanian society family business owners have a high social standing and are accorded much respect. So, they strive to maintain their reputation and minimise the principal-to-principal agency problem to avoid damage being done to their reputation. Family ownership is empirically proved to be a significant factor that can enhance the quality of financial reporting in Jordan. Furthermore, such a type of ownership structure can minimise earnings management levels (Abdullatif & Al-Rahahleh 2020). Further, in the case in Jordan in some cases, ownership concentration leads to fees discounting due to the low demand for high-quality audit services, so corporates are more likely to appoint auditors who accept their controversial fair values with lower audit costs (Abdullatif & Al-Rahahleh 2020)[77]. Consequently, the result of the regression analysis indicates that the analysis rejects the null hypothesis $H3_A$[78].

Model (2) of Table 5.4 below presents the results for the moderating role of family ownership- through the hierarchy levels of fair value inputs. As shown below a negative significant effect of the moderating family ownership on the association between fair-valued assets *FVA1_TA* and audit fees at the 0.01 level (*Coeff. = -1.078, Robust t = -2.86*). However, insignificant and positive coefficients were documented for the moderating effect of family ownership on the association between Level 2 (Level 3) assets and audit fees where the *Coeff. = 1.329, Robust t = 0.79 (Coeff. = 7.505, Robust t = 1.65*). This result is due to the fact that fair value through Level 1 is the predominant type of fair value portfolio in Jordanian firms over the study period[79]. The analysis results are consistent with the univariate analysis presented above (see Table 5.2 of section 5.3) which proved that the highest presence of Level 1 assets occurs with family firms relative to non-family firms[80]; however, for Level 2 and Level 3, the opposite is confirmed[81]. This analysis supports the fact that the moderating effect of family ownership on the association between Level 2 and Level 3 assets and audit fees is never significant as these assets are not likely to be applied by family-controlled firms. Such companies are mostly considered to be a small business compared to those with spread ownership with more branches and locations, and diversified product lines (Al-Akra & Hutchinson 2013; Alzoubi 2016).

The negative sign of the interaction term of family ownership with Level 1 assets is consistent with the alignment perspective and Model (1) findings in that family ownership leads to high quality level of fair value figures prepared by managers due to their sufficient knowledge and expertise in that particular industry (Tama-Sweet & Zhang 2015). Based on agency theory, Level 1 assets do not constitute serious audit risk and complexity; however, the risk increases while moving towards the more subjective input levels, such as Level 2 and Level 3 (Huang et al. 2020). The result also supports Lin et al.'s (2017) conclusion in that the interaction term of corporate governance with fair value hierarchy levels is significant and negatively influences the financial restatement. This means a smaller information asymmetric problem exists in firms with high levels of family ownership, which is considered one way to strengthen corporate governance procedures. This appears to have somewhat mitigated the likelihood

[77] Untabulated t – test confirms that the mean difference of *FAMILY_OWN* over the Big 4 vs non-Big 4 samples is found to be significant at the 0.01 level (*p – value = 0.000, t – value = 10.80*). The mean for the Big 4 sample is almost 17% which is higher than the non-Big 4 sample at 26%.

[78] As an additional analysis, the moderating effect of *FAMILY_OWN* on *FVA* variable and *LnASSET* is conducted by modifying Model (1) into the following model:

*LnAFEES=δ0+δ1 FAMILY_OWN+δ2FVA+δ3FAMILY_OWN*FVA +δ4LnASSET+δ5SUBS+δ6LOSS+δ7ROA+δ8LEV+δ9QGROWTH+ δ10BIG4+δ11CHANGE+ δ12UNQUALIFIED + IndFE + YearFE+ ε.*

Untabulated result confirms that the interaction term of *FAMILY_OWN* and *FVA* emerges as highly significant with a negative sign at the 0.01 level (*Coeff. =-0.97, Robust t = -4.91*). The results support the primary analysis and confirm the fact that the influence of family ownership negatively affects the association between firms with fair value model (relative to cost model firms) and audit fees.

[79] Again, the mean of *FVA1_TA* is 0.073 versus 0.013 for both *FVA2_TA* and *FVA3_TA* (see Table 4.1).

[80] Univariate analysis explained above confirmed that the mean difference of Level 1 assets is higher for the family sample (*t – value = -4.5138*), while the higher uncertain fair values through Level 2 (*t – value = 1.075*) and Level 3 (*t – value = 1.6969*) are higher for the non-family sample.

[81] Untabulated t – test confirms that the higher application of higher uncertain and subjective fair value hierarchy inputs using *FVA23_TA* variable is found in the non-family-controlled firms with a mean of 0.0151 vs 0.0110 for family-controlled firms. The mean difference is found to be significant at the 0.05 level (*t – value = 1.7454*).

of restatements caused by the agency problem following reporting fair value hierarchy assets (Lin et al. 2017). Therefore, the analysis rejects the null hypothesis $H3_B$[82].

Table 5.4. Result of OLS Regression: Moderating Family Ownership

DV = *LnAFEES* **Variables**	**Model (1)** ***Coeff. (Robust t)***	**Model (2)** ***Coeff. (Robust t)***
Intercept	***3.155*** ***(17.33)******	***3.030*** ***(16.34)******
FVA_TA	0.681 (7.99)***	
FAMILY_OWN	0.230 (3.68)***	0.171 (2.76)***
*FVA_TA*FAMILY_OWN*	-1.379 (-5.01)***	
FVA1_TA		0.892 (8.39)***
FVA2_TA		0.153 (0.410)
FVA3_TA		0.615 (0.480)
*FVA1_TA * FAMILY_OWN*		-1.078 (-2.86)**
*FVA2_TA * FAMILY_OWN*		1.329 (0.790)
*FVA3_TA * FAMILY_OWN*		7.505 (1.650)
LnASSET	0.308 (27.46)***	0.315 (27.57)***
ROI	0.000 (5.29)***	0.000 (4.87)***
LOSS	0.116 (3.13)***	0.113 (3.03)***
LEV	0.000 (10.64)***	0.000 (10.60)***
GROWTH	-0.011 (-2.30)**	-0.011 (-2.35)**
SUBS	0.024 (5.60)***	0.023 (5.15)***
BIG4	0.438 (15.30)***	0.430 (15.13)***
CHANGE	0.102 (3.69)***	0.092 (3.30)***
UNQUALIFIED	-0.069 (-1.900)*	-0.067 (-1.830)*
Robust	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***
N	***3108***	***3108***
Prob>F	***0.000***	***0.000***
F - Statistic	***(27)******	***(31)******
R^2	***59.20***	***59.52***
Mean VIF	***1.75***	***1.71***

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) on the interaction family ownership variable with the proportions of fair-valued assets (by input Level) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

[82] 1- Following Ettredge et al. (2014) and Abernathy et al. (2019), the analysis is also repeated using panel data analysis to exploit a strongly balanced panel methodology. The Random effects model controlled by year and industry fixed effects is selected to re-test $H3_{A\&B}$ using panel data regression (the *P – value* of Hausman test was never significant, see *Appendix E*). All results remain unchanged with those reported in the primary analyses where the interaction term of *FAMILY_OWN and FVA_TA* (and each *FVA1_TA, FVA2_TA, and FVA3_TA) was* found significant with negative sign (negative for Level 1; while, positive for Levels 2 & 3) *Coeff. = -1.408, Robust t =-4.62 (Coeff. = -1.049, Robust t =-2.82, Coeff. = 2.008, Robust t =1.020, and Coeff. = 5.650, Robust t =0.820, respectively).*

2- It is worth mention that $H3_{A\&B}$ were re-tested excluding HC firms from the total sample. Untabulated regression results were not substantially different from ones reported in the main analysis. Moreover, following Lin et al. (2017) and Lawrence et al. (2011), as a robustness test, propensity-score matched research design (PSM) is employed to address the sample selection bias issue. The PSM is obtained through two steps. First, Model (1) used to predict the likelihood of a firm reporting non-zero *FVA*. Second, Model (2) matched each treatment firm (i.e., firms apply FVA) with a control firm (i.e., firms apply HC) with the closest propensity-score obtained in the first step. Untabulated results show similar evidence to the main analysis after controlling for the potential sample selection bias.

3- The magnitudes and signs of the rest control variables coefficients are generally consistent with all models in change analysis.

5.5.2. The Moderating Government Ownership

Table 5.5 below presents the OLS multivariate regression results for the moderating role of government ownership (*GOV_OWN*) on the relationship between the proportion of fair-valued assets (and by input hierarchy Levels) and audit fees paid by the sample during the study period. Table 5.5 contains the results of the two basic models; Model (3) deals with the moderating role of government ownership on the relationship between the proportion of fair-valued assets and audit fees; and Model (4) shows the moderating role of government ownership on the relationship between the proportion of fair-valued assets through the three level fair value inputs (Level 1, Level 2 and Level 3) and audit fees. Table 5.5 shows that the *P – value* of Model 3 (Model 4) is highly significant at the 0.01 level $F = 27$ ($F = 31$). The R^2 for the models ranges from 58% to 59% which indicates a reasonable explanatory power of the models similar to Sangchan et al. (2020). Diagnostics do not suggest that a multicollinearity problem exists. The mean VIF of the tested models is less than 2, which significantly satisfied the collinearity condition for OLS regression. Generally, the current regression analysis tests the following hypotheses:

$H4_A$ There is no significant impact of government ownership on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.

$H4_B$ There is no significant impact of government ownership on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.

Model (3) of Table 5.5 confirms that the moderating effect of government ownership on the association between the proportion of fair-valued assets and audit fees is significant and positive at the 0.10 level (*Coeff. = 1.113, Robust t = 1.76*)[83]. This finding indicates that in the case of fair value application, the greater state ownership, the higher audit fee being charged. The result agrees with those scholars who confirmed that government ownership is an exceptional type due to the fact that it is not real ownership because there are no cash flow rights (Niemi 2005). Specifically, the government is more likely to be interested in controlling ownership rights than cash flow rights thereby leading to decision-makers not really motivated to track wealth maximisation. Here the main purpose of such firms alters from value maximisation to using the firm's assets to achieve governments' political objectives (Shleifer & Vishny 1994). Government owned firms are less profitable ones and experience the highest agency problem (Megginson & Netter 2001). Such firms are more politically than commercially driven. Government firms suffer from weak accountability and controlling mechanisms. In this sense, there is a negative impact of government ownership on a firm's financial performance (Orden & Garmendia 2005; Ramaswamy 2001; Shleifer & Vishny 1997; Zeitun & Tian 2007). Consequently, and based on auditing

[83] As an additional analysis, the moderating effect of *GOV_OWN* on *FVA* and *LnASSET* is conducted by modifying Model (3) into the following model:
$LnAFEES=\delta0+\delta1\ GOV\_OWN+\delta2FVA+\delta3GOV\_OWN*FVA+\delta4LnASSET+\delta5SUBS+\delta6LOSS+\delta7ROI+\delta8LEV+\delta9QGROWTH+\delta10BIG4+\delta11CHANGE+\delta12UNQUALIFIED+IndFE+YearFE+\varepsilon.$
Untabulated results confirms that the interaction term of *GOV_OWN* and *FVA* is found highly significant with a positive sign at the 0.05 level (*Coeff. =0.349, Robust t = 2.28*). The results support the primary analysis and confirm the fact that government ownership positively affects the association between firms with fair value model (relative to cost model firms) and audit fees.

theory, firms that perform poorly pay higher audit fees due to the greater level of risk and complexity involving their finances (Hay et al. 2006).

This finding is consistent with the few studies directly examining whether effective corporate governance mechanisms can mitigate financial reporting risk resulting from FVA, such as Kolev (2008), Song et al. (2010) and Fiechter and Meyer (2011). Accordingly, and based on the conjunction of signalling and stakeholder theories, state ownership can enhance the credibility of financial reports disclosed by firms for the purpose of raising capital and send positive signals for their commitments to market-oriented policies (Ben-Nasr et al. 2015). Thus, state owners are more likely to demand high-quality audits translated in expensive audit fees in order to safeguard firm's assets, protect their reputation and increase capital.

Returning to agency theory, state-owned firms might be less motivated to monitor managers' behaviour given that government owners want to meet political objectives (Habib et al. 2018; Lim et al. 2014). In this respect, Johnson (2007) confirmed that government owners are more willing to conceal damaging or critical information to hide their financial failures and/or corruption. In this situation, it is expected that state representatives keep appointing highly qualified auditors and pay fee premiums accordingly to produce accurate financial statements. This argument is consistent with Ben-Nasr et al. (2015). Ben-Nasr et al. (2015) who empirically confirmed a significant negative association between government ownership and earnings quality. In this respect, government owners attempt to report lower levels of earnings management to avoid possible tunnelling of firms' resources to protect their own political interests and avoid scrutiny by minority shareholders (Johnson et al. 2000). This outcome, moreover, agrees with Lin and Yen (2011), Laux and Leuz (2009), Evans et al. (2010) and Song (2015) who have stated that FVA leads to higher earnings management practices due to the agency problem. In this situation, auditing will be more complex and riskier. Additional effort and time will be spent by auditors to ensure the quality of fair value measures prepared by company managers. Conversely, the result is inconsistent with Lin et al. (2017) who empirically confirm that the interaction term between state ownership and fair-valued assets leads to less likely accounting restatement in one of the largest developed markets, the US.

Consistent with signalling theory, the main priority of Jordan's government is to attract foreign investors by sending positive signals about the country's firms' finances (Zeitun & Tian 2007)[84]. Government ownership is a significant factor influencing audit fees in Jordan due to the emphasis on attracting new foreign investors (Alhababsah 2019). Given the scarce natural resources, Jordan's government has during the last few decades tried to enhance governance and disclosure frameworks to improve trust and confidence in its economy (Abdullatif & Al-Rahahleh 2020). In this respect, the Jordanian government is complying with the requirements of IAAS including FVD and stressing better quality audits. The

[84] Untabulated t – test confirms that the mean difference of *GOV_OWN* among the Big 4 and non-Big 4 samples is found significant at the 0.01 level (*p – value = 0.000, t – value = -12.70*). The mean of Big 4 sample is almost 10% which is higher than the non-Big 4 sample which is 3%. This result confirms that the state owners are more likely to seek high-quality audit and produce appropriate financial information in order to develop an efficient and effective global economy by delivering relevant and reliable financial information to investors and capital markets investors.

interaction term of state ownership with fair value leads to bearing higher audit fees. The analysis confirms the fact that government ownership in Jordan is most likely leading to the appointment of high-quality auditors as a positive signal to investors which is also confirmed by Nawaiseh et al. (2019) and Zeitun and Gang (2007). Hence, the analysis rejects the *null* $H4_A$.

Model (4) of Table 5.5 below presents the results for the moderating role of government ownership through the hierarchy levels of fair value inputs. Therefore, the proportion of fair-valued assets (*FVA_TA*) has been breaking into the three fair value input levels (*FVA1_TA, FVA2_TA, FVA3_TA*). As shown in Table 5.5 below, there is a negative (positive) and insignificant effect of the moderating government ownership on the association between Level 1 (Level 2) assets and audit fees *Coeff. = -1.488, Robust t = -0.95 (Coeff. = 2.573, Robust t = 0.58*); meanwhile it is significant and positive for Level 3 assets (*Coeff. = 19.038, Robust t = 2.24*)[85]. The outcome is in line with the fact that auditing fair value Level 1 has not resulted in serious problems for auditors; however, it does worsen while moving to the other levels of the fair value hierarchy (Level 2 and Level 3) (Griffith 2020; McDonough et al. 2020; Hauge et al. 2020). This result is in line with Lin et al. (2017) who asserted that a lower level of accounting complexity and risk in preparing fair values exists in the case of state ownership. This justified the negative sign on Level 1 assets and the positive sign on both Level 2 and Level 3 assets. It seems that a higher audit fee is paid by state-owned firms when using the highly uncertain fair value levels (Level 3 assets). The result confirms the argument that, in the case of auditing less reliable and verifiable fair-valued assets, additional disclosures are required to explain the valuation techniques and inputs used to conduct those measurements (Freeman et al. 2017; Oyewo et al. 2020). Again, using FVEs by state-owned firms in Jordan, especially Level 2 and Level 3 inputs, leads to greater levels of audit complexity and risk due to the high level of agency conflict in this case. External auditors respond to this situation by spending additional time and effort on the audit (Abdullatif 2016).[86] Therefore, the analysis rejects the null hypthesis $H4_B$[87].

[85] The coefficient estimates of *FVA3_TA * GOV_OWN* suggest that audit fees increase at around 190.38% if the *FVA3_TA * GOV_OWN* rises from 0 to 100% which seems high in this case. Therefore, DFBETA analysis is conducted (Kohler & Kreuter 2012) to identify observations wielding the most influence on the coefficient. Untabulated analysis results after excluding the observations with high coefficients are qualitatively similar with the original analysis results (11 observations).

[86] All significant control variable coefficients have the expected signs.

[87] 1- Following Ettredge et al. (2014) and Abernathy et al. (2019), the analysis is also repeated using panel data analysis to exploit a strongly balanced panel methodology. The Random effects model controlled by year and industry fixed effects is selected to re-test $H4_{A\&B}$ using panel data regression (the *P – value* of Hausman test was never significant, see *Appendix E*). All results remain unchanged with those reported in the primary analyses where the interaction term of *GOV_OWN and FVA_TA (*and each *FVA1_TA, FVA2_TA, and FVA3_TA) was* found significant with positive sign (negative for Levels 1 & 2; while, positive for Level 3) *Coeff. = 1.166, Robust t =1.360 (Coeff. = -1.428, Robust t =-0.780, Coeff. = -0.059, Robust t =-0.10, and Coeff. = 20.780, Robust t =2.19, respectively).*

2- It is worth mention that $H4_{A\&B}$ were re-tested excluding HC firms from the total sample. Untabulated regression results were not substantially different from ones reported in the main analysis. Moreover, following Lin et al. (2017) and Lawrence et al. (2011), as a robustness test, propensity-score matched research design (PSM) is employed to address the sample selection bias issue. The PSM is obtained through two steps. First, Model (1) used to predict the likelihood of a firm reporting non-zero *FVA*. Second, Model (2) matched each treatment firm (i.e., firms apply FVA) with a control firm (i.e., firms apply HC) with the closest propensity-score obtained in the first step. Untabulated results show similar evidence to the main analysis after controlling for the potential sample selection bias.

3- The magnitudes and signs of the rest control variables coefficients are generally consistent with all models in change analysis.

Table 5.5. Result of OLS Regression: Moderating Government Ownership

DV = *LnAFEES* Variables	Model (3) *Coeff. (Robust t)*	Model (4) *Coeff. (Robust t)*
Intercept	***3.043 (15.45)****	***3.067 (16.74)****
FVA_TA	0.255 (3.00)***	
GOV_OWN	-0.219 (-2.36)**	-0.211 (-1.960)*
FVA_TA GOV_OWN*	1.113 (1.760)*	
FVA1_TA		0.659 (7.60)***
FVA2_TA		0.619 (0.650)
FVA3_TA		0.428 (1.360)*
*FVA1_TA * GOV_OWN*		-1.488 (-0.950)
*FVA2_TA * GOV_OWN*		2.573 (0.580)
*FVA3_TA * GOV_OWN*		19.038 (2.24)**
LnASSET	0.319 (26.92)***	0.316 (28.05)***
ROI	0.000 (5.06)***	0.000 (4.76)***
LOSS	0.116 (3.06)***	0.102 (2.73)***
LEV	0.000 (10.51)***	0.000 (10.46)***
GROWTH	-0.000 (-4.31)***	-0.011 (-2.35)**
SUBS	0.025 (5.64)***	0.023 (5.24)***
BIG4	0.436 (13.37)***	0.427 (14.59)***
CHANGE	0.092 (3.27)***	0.085 (3.11)***
UNQUALIFIED	-0.100 (-2.67)***	-0.080 (-2.15)**
Robust	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***
N	***3108***	***3108***
Prob>F	***0.000***	***0.000***
F - Statistic	***(27)****	***(31)****
R^2	***58.42 %***	***59.43%***
Mean VIF	***1.73***	***1.71***

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) on the interaction government ownership variable with the proportions of fair-valued assets (by input Level) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

5.5.3. The Moderating Financial Institution Ownership

Table 5.6 below presents the OLS multivariate regression results for the moderating role of the financial institution ownership (*FIN_INST_OWN*) on the relationship between the proportion of fair-valued assets (and by input hierarchy Levels) and audit fees (*LnAFFES*) paid by the sample during the study period. Table 5.6 shows the results of two basic models: Model (5) shows the moderating role of the financial institution ownership on the relationship between the proportion of fair-valued assets and audit fees; and Model (6) highlights the moderating role of the financial institution ownership on the relationship between the proportion of fair-valued assets through the three level fair value inputs (Level 1, Level 2 and Level 3) and audit fees. The table shows that the *P* – values of Model (5) and Model (6) are highly significant at the 0.01 level, $F = 27$ and $F = 31$ with reasonable explanatory power of each model ranged between 59% and 60%, respectively. The Diagnostics do not suggest that a multicollinearity problem exists. The mean VIF of the tested models is less than 2, which significantly satisfied the collinearity condition for OLS regression. Generally, the current regression analysis tests the following hypotheses:

$H5_A$ There is no significant impact of financial institutional ownership on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.

$H5_B$ There is no significant impact of financial institutional ownership on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.

Model (5) in Table 5.6 indicates that the moderating role of financial institutions ownership on the association between the proportion of fair-valued assets and audit fees in Model (5) is significant and positive[88] at the 0.01 level (*Coeff. = 1.626, Robust t = 3.28*)[89]. It confirms the perspective of the group of scholars who confirmed that financial institutions prefer short-term returns instead of long-term returns (Christensen & Nikolaev 2013). This situation would open the door to managers acting in their own interests regardless the shareholders' interests. So, a higher agency problem exists. The increased usage of FVMs leads to more financial reporting difficulty and complexity (Bratten et al. 2013; Glover et al. 2019). Auditing fair value measures requires considerable judgment and additional related disclosures. This contributes to the substantial increase in the complexity of financial statements from the auditors' side which eventually leads to higher audit fees (Bell & Griffin 2012; Bratten et al. 2013; Christensen et al. 2012; Glover et al. 2016a; Griffith et al. 2015a). Consequently, the analysis is in line with both agency and signalling theories as firms owned by financial institutions are more likely to seek a high-quality audit and appoint highly qualified auditors (i.e., Big 4 audit firms) to send positive signals to their investment partners and stakeholders that there only a low level of agency conflict exists[90]. This can guarantee continuous funding from shareholders and attract foreign investors, which agrees with Song (2015) and Lin et al. (2011) who stated that ownership concentration is an ideal way to improve financial information quality following the application of IAS. The regression analysis results also confirmed Yao et al.'s (2015) findings who stated that corporate governance in some cases leads to higher audit fees paid by fair value model firms.

Institutional investors are deemed a crucial monitoring tool in Jordan. Institutional investors assist in boosting corporate governance schemes because they wield significant authority to monitor the

[88] Surprisingly, the analysis indicates that the direct effect of financial institution ownership on audit fees is significant and negative (*Coeff. =-0.691, Robust t = -6.70).* This result confirms the fact that this type of ownership has a positive impact on firms' performance. Excellent financial performance means lower audit risk and complexity which leads to lower audit fees (Balsam et al. 2003; Koh 2003; Ferreira 2010). Financial institution owners are more professional and better informed in regard to capital markets, industries and businesses than the other shareholders. Consequently, the sophisticated abilities to control and monitor managers' behaviours are more presumed, thereby curtailing the agency problem and auditing costs (Almazan et al. 2005; Chen et al. 2006).

[89] As an additional analysis, the moderating effect of *FIN_INST_OWN* on *FVA* and *LnAFFES* is conducted by modifying Model (5) into the following models:

*LnAFEES=δ0+δ1FIN_INST_OWN+δ2FVA+δ3FIN_INST_OWN*FVA+δ4LnASSET+δ5SUBS+δ6LOSS+δ7RO1+δ8LEV+δ9QGROWTH+ δ10BIG4+δ11CHANGE+ δ12UNQUALIFIED+IndFE + YearFE+ ε.*

Untabulated result confirms that the interaction term of *FIN_INST_OWN* and *FVA* is highly significant with a positive sign at the 0.05 level (*Coeff. = 0.283, Robust t = 2.32*). Results support the primary analysis and confirm that financial institution ownership positively affects the association between firms with fair value model (relative to cost model firms) and audit fees.

[90] Untabulated t – test confirms that the mean difference of *FIN_INST_OWN* among the Big 4 and non-Big 4 samples is significant at the 0.01 level (*p – value = 0.000, t – value = -13.40*). The mean of Big 4 sample is almost 32% which is higher than the non-Big 4 sample at 19%.

managers on financial reporting matters (Alhababsah 2019). Forcing managers to demand high quality audit leads to higher monitoring costs including audit fees (Nawaiseh et al. 2019). Such owners drive their managers to increase owners' wealth. Due to such owners' specialised business knowledge and their close relationships with shareholding firms, they are most likely to assess managerial agency cost to decide whether to provide funding to these firms or not, based on the level of agency cost. This issue is more important in Jordan, especially in the case of bank ownership where banks are the main source of business funding. Hence, the analysis result rejects the null hypothesis $H5_A$.

Model (6) of Table 5.6 below presents the results for the moderating role of financial institution ownership through the hierarchy levels of fair value inputs. As shown below a significant and positive effect of the moderating *FIN_INST_OWN* on the association between fair-valued assets *FVA2_TA(FVA3_TA)* and audit fees at the 0.05 level is evident, where *Coeff. = 4.436, Robust t = 1.99* (*Coeff. = 20.525*, *Robust t = 2.04*)[91]. A positive and insignificant coefficient was documented on fair-valued assets *FVA1_TA* (*Coeff. = 0.186*, *Robust t = 0.35*). It confirms that financial institution-owned firms with a greater ratio of subjective fair values (Level 2 and Level 3 assets) are more subject to bear higher audit fees. The result is consistent with the thought that FVD and audit fees are closely linked, especially for the highly uncertain FVEs (Level 2 and Level 3 inputs) (Alexeyeva & Mejia-Likosova 2016; Yao et al. 2015). The result is consistent with Ajinkya et al. (2005), Karamanou and Vafeas (2005) and Truong and Dunstan (2011) who stated that firms with higher institutional ownership are more likely to provide additional disclosures about management forecasts (Barako et al. 2006; Bushee & Noe 2000). This means additional audit time and effort and hence higher audit fees to be charged.

Financial institutions in Jordan are generally well-organised, structured, and developed and more importantly are more consistent with the corporate governance code compared to other industry sectors (Matar et al. 2007). Strict regulations and strong supervision from the CBJ are evident. Therefore, this type of ownership in Jordan is more likely to result in getting high quality audits because they have the motivations and power to control firms' financial reporting and subject managers to penalties who disclose poor earnings (Alhababsah 2019). Consequently, the analysis rejects the null hypothesis $H5_B$[92].

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[91] The coefficient estimates of *FVA3_TA * FIN_INST_OWN* suggest that audit fees increase around 20.38% if the *FVA3_TA * FIN_INST_OWN* increases from 0 to 100% which seems high in this case. Therefore, DFBETA analysis is conducted (Kohler & Kreuter 2012) to identify observations wielding the most influence on the coefficient. Untabulated analysis results after excluding the observations with high coefficients are qualitatively similar with the original analysis results (4 observations).

[92] 1- Following Ettredge et al. (2014) and Abernathy et al. (2019), the analysis is also repeated using panel data analysis to exploit a strongly balanced panel methodology. The Random effects model controlled by year and industry fixed effects is selected to re-test $H5_{A\&B}$ using panel data regression (the *P – value* of Hausman test was never significant, see *Appendix E*). All results remain unchanged with those reported in the primary analyses where the interaction term of *FIN_INST_OWN and FVA_TA (*and each *FVA1_TA, FVA2_TA, and FVA3_TA) was* found significant with positive sign *Coeff. = 1.166, Robust t =1.360 (Coeff. = -1.428, Robust t =-0.780, Coeff. = -0.059, Robust t =-0.10, and Coeff. = 20.780, Robust t =2.19, respectively).*

2- It is worth mention that $H5_{A\&B}$ were re-tested excluding HC firms from the total sample. Untabulated regression results were not substantially different from ones reported in the main analysis. Moreover, following Lin et al. (2017) and Lawrence et al. (2011), as a robustness test, propensity-score matched research design (PSM) is employed to address the sample selection bias issue. The PSM is obtained through two steps. First, Model (1) used to predict the likelihood of a firm reporting non-zero *FVA*. Second, Model (2) matched each treatment firm (i.e., firms apply FVA) with a control firm (i.e., firms apply HC) with the closest propensity-score obtained in the first step. Untabulated results show similar evidence to the main analysis after controlling for the potential sample selection bias.

3- The magnitudes and signs of the rest control variables coefficients are generally consistent with all models in change analysis.

Table 5.6. Result of OLS Regression: Moderating Financial Institution Ownership

DV = *LnAFEES* **Variables**	**Model (5)** ***Coeff. (Robust t)***	**Model (6)** ***Coeff. (Robust t)***
Intercept	***3.280*** ***(18.23)****	***3.114*** ***(17.07)****
FVA_TA	0.210 (2.56)**	
FIN_INST_OWN	-0.691 (-6.70)***	-0.623 (-6.22)***
FVA_TA FIN_INST_OWN*	1.626 (3.28)***	
FVA1_TA		0.617 (6.97)***
FVA2_TA		0.135 (0.420)
FVA3_TA		0.638 (0.620)*
*FVA1_TA * FIN_INST_OWN*		0.186 (0.350)
*FVA2_TA * FIN_INST_OWN*		4.436 (1.99)**
*FVA3_TA * FIN_INST_OWN*		20.525 (2.04)**
LnASSET	0.307 (27.98)***	0.315 (28.23)***
ROI	0.000 (5.12)***	0.000 (4.73)***
LOSS	0.124 (3.34)***	0.123 (3.30)***
LEV	0.000 (10.65)***	0.000 (10.75)***
GROWTH	-0.011 (-2.21)**	-0.011 (-2.26)**
SUBS	0.023 (5.16)***	0.022 (4.94)***
BIG4	0.439 (15.52)***	0.433 (15.35)***
CHANGE	0.100 (3.65)***	0.091 (3.31)***
UNQUALIFIED	-0.104 (-2.90)***	-0.103 (-2.83)***
Robust	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***
N	***3108***	***3108***
Prob>F	***0.000***	***0.000***
F - Statistic	***(27)****	***(31)****
R^2	***59.86%***	***60.24%***
Mean VIF	***1.75***	***1.71***

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) on the interaction financial institution ownership variable with the proportions of fair-valued assets (by input Level) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5, Chapter 3.

5.5.4. Dealing with Endogeneity in Relation to Auditor Type

To rule out that the primary analysis results are not driven by the potential self-selection bias (i.e., endogeneity in this study) of Big 4, Heckman two-stage estimator is applied (Heckman 1979). Following prior evidence on auditing and fair value knowledge (Goncharove et al. 2014; Sangchan et al. 2020; Yao et al. 2015), the *BIG4* variable was included separately as the dependent variable in the first-stage probit regression model. The choice of audit firm is regressed using the dummy variable of BIG4 on some of the likely determinants of the auditor choice decision[93]. Then, Models (1, 3 and 5) are modified in the second-stage of the Heckman test by adding inverse Mills ratio variable (*INVMILLS*) computed from the probit regression in the first-stage to control for self-selection issue[94].

Model 1 of Table 5.7 shows the result of probit regression analysis. The dependent variable is *BIG4*. The independent variables of interest are industry expertise attributes: natural logarithm of total assets (*LnASSET*), return on investment (*ROI*), firm loss (*LOSS*), leverage (*LEV*), growth ratio (*GROWTH*), number of subsidiaries (*SUBS*), asset turnover (*ATURN*) and current ratio (*CURR*). As shown in the table below the *P* – value of the probit model is highly significant at the 0.01 level (*Prob > chi2= 0.000*) with reasonable explanatory power where the Pseudo R^2 of 19%. Models (1, 3 and 5) of Table 5.7 show the result of the OLS regression analysis (including inverse *INVMILLS* variable computed in the probit regression). The dependent variable is the log of audit fees (*LnAFEES*). The independent variables of interest are the proportion of fair-valued assets (*FVA_TA*) and fair value level inputs (*FVA1_TA, FVA2_TA, FVA3_TA*). The moderating variables belonging to ownership concentration are: family ownership (*FAMILY_OWN*), government ownership (*GOV_OWN*), and financial institution ownership (*FIN_INST_OWN*). As shown in the table below the *P* – value of the tested models (1, 3 and 5) is highly significant at the 0.01 level (*Prob.>F = 0.000)* with reasonable explanatory power of each model ranging from 61% to 62%. The mean VIF of the probit regression and second-stage regression models of Heckman (1979) is less than 4[95]. Therefore, the reported results in Table 5.7 significantly satisfied the collinearity condition for OLS regression.

The findings of the second-stage estimation reported in Table 5.7 (Models 2 – 4) confirm that the sign and coefficients of the interaction of the proportion of fair-valued assets with ownership concentration factors still hold after controlling for the selection bias[96].

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[93] The first-stage probit regression is similar to Chaney et al. (2004) model which is also employed by Goncharove et al. (2014) and Sangchan et al. (2020) later to who examine the effect of fair value on audit fees in US and Australia real estate contexts, respectively. Chaney et al.'s (2004) model is used to obtain the probability of Big4 selection bias where the dependent variable is a dummy variable coded 1 for clients employing a Big4 audit firm, 0 otherwise as follows:

$BIG4\ (0,1) = \delta 0 + \delta 2 LnASSET + \delta 3 SUBS + \delta 4 LOSS + \delta 5 ROI + \delta 6 LEV + \delta 7 GROWTH + \delta 3 ATURN + \delta 4 CURR + IndFE + YearFE + \varepsilon.$

Where: *ATURN* = sales/total assets; *CURR* = current assets/current liabilities; the rest variables are previously defined.

[94]The first stage includes a set of control variables that are excluded from the second stage regression (namely *ATURN and CURR*) following Lawrence et al. (2011) and Behn et al. (2008).

[95] The highest VIF mean was 4 documented for *INVMILLS* in the second stage of Heckman regression.

[96] Untabulated second-stage of Heckman test also confirmed and supported the primary analysis with reference to the moderating impact of each ownership structure proxy on the association between hierarchy input levels of fair value (Levels 1, 2 & 3) and the magnitude of audit fees. Generally, the findings of the primary analysis were not changed after controlling for sample selection bias.

Table 5.7. Pooled Regression Results with Controlling for Possible Endogeneity

DV = *LnAFEES*	***Probit Regression***	**Model (1)**	**Model (3)**	**Model (5)**
Variables	***Coeff. (z)***	***Coeff. (Robust t)***	***Coeff. (Robust t)***	***Coeff. (Robust t)***
Intercept	***- 8.256 (-22.32)******	***-7.747 (-7.68)******	***-7.315 (-7.30)******	***-7.112 (-7.46)******
FVA				
FVA_TA		0.769 (9.03)***	0.289 (3.64)***	0.183 (2.26)**
FAMILY_OWN		0.191 (3.14)***		
GOV_OWN			-0.146 (-1.640)	
FIN_INST_OWN				-0.671 (-7.05)***
FVA_TA FAMILY_OWN*		-1.731 (-5.93)***		
FVA_TA GOV_OWN*			1.165 (2.04)**	
FVA_TA FIN_INST_OWN*				2.014 (4.22)***
LnASSET	0.415 (19.58)***	0.775 (17.43)***	0.760 (17.18)***	0.753 (17.93)***
ROI	0.000 (4.19)***	0.000 (11.80)***	0.000 (11.43)***	0.000 (11.46)***
LOSS	0.293 (3.54)***	0.462 (9.85)***	0.444 (9.46)***	0.453 (9.81)***
LEV	-0.000 (-1.110)	0.000 (6.30)***	0.000 (6.46)***	0.000 (6.40)***
GROWTH	-0.013 (-1.210)	-0.029 (-6.05)***	-0.029 (-5.96)***	-0.028 (-5.84)***
SUBS	-0.013 (-1.520)	0.011 (2.53)**	0.011 (2.47)**	0.010 (2.20)**
BIG4		0.410 (14.45)***	0.402 (13.86)***	0.415 (14.82)***
CHANGE		0.104 (3.85)***	0.099 (3.69)***	0.104 (3.89)***
UNQUALIFIED		-0.047 (-1.310)	-0.060 (-1.660)*	-0.075 (-2.10)**
ATURN	0.018 (2.87)***			
CURR	0.000 (0.140)			
INVMILLS		1.768 (11.31)***	1.705 (10.99)***	1.679 (11.37)***
Pseudo R^2	***19.39%***			
Log likelihood	***-1647.90***			
Wald chi2	***(23)******			
Prob > chi2	***0.000***			
Robust	***Yes***	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
N	***3108***	***3108***	***3108***	***3108***
Prob>F		***0.000***	***0.000***	***0.000***
F - Statistic		***(28)******	***(28)******	***(28)******
R^2		***61.54%***	***61.15%***	***62.09%***
Mean VIF		***3.64***	***3.52***	***3.54***

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) on the interaction ownership structure variables with the proportions of fair-valued assets (by input Level) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*

Model (1): LnAFEES= δ0 + δ1FVA_TA+ δ2 FAMILY_OWN + δ3FVA_TA FAMILY_OWN + δ4LnASSET+ δ5SUBS+ δ6LOSS+ δ7ROI+ δ8LEV+ δ9QGROWTH+ δ10BIG4+ δ11CHANGE+ δ12UNQUALIFIED + δ13INVMILLS + IndFE + YearFE+ ε.*

Model (3): LnAFEES= δ0 + δ1FVA_TA+ δ2GOV_OWN + δ3FVA_TA GOV_OWN + δ4LnASSET+ δ5SUBS+ δ6LOSS+ δ7ROI+ δ8LEV+ δ9QGROWTH+ δ10BIG4+ δ11CHANGE+ δ12UNQUALIFIED + δ13INVMILLS + IndFE + YearFE+ ε.*

Model (5): LnAFEES= δ0 + δ1FVA_TA+ δ2 FIN_INST_OWN + δ3FVA_TA FIN_INST_OWN + δ4LnASSET+ δ5SUBS+ δ6LOSS+ δ7ROI+ δ8LEV+ δ9QGROWTH+ δ10BIG4+ δ11CHANGE+ δ12UNQUALIFIED+ δ13INVMILLS + IndFE + YearFE+ ε.*

Where: FVA_TA = Firm's total fair-valued assets deflated by total assets. FVA1_TA, FVA2_TA, FVA3_TA = Firm's total fair-valued assets using Level 1, Level 2, and Level 3 inputs deflated by total assets. FAMILY_OWN = The percentage of family ownership in the firm. GOV_OWN = The percentage of government ownership in the firm. FIN_INST_OWN = The percentage of financial institutions ownership in the firm. INVMILLS = The inverse Mills ratio calculated from the first stage probit regression on the probability of employing Big4 auditors.

****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*

All variables are defined in Table 3.5, Chapter 3.

5.6. Additional Analysis and Robustness Checks

A number of additional and sensitivity analyses are conducted to ensure that the main regression results are robust to different measurements and estimators. Furthermore, additional insights related to the analysis results of tested hypotheses can be generated from various supplementary tests as presented in the following sub-sections.

5.6.1. Bootstrap Standard Error

Similar to Chapter 4 and other research (Athanasakou et al. 2007; González & García-Meca 2014; Jiraporn & DaDalt 2009; Prencipe et al. 2008), Models (1 – 6) were re-tested using randomised sample repeated 3108 times (i.e., the total number of observations in the original sample to arrive at a new resample). Then this resampling process is repeated 100, 200, 500 and 1000 times to develop estimates of the standard errors and confidence intervals of the parameters shown. This robustness analysis is applied to ensure that the regression results are not driven by sampling error or data mining. Table 5.8. shows the results for the resampling procedure repeated 1000 times following Minutti-Meza (2013). Similar to previous regression models, the dependent variable is the log of audit fees (*LnAFEES*). The independent variables of interest are the proportion of fair-valued assets (*FVA_TA*) and fair value input levels (*FVA1_TA*, *FVA2_TA*, *FVA3_TA*). The moderating variables belonging to ownership concentration are family ownership (*FAMILY_OWN*), government ownership (*GOV_OWN*) and financial institution ownership (*FIN_INST_OWN*). As shown in the table below the *P* – value of the tested models (1 – 6) is highly significant at the 0.01 level (*Prob > chi2 = 0.000*) with reasonable explanatory power of each model ranging from 58% to 60%. Overall, the results of the bootstrapping approach analyses produce qualitatively similar results as those documented in the primary analysis[97]. Therefore, the findings reported in the main regression analysis hold strong and significant.

Table 5.8. Bootstrapping (1000 times) OLS Analysis

DV = *LnAFEES* **Variables**	***Model (1) Coffe. (bootstrapping z)***	***Model (2) Coffe. (bootstrapping z)***	***Model (3) Coffe. (bootstrapping z)***	***Model (4) Coffe. (bootstrapping z)***	***Model (5) Coffe. (bootstrapping z)***	***Model (6) Coffe. (bootstrapping z)***
Intercept	***3.155***	***3.030***	***3.043***	***3.067***	***3.280***	***3.114***
	(17.47)*	***(16.47)****	***(15.52)****	***(16.79)****	***(18.09)****	***(16.60)****
FVA_TA	0.681		0.255		0.210	
	(7.84)***		(3.07)***		(2.55)**	
FVA1_TA		0.892		0.659		0.617
		(8.49)***		(7.33)***		(6.72)***
FVA2_TA		0.153		0.428		0.135
		(0.400)		(1.390)		(0.400)
FVA3_TA		0.615		0.619		0.638
		(0.480)		(0.650)		(0.600)
FAMILY_OWN	0.230	0.171				
	(3.68)***	(2.79)***				
*FVA_TA * FAMILY_OWN*	-1.379					
	(-4.84)***					
*FVA1_TA * FAMILY_OWN*		-1.078				
		(-2.70)***				

(This Table is continued on the next page)

[97] All factors of the control variables remain the same as in the original models.

DV = *LnAFEES* Variables	*Model (1) Coffe. (bootstrapping z)*	*Model (2) Coffe. (bootstrapping z)*	*Model (3) Coffe. (bootstrapping z)*	*Model (4) Coffe. (bootstrapping z)*	*Model (5) Coffe. (bootstrapping z)*	*Model (6) Coffe. (bootstrapping z)*
*FVA2_TA * FAMILY_OWN*		1.329				
		(0.750)				
*FVA3_TA * FAMILY_OWN*		7.505				
		(1.570)				
GOV_OWN			-0.219	-0.211		
			(-2.31)**	(-1.880)		
*FVA_TA * GOV_OWN*			1.113			
			(1.670)*			
*FVA1_TA * GOV_OWN*				-1.488		
				(-0.910)		
*FVA2_TA * GOV_OWN*				2.573		
				(0.530)		
*FVA3_TA * GOV_OWN*				19.038		
				(2.01)**		
FIN_INST_OWN					-0.691	0.623
					(-6.80)***	(6.22)***
*FVA_TA * FIN_INST_OWN*					1.626	
					(3.28)***	
*FVA1_TA * FIN_INST_OWN*						0.186
						(0.340)
*FVA2_TA * FIN_INST_OWN*						4.436
						(1.900)*
*FVA3_TA * FIN_INST_OWN*						20.525
						(1.960)*
LnASSET	0.308	0.315	0.319	0.316	0.307	0.315
	(27.54)***	(27.82)***	(27.30)***	(28.21)***	(27.37)***	(27.77)**
ROI	0.000	0.000	0.000	0.000	0.000	0.000
	(5.44)***	(4.98)***	(5.16)***	(4.76)***	(5.12)***	(5.02)**
LOSS	0.116	0.113	0.116	0.102	0.124	0.123
	(3.21)***	(3.00)***	(3.12)***	(2.75)***	(3.42)***	(3.35)**
LEV	0.000	0.000	0.000	0.000	0.000	0.000
	(10.65)***	(10.55)***	(10.23)**	(10.69)***	(11.04)***	(10.87)**
GROWTH	-0.011	-0.011	-0.000	-0.011	-0.011	-0.011
	(-2.34)**	(-2.34)**	(-0.010)	(-2.31)**	(2.23)**	(-2.24)*
SUBS	0.024	0.023	0.025	0.023	0.023	0.022
	(5.72)***	(5.06)***	(5.61)***	(5.15)***	(4.88)***	(4.89)**
BIG4	0.438	0.430	0.436	0.427	0.439	0.433
	(15.56)***	(14.98)***	(14.08)***	(14.37)***	(15.42)***	(16.40)**
CHANGE	0.102	0.092	0.092	0.085	0.100	0.091
	(3.71)***	(3.29)***	(3.22)***	(3.14)***	(3.58)***	(3.26)**
UNQUALIFIED	-0.069	-0.067	-0.100	-0.080	-0.104	-0.103
	(-1.820)*	(-1.850)*	(-2.71)***	(-2.13)**	(2.84)***	(-2.77)**
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
N	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***
Replications	***1000***	***1000***	***1000***	***1000***	***1000***	***1000***
Wald chi2	***(27)****	***(31)****	***(27)****	***(31)****	***(27)****	***(31)****
Prob > chi2	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***
R^2	***58.52%***	***59.10%***	***58.29%***	***59.07%***	***58.36%***	***59.25%***
Adj. R^2	***58.36%***	***58.89%***	***58.12%***	***58.86%***	***58.19%***	***59.04%***
Mean VIF	***1.75***	***1.71***	***1.73***	***1.71***	***1.75***	***1.71***

***Note:** this table presents the OLS regressions with standard errors corrected by bootstrap replications (1000) of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on FVD and the interaction of ownership structure variables with the proportions of fair-valued assets (by input Level).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

5.6.2. Huber/White Standard Error

The residuals of all tested models passed through several tests for heteroscedasticity and non-normality as discussed above (see section 6.5). The Breusch-Pagan/Cook-Weisberg test is conducted to test for the existence of a heteroscedasticity problem. Untabulated *p – value* indicates a kind of heteroscedasticity is evident in the linear model (*p – value = 0.0581*). Similar to Chapter 4 and other research (Alhababsah 2019; Chambers et al. 2007; Mohrmann et al. 2013), the robust standard error method with Huber-White's sandwich estimator described in Diggle et al. (1994) serves as a more reliable method to diagnose this issue to ensure robust regression in the presence of heteroscedasticity. Therefore, Models (1 – 6) are re-tested in order to adjust for the heteroscedasticity problem. As shown in Table 5.9 below the *P* – value of the tested models (1 – 6) is highly significant at the 0.01 level (*Prob>F = 0.000)*. Overall, the outcome of Huber-White's sandwich estimator produces qualitatively similar results as those documented in the primary analysis[98].

Table 5.9. Pooled Regression Results with Huber–White t-statistics

DV = *LnAFEES* **Variables**	***Model (1)*** **Coffe. (*t*)**	***Model (2)*** **Coffe. (*t*)**	***Model (3)*** **Coffe. (*t*)**	***Model (4)*** **Coffe. (*t*)**	***Model (5)*** **Coffe. (*t*)**	***Model (6)*** **Coffe. (*t*)**
Intercept	***2.888***	***2.759***	***2.787***	***2.730***	***2.923***	***2.783***
	(20.21)***	***(18.98)******	***(20.03)******	***(19.07)******	***(20.93)******	***(19.53)******
FVA_TA	0.459		0.488		0.169	
	(4.82)***		(5.71)***		(2.30)**	
FVA1_TA		0.722		0.554		0.517
		(6.26)***		(6.13)***		(5.48)***
FVA2_TA		0.508		0.059		0.246
		(1.170)		(0.160)		(0.680)
FVA3_TA		0.592		0.198		0.094
		(0.410)		(0.170)		(0.080)
FAMILY_OWN	0.134	0.073				
	(2.56)**	(1.410)				
*FVA_TA * FAMILY_OWN*	-1.105					
	(-4.11)***					
*FVA1_TA * FAMILY_OWN*		-1.011				
		(-3.07)***				
*FVA2_TA * FAMILY_OWN*		1.822				
		(1.040)				
*FVA3_TA * FAMILY_OWN*		8.307				
		(1.360)				
GOV_OWN			-0.136	-0.172		
			(-1.790)*	(-1.98)**		
*FVA_TA * GOV_OWN*			0.508			
			(0.510)*			
*FVA1_TA * GOV_OWN*				-2.230		
				(-1.370)		
*FVA2_TA * GOV_OWN*				1.908		
				(0.360)		
*FVA3_TA * GOV_OWN*				18.792		
				(2.23)**		
FIN_INST_OWN					-0.532	-0.443
					(-7.50)***	(-6.42)***

(This Table is continued on the next page)

[98] All factors of the control variables remain the same as in the original models.

(Table 5.9. Continued)

DV = *LnAFEES* Variables	*Model (1)* Coffe. (*t*)	*Model (2)* Coffe. (*t*)	*Model (3)* Coffe. (*t*)	*Model (4)* Coffe. (*t*)	*Model (5)* Coffe. (*t*)	*Model (6)* Coffe. (*t*)
*FVA_TA * FIN_INST_OWN*					0.812	
					(1.750)*	
*FVA1_TA * FIN_INST_OWN*						0.248
						(0.420)
*FVA2_TA * FIN_INST_OWN*						1.595
						(0.500)*
*FVA3_TA * FIN_INST_OWN*						16.232
						(1.160)*
LnASSET	0.333	0.340	0.339	0.342	0.335	0.340
	(40.25)***	(40.44)***	(41.49)***	(40.77)***	(40.80)***	(40.84)***
ROI	0.000	0.000	0.000	0.000	0.000	0.000
	(4.67)***	(4.22)***	(3.93)***	(4.14)***	(4.76)***	(4.37)***
LOSS	0.092	0.092	0.084	0.083	0.099	0.097
	(2.65)***	(2.64)***	(2.41)**	(2.40)**	(2.83)***	(2.79)***
LEV	0.000	0.000	0.000	0.000	0.000	0.000
	(10.66)***	(10.65)***	(10.45)***	(10.62)***	(10.53)***	(10.78)***
GROWTH	-0.008	-0.008	-0.001	-0.009	-0.008	-0.008
	(-2.20)**	(-2.20)**	(-4.40)***	(-2.31)**	(-1.98)**	(-1.98)**
SUBS	0.019	0.017	0.015	0.018	0.017	0.017
	(4.88)***	(4.43)***	(4.13)***	(4.58)***	(4.54)***	(4.49)***
BIG4	0.424	0.422	0.422	0.429	0.412	0.412
	(16.96)***	(16.80)***	(16.84)***	(17.04)***	(16.61)***	(16.55)***
CHANGE	0.081	0.072	0.075	0.073	0.073	0.069
	(3.40)***	(3.04)***	(3.14)***	(3.08)***	(3.10)***	(2.90)***
UNQUALIFIED	-0.070	-0.066	-0.066	-0.063	-0.085	-0.083
	(-2.28)**	(-2.16)**	(-2.13)**	(-2.03)**	(-2.80)***	(-2.74)***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
N	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***
Prob>F	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***
F - Statistic	***(27)****	***(31)****	***(27)****	***(31)****	***(27)****	***(31)****
R^2	***66%***	***66%***	***66%***	***66%***	***66%***	***66%***
Mean VIF	***1.75***	***1.71***	***1.73***	***1.71***	***1.75***	***1.71***

Note: *this table presents the OLS regressions with Huber–White t-statistics of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on FVD and the interaction of ownership structure variables with the proportions of fair-valued assets (by input Level).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

5.6.3. Excluding the Crisis Year (2008)

Following recent work (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a; Goncharov et al. 2014; Sonu et al. 2017), the hypotheses are re-tested (Models 1 – 6) after excluding the firm-year observations for the crisis year (2008) from the total sample (222 firm-year observation). Table 5.10 below summarises the analysis results of the retested models. As shown in the table below the *P* – value of the tested models (1 – 6) is highly significant at the 0.01 level (*Prob>F = 0.000*) with reasonable explanatory power of each model ranging from 59% to 60%. The results of these replications remain consistent with our primary analysis[99].

[99] All factors of the control variables remain the same as in the original models.

Table 5.10. Result of OLS Regression Excluding Crisis Year (2008)

DV = *LnAFEES* Variables	*Model (1)* Coffe. (Robust *t*)	*Model (2)* Coffe. (Robust *t*)	*Model (3)* Coffe. (Robust *t*)	*Model (4)* Coffe. (Robust *t*)	*Model (5)* Coffe. (Robust *t*)	*Model (6)* Coffe. (Robust *t*)
Intercept	***3.132***	***3.006***	***3.198***	***3.036***	***3.255***	***3.088***
	(16.71)***	***(15.75)******	***(17.18)******	***(16.11)******	***(17.57)******	***(16.45)******
FVA_TA	0.680		0.297		0.209	
	(7.61)***		(3.56)***		(2.45)**	
FVA1_TA		0.895		0.670		0.620
		(7.99)***		(7.28)***		(6.67)***
FVA2_TA		0.157		0.448		0.124
		(0.390)		(1.370)		(0.360)
FVA3_TA		0.667		0.369		0.340
		(0.490)		(0.380)		(0.320)
FAMILY_OWN	0.219	0.164				
	(3.37)***	(2.55)*				
*FVA_TA * FAMILY_OWN*	1.383					
	(4.77)***					
*FVA1_TA * FAMILY_OWN*		-1.087				
		(2.73)***				
*FVA2_TA * FAMILY_OWN*		1.389				
		(0.710)				
*FVA3_TA * FAMILY_OWN*		6.015				
		(1.240)				
GOV_OWN			-0.207	-0.208		
			(-1.850)	(-1.840)*		
*FVA_TA * GOV_OWN*			0.828			
			(1.350)**			
*FVA1_TA * GOV_OWN*				-1.944		
				(-1.180)		
*FVA2_TA * GOV_OWN*				3.001		
				(0.660)		
*FVA3_TA * GOV_OWN*				22.495		
				(2.38)**		
FIN_INST_OWN					-0.709	-0.642
					(6.57)***	(6.13)***
*FVA_TA * FIN_INST_OWN*					1.604	
					(3.13)***	
*FVA1_TA * FIN_INST_OWN*						0.135
						(0.250)
*FVA2_TA * FIN_INST_OWN*						4.799
						(2.10)**
*FVA3_TA * FIN_INST_OWN*						22.412
						(2.16)**
LnASSET	0.310	0.316	0.310	0.317	0.309	0.316
	(26.65)***	(26.77)***	(26.88)***	(27.26)***	(27.09)***	(27.38)***
ROI	0.000	0.000	0.000	0.000	0.000	0.000
	(5.19)***	(4.76)***	(5.08)***	(4.68)***	(5.06)***	(4.67)***
LOSS	0.108	0.106	0.099	0.096	0.120	0.120
	(2.78)***	(2.70)***	(2.54)**	(2.47)**	(3.08)***	(3.07)***
LEV	0.000	0.000	0.000	0.000	0.000	0.000
	(10.00)***	(9.96)***	(9.98)***	(9.84)***	(10.07)***	(10.16)***
GROWTH	-0.011	-0.011	-0.011	-0.011	-0.010	-0.011
	(-2.12)**	(-2.16)**	(-2.11)**	(-2.15)**	(-2.00)**	(-2.09)**
SUBS	0.024	0.022	0.024	0.023	0.022	0.022
	(5.34)***	(4.92)***	(5.22)***	(4.99)***	(4.94)***	(4.73)***
BIG4	0.440	0.433	0.431	0.432	0.441	0.437
	(14.62)***	(14.49)***	(14.05)***	(14.01)***	(14.90)***	(14.78)***

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(Table 5.10. Continued)

DV = *LnAFEES* Variables	*Model (1)* Coffe. (Robust *t*)	*Model (2)* Coffe. (Robust *t*)	*Model (3)* Coffe. (Robust *t*)	*Model (4)* Coffe. (Robust *t*)	*Model (5)* Coffe. (Robust *t*)	*Model (6)* Coffe. (Robust *t*)
CHANGE	0.097	0.086	0.090	0.080	0.096	0.086
	(3.34)***	(2.96)***	(3.13)***	(2.78)***	(3.34)***	(3.01)***
UNQUALIFIED	-0.061	-0.059	-0.080	-0.070	-0.099	-0.097
	(-1.620)	(-1.570)	(-2.13)**	(-1.840)*	(-2.68)***	(-2.61)***
Robust	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***2886***	***2886***	***2886***	***2886***	***2886***	***2886***
N	***(26)****	***(30)****	***(26)****	***(30)****	***(26)****	***(30)****
Prob>F	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***
F - Statistic	***59.02%***	***59.32%***	***58.75%***	***59.26%***	***59.72%***	***60.11%***
R^2	***1.82***	***1.86***	***1.74***	***1.85***	***1.75***	***1.73***

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) on the interaction ownership structure variables with the proportions of fair-valued assets (by input Level and in total) excluding the crisis year of 2008 with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3, Chapter 3.

5.6.4. Excluding the BIG4 Variable

Following recent research (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a, 2014b; Goncharov et al. 2014) the hypotheses (Models 1 – 6) were re-tested by excluding the variable *BIG4* from each model to ensure that the main analysis results are not driven by an auditor type factor (*BIG4*). All results remain unchanged with those reported in the primary analysis.

5.6.5. Alternative Measures of Ownership Structure

Ownership concentration is measured using the proportion of ownership participation in the firm's total shares (measurement used in the primary analysis), and the dummy variables which is coded 1 if the ownership exists, 0 otherwise is utilised to capture whether alternative measurements of ownership structure affect the primary analysis results or not (Hay et al. 2006). Following Hay et al. (2006), family, government, and financial institution ownership are re-tested (Models 1 – 6) using the alternative measures. Table 5.11 below presents the analysis results of the re-tested models. As shown in the table the *P* – value of the tested models (1 – 6) is highly significant at the 0.01 level (*Prob>F = 0.000)* with reasonable explanatory power of each model ranging from 58% to 60%[100]. The results are robust with respect to this alternative specification of the independent variables[101].

Table 5.11. Result of OLS Regression using Alternative Proxies

DV = *LnAFEES* Variables	*Model (1)* Coffe. (Robust *t*)	*Model (2)* Coffe. (Robust *t*)	*Model (3)* Coffe. (Robust *t*)	*Model (4)* Coffe. (Robust *t*)	*Model (5)* Coffe. (Robust *t*)	*Model (6)* Coffe. (Robust *t*)
Intercept	***3.133***	***3.020***	***3.086***	***3.114***	***2.966***	***3.066***
	(17.52)*	***(16.52)****	***(15.82)****	***(17.06)****	***(14.66)****	***(16.34)****
FVA_TA	0.731		0.256		-0.294	
	(7.04)***		(2.76)***		(2.32)**	
FVA1_TA		0.987		0.672		0.273
		(8.01)***		(7.19)***		(2.00)**
FVA2_TA		0.243		0.601		0.364
		(0.590)		(1.890)		(0.900)

(This Table is continued on the next page)

[100] All regression models are tested for multicollinearity employing VIF. The mean VIF in all models is below 2.
[101] All factors of the control variables remain the same as in the original models.

DV = *LnAFEES* **Variables**	***Model (1)*** **Coffe.** **(Robust *t*)**	***Model (2)*** **Coffe.** **(Robust *t*)**	***Model (3)*** **Coffe.** **(Robust *t*)**	***Model (4)*** **Coffe.** **(Robust *t*)**	***Model (5)*** **Coffe.** **(Robust *t*)**	***Model (6)*** **Coffe.** **(Robust *t*)**
FVA3_TA		1.147		-1.158		11.488
		(0.820)		(-1.160)		(4.73)***
FAMILY_Own_Dummy	0.143	0.118				
	(4.74)***	(3.95)***				
*FVA_TA * FAMILY_Own_Dummy*	-0.610					
	(-4.53)***					
*FVA1_TA * FAMILY_Own_Dummy*		-0.560				
		(3.64)***				
*FVA2_TA * FAMILY_Own_Dummy*		0.295				
		(0.540)				
*FVA3_TA * FAMILY_Own_Dummy*		1.548				
		(0.920)				
GOV_ Own_Dummy			-0.033	-0.039		
			(-0.950)	(-1.140)		
*FVA_TA * GOV_Own_Dummy*			0.190			
			(1.280)*			
*FVA1_TA * GOV_Own_Dummy*				-0.065		
				(-0.370)		
*FVA2_TA * GOV_Own_Dummy*				0.209		
				(0.310)		
*FVA3_TA * GOV_Own_Dummy*				7.421		
				(4.15)***		
FIN_INST_Own_Dummy					-0.174	-0.099
					(-4.37)***	(-3.39)***
*FVA_TA * FIN_INST_Own_Dummy*					0.627	
					(4.30)***	
*FVA1_TA * FIN_INST_Own_Dummy*						0.035
						(0.060)
*FVA2_TA * FIN_INST_Own_Dummy*						0.512
						(3.24)***
*FVA3_TA * FIN_INST_Own_Dummy*						11.366
						(4.40)***
LnASSET	0.307	0.313	0.315	0.311	0.314	0.312
	(27.58)***	(27.56)***	(26.86)***	(27.72)***	(26.13)***	(27.22)***
ROI	0.000	0.000	0.000	0.000	0.000	0.000
	(5.21)***	(4.78)***	(5.23)***	(4.97)***	(4.96)***	(4.70)***
LOSS	0.113	0.110	0.123	0.110	0.113	0.105
	(3.05)***	(2.99)***	(3.25)***	(2.97)***	(3.00)***	(2.83)***
LEV	0.000	0.000	0.000	0.000	0.000	0.000
	(10.84)***	(10.77)***	(10.23)***	(10.20)***	(10.94)***	(10.81)***
GROWTH	-0.010	-0.011	-0.000	-0.012	-0.000	-0.012
	(-2.09)**	(-2.17)**	(-4.26)***	(-2.40)**	(-3.78)***	(-2.46)**
SUBS	0.024	0.023	0.024	0.022	0.024	0.023
	(5.41)***	(5.15)***	(5.34)***	(4.96)***	(5.38)***	(5.23)***
BIG4	0.449	0.440	0.422	0.411	0.406	0.391
	(15.51)***	(15.30)***	(13.01)***	(14.08)***	(12.85)***	(13.55)***
CHANGE	0.103	0.093	0.093	0.086	0.087	0.079
	(3.72)***	(3.35)***	(3.30)***	(3.14)***	(3.10)***	(2.86)***
UNQUALIFIED	-0.070	-0.071	-0.091	-0.071	-0.083	-0.075
	(-1.940)*	(-1.950)*	(2.48)**	(-1.940)*	(-2.25)**	(-2.06)**
Robust	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects						
N	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***
F - Statistic	***(27)****	***(31)****	***(27)****	***(31)****	***(27)****	***(31)****

(Table 5.11. Continued)

DV = *LnAFEES* Variables	*Model (1)* Coffe. (Robust *t*)	*Model (2)* Coffe. (Robust *t*)	*Model (3)* Coffe. (Robust *t*)	*Model (4)* Coffe. (Robust *t*)	*Model (5)* Coffe. (Robust *t*)	*Model (6)* Coffe. (Robust *t*)
Prob>F	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***
R^2	***59.24%***	***59.61%***	***58.39%***	***59.50%***	***58.96%***	***59.82%***
Mean VIF	***1.89***	***1.95***	***1.76***	***1.79***	***2.27***	***2.87***

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) on the interaction ownership structure variables with the proportions of fair-valued assets (by input Level and in total) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
Where: FVA_TA = Firm's total fair-valued assets deflated by total assets. FVA1_TA, FVA2_TA, FVA3_TA = Firm's total fair-valued assets using Level 1, Level 2, and Level 3 inputs deflated by total assets. FAMILY_Own_Dummy= dummy variable coded 1 if there are any family-held shares and 0 otherwise, GOV_Own_Dummy= dummy variable coded 1 if there are any government-held shares and 0 otherwise., FIN_INST_Own_Dummy= dummy variable taking 1 if there are any financial institution-held shares and 0 otherwise.
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

5.6.6. Alternative Measure of the Subjective Fair Values through Level 2 and Level 3 Assets

As a robustness analysis, Models (3, 4 and 6) were re-tested using the aggregate variable Level 2 and Level 3 *(FVA23_TA)* instead of (*FVA2_TA, FVA3_TA*) to test the robustness of the findings of the effect of each ownership structure type on the association between the uncertain hierarchy level inputs and audit fees. Table 5.12 below presents the analysis results of the re-tested models where the dependent variable is the natural log of audit fees (*LnAFEES*). The independent variables are Level 1 assets (*FVA1_TA*) and the aggregate variables Level 2 and Level 3 *(FVA23_TA)*. The moderating variables belonging to ownership concentration are family ownership (*FAMILY_OWN*), government ownership (*GOV_OWN*); and financial institution ownership (*FIN_INST_OWN*). As shown in the table the *P* – value of the tested models (1 – 3) of Table 5.12 is highly significant at the 0.01 level (*Prob>F = 0.000*) with reasonable explanatory power of each model ranging from 59% to 66%[102]. All results remain unchanged with those reported in the main analyses[103].

Table 5.12. Result of OLS Regression: Aggregate Level 2 and Level 3 Assets Variable (*FVA23_TA*)

DV = *LnAFEES* Variables	*Model (1)* Coffe. (Robust *t*)	*Model (2)* Coffe. (Robust *t*)	*Model (3)* Coffe. (Robust *t*)
Intercept	***3.041***	***3.067***	***3.404***
	(16.39)***	***(16.74)******	***(19.22)******
FVA1_TA	0.889	0.586	0.617
	(8.27)***	(6.80)***	(6.96)***
FVA23_TA	0.705	0.337	0.240
	(2.11)**	(1.340)	(0.880)
FAMILY_OWN	0.112		
	(1.930)*		
FVA1_TA FAMILY_OWN*	-1.033		
	(-2.67)***		
*FVA23_TA * FAMILY_OWN*	1.960		
	(1.260)		
GOV_OWN		0.267	
		(2.05)**	
FVA1_TA GOV_OWN*		-1.271	
		(-1.000)	
*FVA23_TA * GOV_OWN*		4.122	
		(1.910)**	

(This Table is continued on the next page)

[102] All regression models are tested for multicollinearity employing VIF. The mean VIF in all models is below 2.
[103] All factors of the control variables remain the same as in the original models.

(Table 5.12. Continued)

DV = ***LnAFEES*** **Variables**	***Model (1)*** **Coffe. (Robust *t*)**	***Model (2)*** **Coffe. (Robust *t*)**	***Model (3)*** **Coffe. (Robust *t*)**
FIN_INST_OWN			-0.618
			(-6.18)***
FVA1_TA FIN_INST_OWN*			0.220
			0.420
*FVA23_TA * FIN_INST_OWN*			4.349
			(2.05)**
LnASSET	0.314	0.219	0.315
	(27.50)***	(16.86)***	(28.20)***
ROI	0.000	0.000	0.000
	(4.85)***	(3.51)***	(4.72)***
LOSS	0.112	0.107	0.123
	(3.02)***	(3.08)***	(3.30)***
LEV	0.000	0.000	0.000
	(10.57)***	(5.48)***	(10.73)***
GROWTH	-0.011	-0.008	-0.011
	(-2.33)**	-(1.790)*	(-2.29)**
SUBS	0.023	0.039	0.022
	(5.40)***	(9.07)***	(5.02)***
BIG4	0.431	0.351	0.432
	(15.18)***	(12.43)***	(15.35)***
CHANGE	0.091	0.064	0.089
	(3.28)***	(2.46)**	(3.27)***
UNQUALIFIED	-0.070	-0.002	-0.104
	-(1.920)*	-(0.050)	(-2.89)***
Robust	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***
N	***3108***	***3108***	***3108***
Prob>F	***0.000***	***0.000***	***0.000***
F - Statistic	***(29)******	***(29)******	***(29)******
R^2	***59.48%***	***65.70%***	***60.21%***
Mean VIF	***1.77***	***1.73***	***1.73***

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) on the interaction ownership structure variables with the proportions of fair-valued assets (by input Level) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
*Model(1):LnAFEES=δ0+δ1FVA1_TA+δ2FVA23_TA+δ3FVA1_TA*FAMILY_OWN+δ4FVA23_TA*FAMILY_OWN+δ5LnASSET+ δ6SUBS+δ7LOSS+δ8ROI+δ9LEV+δ10GROWTH+δ11BIG4+δ12CHANGE+δ13UNQUALIFIED+ IndFE+ YearFE + ε.*
Model(2):LnAFEES=δ0+δ1FVA1_TA+δ2FVA23_TA+δ3FVA1_TA GOV_OWN +δ4FVA23_TA* GOV_OWN +δ5LnASSET+ δ6SUBS+δ7LOSS+δ8ROI+δ9LEV+δ10GROWTH+δ11BIG4+δ12CHANGE+δ13UNQUALIFIED+ IndFE+ YearFE + ε.*
Model(3):LnAFEES=δ0+δ1FVA1_TA+δ2FVA23_TA+δ3FVA1_TA FIN_INST_OWN +δ4FVA23_TA* FIN_INST_OWN +δ5LnASSET+ δ6SUBS+δ7LOSS+δ8ROI+δ9LEV+δ10GROWTH+δ11BIG4+δ12CHANGE+δ13UNQUALIFIED+ IndFE+ YearFE + ε.*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

5.6.7. Financial vs. Non-Financial Industry

Following Lin et al. (2017) the regression models (1, 3 and 5) are re-tested using corporate industry type variable (*INDS*) in order to capture the difference in the association between FVD and audit fees among the two types of industries. The sample has been split into two sub-samples based on client industry: financial industry vs non-financial industry. Models (1, 3 and 5) are re-tested separately and modified by adding the industry type variable (*INDS*) interaction term to the proportion of fair-valued assets and family, government, and financial institution ownership variables (*FAMILY_OWN *FVA_TA*INDS*, *GOV_OWN*FVA_TA*INDS*, *FIN_INST_OWN *FVA_TA*INDS*) as shown in Models (1 – 3) in Table 5.13. Similar to the primary model the dependent variable is the natural log of audit fees (*LnAFEES*) and the independent variables of interest is the proportion of fair-valued assets (*FVA_TA*). The moderating variables belonging to ownership concentration are family ownership (*FAMILY_OWN*), government ownership (*GOV_OWN*), financial institution ownership (*FIN_INST_OWN*), and corporate industry type (*INDS*). As shown in Table 5.13 below the P – value of the tested models is highly significant at the 0.01 level (*Prob > F = 0.000*) with reasonable explanatory power ranging from 59% to 60% which is similar to Sangchan et al. (2020)[104].

Model (1) failed to find any significant difference in the moderating role of family ownership between the proportion of fair-valued assets and audit fees across the financial vs non-financial industries (*Coeff. = 0.201, Robust t = 0.220*). This analysis is in line with the untabulated t – test which confirmed that the mean difference in *FAMILY_OWN* variable amongst the sub-samples (financial vs non-financial industries) is never significant[105]. Model (2) finds a significant difference in the moderating effect of government ownership on the association between the proportion of fair-valued assets and audit fees between the two sub-samples (*Coeff. = -2.482, Robust t = -1.910*). The result confirms that the effect of state ownership strengthens the association between the proportion of fair-valued assets and audit fees in the non-financial industry where high state ownership is found[106] relative to the financial industry. The result is in line with Zeitun and Tian's (2007) argument which confirms that the main objective of the Jordanian government is to attract foreign investors by sending positive signals on the credibility of local firms' financial situation. Model (3) finds a significant difference in the moderating effect of financial institution ownership on the association between the proportion of fair-valued assets and audit fees over the two sub-samples (*Coeff. = -3.606, Robust t = -4.04*). Consistent with state ownership analysis, financial institution ownership reinforces the association between the proportion of fair-valued assets and audit fees for the non-financial industry compared to the financial industry. This finding is consistent with Alhababsah (2019) and Barth et al. (2008) who suggested that financial industry shareholders impose their strict monitoring and controlling power with lower costs through developing a close relationship with firms. Such owners have advanced knowledge and greater analytical abilities, which boost their monitoring activities with lower agency costs and means lower audit fees[107].

Table 5.13. Result of OLS Regression by Industry Type

DV = *LnAFEES* **Variables**	***Model (1)*** **Coffe. (Robust *t*)**	***Model (2)*** **Coffe. (Robust *t*)**	***Model (3)*** **Coffe. (Robust *t*)**
Intercept	***2.898***	***3.020***	***3.140***
	(16.41)***	***(17.46)******	***(17.89)******
FVA_TA	0.334	0.086	0.300
	(1.97)**	(0.490)*	(2.16)**
INDS	0.229	0.089	0.067
	(4.68)***	(2.35)***	(1.670)*
FAMILY_OWN	0.453		
	(5.19)***		
*FVA_TA * FAMILY_OWN*INDS*	0.201		
	(0.220)		
GOV_OWN		-0.541	
		(-3.90)***	
*FVA_TA * GOV_OWN*INDS*		-2.482	

(This Table is continued on the next page)

[104] All regression models are tested for multicollinearity employing VIF. The mean VIF in all models is below 2.
[105] Untabulated t – test confirms that the mean difference of *FAMILY_OWN* by *INDS* is insignificant where (*p – value =0.1370, t – value = 1.2266*).
[106] Untabulated t – test confirms that the mean of *GOV_OWN* by non-financial industry is 0.10, which is significantly higher than the financial industry 0.05 (*p – value =0.000, t – value = 4.9293*).
[107] All factors of the control variables remain the same as in the original models.

(Table 5.13. Continued)

DV = *LnAFEES* **Variables**	***Model (1)*** **Coffe. (Robust *t*)**	***Model (2)*** **Coffe. (Robust *t*)**	***Model (3)*** **Coffe. (Robust *t*)**
		(-1.910)*	
FIN_INST_OWN			-0.706
			(-6.13)***
*FVA_TA * FIN_INST_OWN*INDS*			-3.606
			(-4.04)***
LnASSET	0.311	0.312	0.311
	(27.95)***	(28.62)***	(28.46)***
ROI	0.000	0.000	0.000
	(5.37)***	(5.10)***	(5.19)***
LOSS	0.118	0.107	0.124
	(3.17)***	(2.90)***	(3.36)***
LEV	0.000	0.000	0.000
	(10.83)***	(10.73)***	(10.41)***
GROWTH	-0.011	-0.011	-0.011
	(-2.37)**	(-2.30)**	(-2.31)**
SUBS	0.025	0.023	0.022
	(5.59)***	(5.37)***	(4.98)***
BIG4	0.439	0.435	0.441
	(15.26)***	(14.70)***	(15.60)***
CHANGE	0.440	0.437	0.443
	(15.33)***	(14.77)***	(15.65)***
UNQUALIFIED	-0.093	-0.092	-0.094
	(-3.38)***	(-3.36)***	(-3.45)***
Robust	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***
N	***3108***	***3108***	***3108***
Prob>F	***0.000***	***0.000***	***0.000***
F - Statistic	***(30)****	***(30)****	***(30)****
R^2	***59.58%***	***59.32%***	***60.30%***
Mean VIF	***2.08***	***2.16***	***2.09***

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) on the interaction ownership structure variables with the proportions of fair-valued assets over industry type with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
*Model(1):LnAFEES=δ0+δ1FVA1_TA+δ2INDS+δ3FAMILY_OWN+δ4FVA1_TA*FAMILY_OWN*INDS+δ5LnASSET+δ6SUBS+δ7LOSS+δ8ROI+δ9LEV +δ10GROWTH+δ11BIG4+δ12CHANGE+δ13UNQUALIFIED+ IndFE+ YearFE + ε.*
*Model(2):LnAFEES=δ0+δ1FVA1_TA+δ2INDS+δ3GOV_OWN+δ4FVA1_TA*GOV_OWN*INDS+δ5LnASSET+δ6SUBS+δ7LOSS+δ8ROI+δ9LEV+δ10GROWTH+δ11BIG4+δ12CHANGE+δ13UNQUALIFIED+IndFE+YearFE+ε.*
*Model(3):LnAFEES=δ0+δ1FVA1_TA+δ2INDS+δ3FIN_INST_OWN+δ4FVA1_TA*FIN_INST_OWN*INDS+δ5LnASSET+δ6SUBS+δ7LOSS+δ8ROI+δ9LEV+δ10GROWTH+δ11BIG4+δ12CHANGE+δ13UNQUALIFIED+IndFE+YearFE+ε.*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

5.6.8. Pre-Crisis vs. Post-Crisis

The effect of the GFC periods over the tested models (1, 3 and 5) is analysed using the crisis variables (*PERCRISIS* and *POSTCRISIS*) following Huang et al. (2020). This aims to capture the difference in the association between FVD and audit fees among the two major periods in the global economy. The sample is split into two sub-samples based on two periods: pre-crisis vs post-crisis. Models (1, 3 and 5) are re-tested separately and modified by adding: the *PERCRISIS* and *POSTCRISIS* variable interaction term to the proportion of fair-valued assets and family, government and financial institution ownership variables:(*FAMILY_OWN*FVA_TA*PRECRISIS,GOV_OWN*FVA_TA*PRECRISIS,FIN_INST_OWN*FVA_TA*PRECRISIS*)and(*FAMILY_OWN*FVA_TA*POSTCRISIS,GOV_OWN*FVA_TA*POSTCRISIS,FIN_INST_OWN*FVA_TA*POSTCRISIS*).

Models (1 – 6) of Table 5.14 below present the regression results. Similar to the primary model the dependent variable is the natural log of audit fees (*LnAFEES*) and the independent variables of interest are the proportion of fair-valued assets (*FVA_TA*) and fair value input levels (*FVA1_TA*, *FVA2_TA*, *FVA3_TA*). Meanwhile the moderating variables belonging to ownership concentration are: family ownership (*FAMILY_OWN*), government ownership (*GOV_OWN*), financial institution ownership (*FIN_INST_OWN*), and the crisis variables (*PERCRISIS* and *POSTCRISIS*). As shown in the table below the P – value of the tested models is highly significant at the 0.01 level (*Prob > F = 0.000*) with reasonable explanatory power ranging from 59% to 60% which is similar to Sangchan et al. (2020)[108].

Models (1 – 2) show that the moderating role of pre-crisis (post-crisis) period strengthens (weakens) the moderating effect of family ownership on the association between the proportion of fair-valued assets and audit fees where *Coeff. = 1.600, Robust t = 2.44 (Coeff. = -1.225, Robust t = -2.22)*. This result is consistent with Cairns et al. (2011), Cameran and Perotti (2014) and Ferguson and Stokes (2002) who stated that a highly complex transition to IFRS resulted in larger audit fees. Conversely, the post-crisis period result agrees with recent research (Haswell & Evans 2018; Groff et al. 2017) that indicates low audit risk follows the improvement in institutions' governance and monitoring procedures. To this end, it can be noticed that family-owned firms are not likely to be affected by economic turmoil due to limited financial trading (Abdullatif 2016). Models (3 – 4) suggest that the moderating role of pre-crisis (post-crisis) period does not significantly influence the moderating effect of government ownership on the association between the proportion of fair-valued assets and audit fees with negative (positive) sign where *Coeff. = -0.875, Robust t = -0.830 (Coeff. = 0.353, Robust t = 0.330)*. Similarly, Models (5 – 6) reveal that the moderating role of pre-crisis (post-crisis) period insignificantly influenced the moderating effect of financial institution ownership on the association between the proportion of fair-valued assets and audit fees where *Coeff. = -2.470, Robust t = -2.18 (Coeff. = 1.691, Robust t = 1.730)*[109].

All in all, excepting government ownership structure, the moderating effect of ownership structure on the relationship between fair value and audit fees weakens at the time before the crisis begins (pre-crisis). However, the relationship strengthens following the crisis period (post-crisis) due to the FVA model coming under heavy criticism. The findings confirm the arguments that using mark-to-market accounting practices resulted in escalating the effect of the credit crisis, by increasing market earnings volatility (Haswell & Evans 2018).

Table 5.14. Result of OLS Regression by GFC

DV = *LnAFEES* **Variables**	***Model (1)*** **Coffe.** **(Robust *t*)**	***Model (2)*** **Coffe.** **(Robust *t*)**	***Model (3)*** **Coffe.** **(Robust *t*)**	***Model (4)*** **Coffe.** **(Robust *t*)**	***Model (5)*** **Coffe.** **(Robust *t*)**	***Model (6)*** **Coffe.** **(Robust *t*)**
Intercept	***3.069***	***3.130***	***3.147***	***3.249***	***3.192***	***3.251***
	(16.66)***	***(17.03)******	***(17.17)******	***(17.97)******	***(17.64)******	***(17.96)******
FVA_TA	0.993	0.315	0.426	0.095	0.320	0.118
	(10.32)***	(2.51)**	(4.39)***	(0.850)	(3.27)***	(1.000)
PRECRISIS	0.074		0.129		0.075	
	(0.920)		(1.710)		(1.000)	

(This Table is continued on the next page)

[108] All regression models are tested for multicollinearity employing VIF. The mean VIF in all models is below 2.
[109] All factors of the control variables remain the same as in the original models.

(Table 5.14. Continued)

DV = *LnAFEES* **Variables**	***Model (1)*** **Coffe. (Robust *t*)**	***Model (2)*** **Coffe. (Robust *t*)**	***Model (3)*** **Coffe. (Robust *t*)**	***Model (4)*** **Coffe. (Robust *t*)**	***Model (5)*** **Coffe. (Robust *t*)**	***Model (6)*** **Coffe. (Robust *t*)**
POSTCRISIS		-0.066		-0.105		-0.050
		(-0.840)		(-1.400)		(-0.670)
FAMILY_OWN	0.194	0.388				
	(2.83)***	(3.73)***				
*FVA_TA * FAMILY_OWN*PRECRISIS*	1.600					
	(2.44)**					
*FVA_TA * FAMILY_OWN*POSTCRISIS*		-1.225				
		(-2.22)**				
GOV_OWN			-0.186	-0.310		
			(-1.530)	(-1.930)*		
*FVA_TA * GOV_OWN* PRECRISIS*			-0.875			
			(-0.830)			
*FVA_TA * GOV_OWN* POSTCRISIS*				0.353		
				(0.330)		
FIN_INST_OWN					-0.789	-0.353
					(-7.34)***	(-2.34)**
*FVA_TA * FIN_INST_OWN* PRECRISIS*					-2.470	
					(-2.18)**	
*FVA_TA * FIN_INST_OWN* POSTCRISIS*						1.691
						(1.730)*
LnASSET	0.309	0.309	0.309	0.309	0.308	0.308
	(27.49)***	(27.51)***	(27.69)***	(27.72)***	(28.04)***	(28.01)***
ROI	0.000	0.000	0.000	0.000	0.000	0.000
	(5.36)***	(5.33)***	(5.21)***	(5.18)***	(5.23)***	(5.21)***
LOSS	0.116	0.118	0.108	0.108	0.128	0.129
	(3.12)**	(3.17)***	(2.90)***	(2.90)***	(3.45)***	(3.47)***
LEV	0.000	0.000	0.000	0.000	0.000	0.000
	(10.60)***	(10.54)***	(10.65)***	(10.62)***	(10.73)***	(10.72)***
GROWTH	-0.011	-0.011	-0.011	-0.011	-0.011	-0.010
	(-2.35)**	(2-.33)**	(-2.25)**	(-2.23)**	(-2.20)**	(-2.11)**
SUBS	0.024	0.024	0.024	0.024	0.023	0.022
	(5.55)***	(5.54)***	(5.45)***	(5.42)***	(5.12)***	(5.10)***
BIG4	0.439	0.441	0.428	0.429	0.442	0.444
	(15.39)***	(15.42)***	(14.65)***	(14.69)***	(15.62)***	(15.73)***
CHANGE	0.105	0.105	0.097	0.096	0.103	0.103
	(3.79)***	(3.79)***	(3.51)***	(3.49)***	(3.77)***	(3.76)***
UNQUALIFIED	-0.065	-0.066	-0.083	-0.083	-0.101	-0.104
	(-1.780)*	(-1.820)*	(-2.26)**	(-2.26)**	(-2.82)***	(-2.90)***
Robust	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
N	***3108***	***3108***	***3108***	***3108***	***3108***	***3108***
Prob>F	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***	***0.000***
F - Statistic	***(30)****	***(30)****	***(30)****	***(30)****	***(30)****	***(30)****
R^2	***59.57%***	***59.46%***	***59.07%***	***59.01%***	***60.17%***	***60.15%***
Mean VIF	***2.21***	***2.70***	***1.91***	***2.19***	***1.91***	***2.38***

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) on the interaction ownership structure variables with the proportions of fair-valued assets over the crisis period with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
*Models(1-2):LnAFEES=δ0+δ1FVA1_TA+δ2PRECRISIS(orPOSTCRISIS)+δ3FAMILY_OWN+δ4FVA1_TA*FAMILY_OWN*INDS +δ5LnASSET+δ6SUBS+δ7LOSS+δ8ROI+δ9LEV +δ10GROWTH+δ11BIG4+δ12CHANGE+δ13UNQUALIFIED+ IndFE+ YearFE + ε.*
*Models(3-4):LnAFEES=δ0+δ1FVA1_TA+δ2PRECRISIS(orPOSTCRISIS)+δ3GOV_OWN+δ4FVA1_TA*GOV_OWN*INDS +δ5LnASSET+δ6SUBS+δ7LOSS+δ8ROI+δ9LEV +δ10GROWTH+δ11BIG4+δ12CHANGE+δ13UNQUALIFIED+ IndFE+ YearFE + ε.*
*Models(5-6):LnAFEES=δ0+δ1FVA1_TA+δ2PRECRISIS(orPOSTCRISIS)+δ3FIN_INST_OWN+δ4FVA1_TA*FIN_INST_OWN*INDS +δ5LnASSET+δ6SUBS+δ7LOSS+δ8ROI+δ9LEV +δ10GROWTH+δ11BIG4+δ12CHANGE+δ13UNQUALIFIED+ IndFE+ YearFE + ε.*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.3, Chapter 3.

5.6.9. Family vs. Non-Family Client

Following Ettredge et al. (2014b) the regression models (1 – 2) are re-tested using an alternative proxy for family ownership to capture the difference in the association between FVD and audit fees between to sub-samples: family vs non-family-owned firms. This kind of analysis is conducted to test the robustness of the findings to different measurements. So, the sample has been split into two sub-samples: family vs non-family-owned firms. Models (1 – 2) are re-tested separately and modified by adding the *FAMILY_Dummy* variable interaction term to the proportion of fair-valued assets (*FAMILY_Dummy*FVA_TA*) in Model (2), and *FAMILY_Dummy* interaction term to each fair value hierarchy levels (*FAMILY_Dummy *FVA1_TA, FAMILY_Dummy*FVA2_TA, FAMILY_Dummy*FVA3_TA*). This kind of additional analysis is based on the fact that family ownership has different influences on their auditors based on the client's business type following Al-Akra and Hutchinson (2013).

Models (1–2) of Table 5.15 below present the regression results. Similar to the primary analysis, the dependent variable is the natural log of audit fees (*LnAFEES*) and the independent variables of interest are the proportion of fair-valued assets (*FVA_TA*) and fair value input levels (*FVA1_TA, FVA2_TA, FVA3_TA*). The moderating variable is family ownership dummy (*FAMILY_OWN_Dummy).* As shown in the table below the *P* – value of the tested models is highly significant at the 0.01 level (*Prob > F = 0.000)* with reasonable explanatory power around 60% which is similar to Sangchan et al. (2020)[110].

Model (1) of Table 5.15 presents the OLS regression results of the interaction term of family ownership with the proportion of fair-valued assets. Consistent with the primary analysis, the result indicates that the coefficient on the interaction of the family ownership with the proportion of fair-valued assets is significant negative (*Coeff. = -0.661, Robust t = -4.93*). The result confirms the view that family-owned firms pay smaller audit fees compared to non-family-owned businesses. This result confirms that companies with minor agency problems are paying less compared to non-family firms.

Model (2) shows the OLS regression results for the interaction term of family ownership dummy with the proportion of fair-valued assets through the hierarchy levels. Family ownership interaction term's coefficient also is not significant with a positive sign for both Level 2 and Level 3 (Level 2: *Coeff. = 0.135, Robust t = 0.370, Level 3: Coeff. = 1.192, Robust t = 1.380*); whereas it is significant with a negative sign for Level 1 (*Coeff. = -0.595, Robust t = -3.86*)[111]. This conclusion is in line with agency theory, in that less usage of subjective and uncertain fair values leads to fee discounts and vice versa. The results are consistent with the descriptive analysis above which confirms that higher subjective fair values are mostly applied by non-family-owned firms where the need for high quality audits and additional audit tests are required; this ultimately drives audit fees up (Al-Akra & Hutchinson 2013; Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a)[112].

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[110] All regression models are tested for multicollinearity employing VIF. The mean VIF in all models is below 2.

[111] All factors of the control variables remain the same as in the original models.

[112] Untabulated regression analysis regarding the moderating effect of *FAMILY_Dummy* on the aggregate variable of Level 2 and Level 3 *FVA23_TA* and audit fees is conducted by modifying Model (1) into the following:

$LnAFEES = \delta 0 + \delta 1\ FAMILY\_OWN + \delta 2 FVA23\_TA + \delta 3 FVA23\_TA * FAMILY\_Dummy + \delta 4 LnASSET + \delta 5 SUBS + \delta 6 LOSS + \delta 7 ROA + \delta 8 LEV + \delta 9 QGROWTH + \delta 10 BIG4 + \delta 11 CHANGE + \delta 12 UNQUALIFIED + IndFE + YearFE + \varepsilon.$

Table. 5.15. Result of OLS Regression: Family VS non-Family

DV = *LnAFEES* **Variables**	**Model (1)** ***Coeff. (Robust t)***	**Model (2)** ***Coeff. (Robust t)***
Intercept	***3.147*** ***(17.61)******	***3.033*** ***(16.60)******
FVA_TA	0.725 (7.00)***	
FAMILY_OWN	0.148 (4.92)***	0.121 (4.07)***
*FVA_TA*FAMILY _Dummy*	-0.661 (-4.93)***	
FVA1_TA		0.981 (7.87)***
FVA2_TA		0.205 (0.620)
FVA3_TA		0.077 (0.130)
*FVA1_TA * FAMILY _Dummy*		-0.595 (-3.86)***
*FVA2_TA * FAMILY _Dummy*		0.135 (0.370)
*FVA3_TA * FAMILY _Dummy*		1.192 (1.380)
LnASSET	0.306 (27.53)***	0.312 (27.47)***
ROI	0.000 (5.26)***	0.000 (4.84)***
LOSS	0.114 (3.08)***	0.112 (3.02)***
LEV	0.000 (10.85)***	0.000 (10.77)***
GROWTH	-0.010 (-2.07)**	-0.011 (-2.17)**
SUBS	0.024 (5.42)***	0.023 (5.26)***
BIG4	0.450 (15.55)***	0.443 (15.42)***
CHANGE	0.104 (3.76)***	0.094 (3.40)***
UNQUALIFIED	-0.070 (-1.950)*	-0.070 (-1.940)*
Robust	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***
N	***3108***	***3108***
Prob>F	***0.000***	***0.000***
F - Statistic	***(27)******	***(31)******
R^2	***58.86%***	***59.55%***
Mean VIF	***1.82***	***1.91***

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) on the interaction family ownership variable with the proportions of fair-valued assets (by input Level) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
Model (1): LnAFEES= δ0 + δ1FVA_TA+ δ2 FAMILY_Dummy + δ3FVA_TA FAMILY_ Dummy + δ4LnASSET+ δ5SUBS+ δ6LOSS+ δ7ROI+ δ8LEV+ δ9QGROWTH+ δ10BIG4+ δ11CHANGE+ δ12UNQUALIFIED + IndFE + YearFE+ ε.*
Model (2): LnAFEES= δ0+ δ1FVA1_TA+ δ2FVA2_TA+ δ3FVA3_TA+ δ4 FAMILY_ Dummy + δ5FVA1_TA FAMILY_ Dummy + δ6FVA2_TA* FAMILY_ Dummy + δ7FVA3_TA* FAMILY_ Dummy +δ8LnASSET+ δ9SUBS+ δ10LOSS+ δ11ROI+ δ12LEV+ δ13GROWTH+ δ14BIG4+ δ15CHANGE+ δ16UNQUALIFIED+ IndFE+ YearFE+ ε.*
Where: FVA_TA = Firm's total fair-valued assets deflated by total assets. FVA1_TA, FVA2_TA, FVA3_TA = Firm's total fair-valued assets using Level 1, Level 2, and Level 3 inputs deflated by total assets. FAMILY_Dummy = dummy variable would take one if a family or individual hold 10% or more of equity, 0 otherwise.
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.3, Chapter 3.

FAMILY_Dummy interaction term is found to be insignificant with the positive sign (*Coeff. = 0.031, Robust t = 0.09*). These results support the primary analysis and confirm the fact that the association between the high uncertain fair value input levels and audit fees are not subject to the difference in ownership structure.

6. Summary

This chapter examines the moderating role of ownership structure on the relationship between FVD and audit fees paid by Jordanian firms over the pooled period (2005 – 2018). Overall, the regression results indicate that family ownership leads to a weaker relationship between the proportion of fair-valued assets and audit fees. The regression further confirms that the nature of the association between Level 1 assets and audit fees is significant with a negative sign, suggesting that using the controversial fair value model in family-controlled firms does not result in high audit complexity and risk. These conclusions are due to family-owned firms experiencing fewer agency problems. Also confirmed here is the positive and significant impact of the moderating role of government ownership on the association between the proportion of fair-valued assets and audit fees. This finding aligns with signalling and stakeholder theories, where the application of FVA required additional audit testing and quality checks. Consequently, additional time and effort in the auditing process is required due to the high uncertainties surrounding FVA which drives audit fees up. Auditors can protect stakeholders' rights and interests, counteracting the agency problem between the owners and managers and ensuring a high level of compliance.

CHAPTER 6: THE MODERATING EFFECT OF AUDITOR INDUSTRY EXPERTISE ON FAIR VALUE DISCLOSURE AND AUDIT FEES: RESULTS AND DISCUSSION

6.1. Introduction

This chapter discusses the empirical analysis results for the moderating effect of auditor industry expertise on the relationship between FVD and audit fees. Two contradictory scenarios were tested: the product differentiation scenario (enhanced fee) and shared efficiency scenario (reduced fee). Descriptive statistics, univariate analysis, correlation matrix and multivariate analysis using OLS regression all test the developed hypotheses. A number of robustness checks confirmed the validity of the main analysis results and robustness of regression outcomes. The chapter is organised as follows: section 6.2. Descriptive Statistics; section 6.3. Univariate Analysis; section 6.4. Correlation Matrix; section 6.5. Multivariate Analysis; section 6.6. Additional analysis and robustness checks; and section 6.7. Summary.

6.2. Descriptive Statistics

Descriptive statistics for the regression variables are provided in Table 6.1 below[113]. Compared to previous empirical chapters (Chapters 4 & 5), the current statistics indicate 2100 firm-year observations (150 unique firms). Following studies like Chi and Chin (2011), Hegazy et al. (2015), Hegazy and Hegazy (2018) and Hogan and Jeter (1999), industries with less than 10 businesses are excluded from the sample[114]. Therefore, the total sample observations dropped from 3108 to 2100 firm-year observations (see Table F.1 of *Appendix F*). Likewise, similar to Behn et al. (2008), all auditors with fewer than 10 clients per year are classified as non-specialist in order to remove the effect of small auditing companies with only a few clients (see Table F.2 of *Appendix F*).

Table 6.1 summarises the descriptive statistics including mean, median, standard deviation, minimum, maximum, skewness and kurtosis of all variables used in the empirical analysis (pooled for the years 2005–2018). On average, the mean of auditor industry expertise identified by MS (PS) *ISPEC1(ISPEC2)* is 0.347 (0.690) with median of 0.000 (0.841) and standard deviation 0.476 (0.338) and maximum and minimum values of 1 and 0, implying that 0.35(0.70) of sample clients hire industry specialists.

Table 6.1. Descriptive Statistics

Variable	Obs	Mean	Median	Std. Dev.	Min	Max	Skewness	Kurtosis
ISPEC1	2100	0.347	0.000	0.476	0.000	1.000	0.644	1.415
ISPEC2	2100	0.690	0.841	0.338	0.000	1.000	-1.083	2.526

(This Table is continued on the next page)

[113] The descriptive statistics discussion in this chapter covers only auditor industry expertise variables since such statistics for the remaining variables were explained in previous chapters. Again, to ensure the validity of the variables used in this chapter to the OLS regression analysis after dropping the tested observations to 2100 firm-year observation, regression assumption tests are also employed here using a number of statistical numerical and graphical tools. The untabulated results indicate that the data were approximately normally distributed. The residuals and dependent variable were closest to normal distribution.

[114] Industries listed in the current sample are: Banking industry 11%, Diversified Financial Services 29%, Hotels and Tourism 7%, Insurance 15%, Mining and Extraction Industries 7%, Real Estate 24%, and Transportation 7% (see Table F.1 of *Appendix F*).

(Table 6.1. Continued)

Note: *following Ettredge et al. (2014) and Alexeyeva and Mejia-Likosova (2016) and for the purpose of the current study, all continuous variables are winsorized at the 1% and 99% levels each year to reduce the influence of potential outliers in the sample.*
Where: ISPEC=: dummy variable coded 1 if auditor market share is greater than 10%, 0 otherwise. ISPEC2= a continuous variable measuring the auditor's percentage of each industry group's total audit fees.

It should be noted that the predominant auditor specialisation approach over the sample during the study period is the client portfolio share approach (see Figure 6.1)[115]. This result is in line with the majority of previous industry specialisation studies (Abbott & Parker 2000; Almutairi et al. 2009; Ettredge et al. 2014a) in Egypt[116].

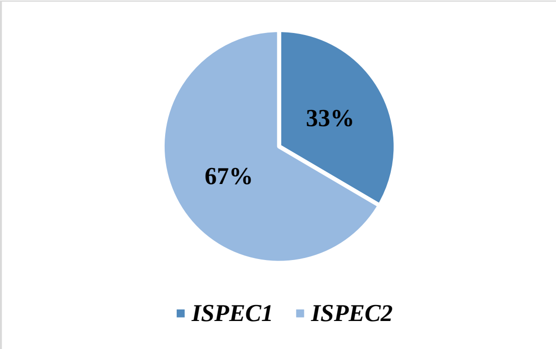

Figure 6.1. Auditor Industry Expertise Distribution over the Sample

6.3. Univariate Analysis: Expert vs. Non-Expert Auditor

Table 6.2 presents the univariate analysis results using both parametric (i.e., independent *t* – test Welch's approximation) and nonparametric (i.e., Mann-Whitney U-test) tests[117]. The table presents the significant difference (*p* – value) in mean and mean rank values of the dependent variable, natural log of audit fees (*LnAFEES*), and independent variables (*FVA*, *FVA_TA*, *FVA1_TA*, *FVA2_TA* and *FVA3_TA*) amongst the expert client sample and non-expert client sample throughout the study period (2005 – 2018)[118]. This analysis aims to detect any systematic difference in sample characteristics between the specialist and non-specialist auditors' clients. The analysis splits the sample into two sub-samples: experts' clients and non-expert's clients using two determinations for auditor industry expertise (see Abbott & Parker 2000; Behn et al. 2008; Sangchan et al. 2020; Habib 2011; Lawrence et al. 2011; Minutti-Meza 2013). First, Panel A: market share-based approach (*ISPEC1*) and Panel B: client portfolio-based approach (*PS_DUMMY*). The number of clients of the two sub-samples varies based on the measurement approach used for identifying industry specialists. Panel A subsamples include: 107 clients of specialists' vs 43 clients of non-specialists. Panel B subsamples include: 139 clients of specialists' vs 11 clients of non-specialists[119]. Results of Panels A and B show that the clients of specialist auditors' mean, and mean rank audit fees are higher than the clients of non-specialist auditors where *t – value = -17.0759* and *t – value = -3.3929*, respectively, suggesting that clients of the former

[115] It is worth noting that "portfolio" metric classifies several non-Big 4 auditors as more specialised than the Big 4 ones. This approach represents the industry specialists of either Big 4 and non-Big 4 auditors which, in turn, broadens the specialisation consideration and includes a wide range of auditors as industry specialists (Audousset-Coulier et al. 2015; Ettredge et al. 2014a) (see Table F.5 of *Appendix F*).
[116] Industry specialisation ratios distribution for each scenario over the study period and industry type for the whole sample are reported in Tables (F.3 – F.4) below in *Appendix F*.
[117] Untabulated two-sample Wilcoxon rank-sum (Mann-Whitney) test also conducted and confirms results presented in Table 6.2.
[118] Univariate analysis, Mann-Whitney U–test, has been conducted using IBM *SPSS Statistics 25 software*.
[119] Through the portfolio share approach, smaller audit firms serving many of their clients in the same industry segment are classified as specialists. Here, smaller audit firms are considered to be specialists, whereas Big 4 firms are not, because they do not focus on serving clients in one industry.

tend to pay higher audit fees than the latter. This is consistent with Reichelt and Wang (2010), Shirinbakhsh et al. (2013), Hegazy et al. (2015), Ettredge et al. (2014) and Audousset-Coulier et al. (2015). The result is also in line with the product differentiation scenario identified by auditor MS in that specialist auditors in a specific industry are more qualified and are paid higher fees than non-specialised auditors in other sectors. Likewise, industry specialists are more likely to offer a fee discount, which is the case of the shared efficiency scenario identified by client portfolio share[120].

Regarding fair value metrics, it appears that fair value-oriented clients are more likely to hire specialist auditors; thus, the mean and mean rank of the presence of FVD variable (*FVA*) is high for the specialist sample compared to the non-specialist sample (*t – value = -4.6150* and *t – value = -5.6564*, respectively). The result is consistent with Keefe et al. (1994) who stated that industry-specialist auditors provide a superior audit quality than non-specialists because they comply well with the ISA. Consistent with the agency theory, auditors are responsible for discovering client breaches of accounting standards (Gul et al. 2013). The analysis, moreover, confirms that the difference in the mean and mean rank of the proportion of fair-valued assets between the specialist and non-specialist auditor are found to be significant (*t – value = -2.4186* and *t – value = -2.5452*, respectively). The result supports the rationale of agency theory and Ettredge et al.'s (2014a) conclusion in which specialist auditors charge higher audit fees for the time and effort taken to check the quality of FVMs due to the higher business risk and measurement uncertainty.

Looking closely at fair value hierarchy level inputs, the mean and mean rank of Level 1, Level 2 and Level 3 assets are significantly higher for clients of specialists than clients of non-specialists for the both approaches; MS (Level 1: *t – value = -0.599,* Level 2: *t – value = -4.0716,* Level 3: *t – value = -2.2844,* respectively) and portfolio share (Level 1: *t – value = -3.2110,* Level 2: *t – value = -2.6002*; Level 3: *t – value = -2.0503,* respectively), suggesting that clients with fair value hierarchy disclosures are more likely to hire high quality auditors due to the greater complexity and risk attributed to such type of assets (Huang et al. 2020). The analysis again confirms that clients with higher ratios of uncertain and subjective fair-valued assets (Level 2 and Level 3) are more likely to want expert auditors. This outcome is consistent with agency theory which asserts that specialist auditors spend more effort in auditing less verifiable fair values due to the high level of managerial bias in selecting the valuation techniques when preparing fair values (Ettredge et al. 2014a).

Untabulated univariate analysis results for the remaining control variables for the sub-samples based on the discussed approaches confirm that clients of specialist auditors are more likely to be in complex industries. Such clients have more total assets and subsidiaries relative to other auditors' clients (*LnASSET* and *SUBS*) (Abbott & Parker 2000). In addition, clients of expert auditors are apparently those firms that make profits and are financially stable (*ROI*, *LOSS*, *LEV* and *GROWTH*) (Abbott & Parker 2000). Such clients seek to change their auditor following the legal requirement (*CHANGE*) and

[120] Following Audousset-Coulier et al. (2015), although Portfolio share scenario methods result in fee discount (when using client size proxies or number of clients), the opposite is documented when expertise is measured using audit fees. This is evident in the current study.

very likely to get an unqualified audit opinion (*UNQUALIFIED*) than other clients. Further, industry specialisation clients are more subject to hire Big 4 audit firms (*BIG4*) than local audit companies.

Table 6.2. Univariate Analysis: Auditor Industry Expertise

Variable	Mean		*t* – value(sig)	Mean Rank		*z* - value(sig)
Panel A: specialist vs non-specialist auditor: Auditor market share (ISPEC1)						
	Expert (*ISPEC1*=1) **N = 107 firm**	**Non-Expert** (*ISPEC1*=0) **N = 43 firm**		**Expert** (*ISPEC1*=1) **N = 107 firm**	**Non-Expert** (*ISPEC1*=0) **N = 43 firm**	
LnAFEES	9.507	8.625	***-17.0759****	1198.16	681.34	***-17.653****
FVA	0.882	0.805	***-4.6150****	1073.60	992.75	***-4.593****
FVA_TA	0.120	0.100	***-2.4186****	1081.89	972.04	***-3.756****
FVA1_TA	0.096	0.092	***-0.599****	1072.53	995.42	***-2.649****
FVA2_TA	0.015	0.004	***-4.0716****	1082.47	970.59	***-4.334****
FVA3_TA	0.005	0.002	***-2.2844****	1077.80	982.24	***-5.281****
Panel B: specialist vs non-specialist auditor: Auditor portfolio share (PS_Dummy)						
	Expert (*PS_ Dummy* =1) **N = 139 firm**	**Non-Expert** (*PS_ Dummy* =0) **N = 11 firm**		**Expert** (*PS_ Dummy* =1) **N = 139 firm**	**Non-Expert** (*PS_ Dummy* =0) **N = 11 firm**	
LnAFEES	9.278	8.951	***-3.3929****	1063.03	887.58	***-3.416****
FVA	0.872	0.707	***-5.6564****	1062.88	889.50	***-5.615****
FVA_TA	0.117	0.080	***-2.5452****	1071.36	779.29	***-5.693****
FVA1_TA	0.098	0.056	***-3.2110****	1081.06	653.16	***-8.382****
FVA2_TA	0.012	0.001	***-2.6002****	1072.86	759.86	***-6.912****
FVA3_TA	0.004	0.000	***-2.0503****	1060.36	922.27	***-4.350****

Where: ISPEC1= dummy variable coded 1 if auditor market share is greater than 10%, 0 otherwise. PS_ Dummy= dummy variable coded 1 if auditor portfolio share greater than the industry-year cut-off, 0 otherwise.
, ** and * denote significance at the 0.10, 0.05 and 0.01 levels, respectively.*

6.4. Multicollinearity

Tables 6.3. below presents the Pearson and Spearman correlation matrix results for the dependent and independent variables. The test for multicollinearity ensures there is no correlation problem between the independent variables used in the regression models (Chen 2012). As shown in Table 6.3 below, the bivariate analysis confirms that correlation coefficients of *LnAFEES* with all fair value variables (*FVA*, *FVA_TA*, *FVA1_TA*, *FVA2_TA*, *FVA3_TA*) is significant and positive. The bivariate analysis, moreover, confirms that the correlation coefficients of *LnAFEES* with auditor industry expertise variables (*ISPEC1*, *ISPEC2*) are all significantly associated with the magnitude of audit fees. Correlation analysis further shows that other control variables (*LnASSET*, *ROI*, *LOSS*, *LEV*, *GROWTH*, *SUBS*, *BIG4*, *CHANGE*, *UNQUALIFIED*) are significantly associated with audit fees while, the correlation is not significant in relation to the *UNQUALIFIED* variable. The correlation coefficient between the independent variables used in each model confirms that the independent variables are generally not correlated. However, the highest correlation is found between *LOSS* and *ROI* (-0.593); meanwhile the mean of the VIF test does not show any potentially serious multicollinearity problem, where the mean VIF of each model is below 2.

Table 6.3. Correlation Matrix

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	***LnAFFES***	*1*	*.047**	*.082***	*.094***	*.075***	*.358***	*-.238***	*.749***	*.294***	*-.230***	*.456***	*-.062***	*.244***	*.541***	*.112***	*-.063***
2.	***FVA_TA***	*.134***	*1*	*.920***	*.343***	*.264***	*.055**	*.060***	*-.196***	*.019*	*.003*	*-.105***	*.055**	*-.030*	*-.082***	*.018*	*-.137***
3.	***FVA1_TA***	*.100***	*.883***	*1*	*.044**	*.135***	*.021*	*.087***	*-.249***	*.035*	*-.009*	*-.120***	*.059***	*-.045**	*-.139***	*.008*	*-.126***
4.	***FVA2_TA***	*.255***	*.387***	*.315***	*1*	*.167***	*.115***	*-.068***	*.077***	*-.020*	*.017*	*.023*	*.002*	*-.014*	*.097***	*.027*	*-.050**
5.	***FVA3_TA***	*.277***	*.159***	*.091***	*.211***	*1*	*.042*	*-.063***	*.050**	*-.017*	*.025*	*-.026*	*.003*	*.095***	*.074***	*-.014*	*-.033*
6.	***ISPEC1***	*.385***	*.082***	*.058***	*.095***	*.115***	*1*	*-.485***	*.291***	*.103***	*-.097***	*.094***	*-.034*	*.135***	*.434***	*.149***	*-.053**
7.	***ISPEC2***	*-.277***	*-.007*	*.037*	*-.027*	*-.108***	*-.474***	*1*	*-.160***	*-.080***	*.079***	*-.015*	*-.015*	*-.057***	*-.265***	*-.085***	*.019*
8.	***LnASSET***	*.646***	*-.087***	*-.155***	*.141***	*.240***	*.293***	*-.199***	*1*	*.322***	*-.288***	*.448***	*-.046**	*.301***	*.510***	*.090***	*-.040*
9.	***ROI***	*.274***	*.092***	*.082***	*.054**	*.047**	*.106***	*-.085***	*.298***	*1*	*-.582***	*.166***	*.050**	*-.134***	*.199***	*.014*	*-.232***
10.	***LOSS***	*-.208***	*-.062***	*-.050**	*-.038*	*-.031*	*-.097***	*.070***	*-.251***	*-.593***	*1*	*-.135***	*-.053**	*.125***	*-.155***	*-.047**	*.266***
11.	***LEV***	*.412***	*-.057***	*-.059***	*.173***	*.062***	*.097***	*-0.037*	*.404***	*.170***	*-.137***	*1*	*-.008*	*-.032*	*.183***	*.092***	*.005*
12.	***GROWTH***	*.094***	*.039*	*.047**	*.059***	*.000*	*.053**	*-.037*	*.104***	*.280***	*-.280***	*.106***	*1*	*-.016*	*-.055**	*-.044**	*-.030*
13.	***SUBS***	*.320***	*-0.017*	*-.040*	*.033*	*.201***	*.163***	*-.091***	*.382***	*-.118***	*.136***	*.032*	*-.062***	*1*	*.123***	*.042*	*.171***
14.	***BIG4***	*.545***	*.005*	*-.074***	*.183***	*.185***	*.434***	*-.409***	*.496***	*.199***	*-.155***	*.187***	*.072***	*.147***	*1*	*-.040*	*-.059***
15.	***CHANGE***	*.122***	*-.014*	*-.017*	*.009*	*.004*	*.149***	*-.057***	*.096***	*.014*	*-.047**	*.093***	*-.055**	*.036*	*-.040*	*1*	*.000*
16.	***UNQUALIFIED***	*-.027*	*-.165***	*-.142***	*-.094***	*-.040*	*-.053**	*.042*	*.009*	*-.234***	*.266***	*.004*	*-.139***	*.218***	*-.059***	*.000*	*1*

Note: *this table presents both Pearson (upper catercorner) and Spearman (lower catercorner) correlation matrix results amongst the dependent and independent variables.*
***, * Correlation is significant at the 0.01, 0.05 levels (2-tailed), respectively.*

6.5. Multivariate Analysis

Consistent with previous empirical chapters, this chapter follows the work of recent prior scholars who employed the OLS multivariate regression technique controlling for the clustered-adjusted and robust standard errors to find the moderating effect of auditor industry expertise on the association between the proportion of fair-valued assets and audit fees[121]. To conduct this regression, the research data (pooled sample 2005 – 2018) has to meet four essential assumptions to be valid for analysis (Chen et al. 2003; Hair et al. 2010). Regression assumptions tests include: first, Normality[122], Linearity, Homoscedasticity and Multicollinearity. Therefore, to ensure the validity of the data to the OLS regression analysis, regression assumptions are tested to confirm that the current data satisfies these assumptions. Generally, the multivariate analysis is basically conducted using the OLS multivariate regression technique with robust standard error.

Like other analyses (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a; Goncharov et al. 2014; Huang et al. 2016; Sangchan et al. 2020; Yao et al. 2015) OLS regression models were controlled by cluster-adjusted and robust standard errors with year and industry fixed effects to control for a potential variation in audit fees over time and according to the sector level (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a; Rogers 1994). Similar to empirical analyses in previous chapters, the dependent variable is the log of audit fees (*LnAFEES*). The independent variables of interest are the proportion of fair valued assets (*FVA_TA*) and proportion of fair valued assets using Level 1, Level 2 and Level 3 fair value inputs (*FVA1_TA, FVA2_TA, FVA3_TA*). The moderating variable is the auditor industry expertise using both approached the MS (*ISPEC1*) and portfolio share attributes (*ISPEC2*), separately. The same control variables used by previous analyses were employed here[123]. To improve the validity of the OLS multivariate regression results, a number of robust analyses and additional checks are carried out and presented in the following subsections.

6.5.1. Moderating Expertise (MS & PS)

Table 6.4 below presents the OLS multivariate regression results for the moderating role of the auditor industry expertise measured by both the MS (*ISPEC1*) and PS metrics (*ISPEC2*)[124] on the relationship between the proportion of fair-valued assets (and by input hierarchy Level) and audit fees paid by the

[121] To confirm the best estimator of the current study, the models tested using panel data first, Hausman test chooses between fixed and random effects but it fails to reject the null hypothesis. It confirms that random effects model is more appropriate than fixed effects where *P* – value of each model is highly insignificant and greater than 5% (untabulated Hausman prob>chi2 ranged 0.84 to 0.89) see *Appendix E: examples of Hausman test Stata outputs*). Then Breusch–Pagan Lagrange Multiplier test (LM) has been conducted to decide whether random effects or simple OLS regression is more appropriate for the multivariate analysis. Untabulated LM test *p* – value is highly insignificant and greater than 5% (*P = 0.1004*). It is obvious that pooled data using the simple OLS regression is better for the multivariate analysis.

[122] Skewness and kurtosis were checked for all continuous variables (see Table 6.1 of Section 6.2). Examination of both statistics shows that the values of skewness were within the acceptable range of -1.083 to 0.644, and the values of the kurtosis ranged from 1.415 to 2.526. Moreover, figures (D.4.1 – D.4.2) of *Appendix D* depict the plot of selected independent variables and regression residuals. The plotted points are evenly and randomly dispersed around the plot, thus indicating that the assumption of independence was satisfied. Furthermore, all continuous variables are winsorized at the 1% and 99% levels each year to remove outliers (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a).

[123] Control variables: Client attributes: *LnASSET, ROI, LOSS, LEV, GROWTH, SUBS*, auditor attributes: *BIG4*, and engagement attributes: *CHANGE, UNQUALIFIED.*

[124] Previous literature does not presume a preference for either a dummy or continuous measure of industry expertise and the majority continue to examine both dummy and continuous metrics, such as Ettredge et al. (2014). Following Audousset-Coulier et al. (2015) and Chi and Chin (2011), the attributes of specialisation adopted in this study's regression analysis contains a dichotomous measure of market share-based and a percentage measure of client portfolio share-based. This is because using both attributes at the same measurement is not acceptable in the auditing literature (Audousset-Coulier et al. 2015).

sample during the study period. Table 6.7 shows the results of two basic models: Model (1 – 2) shows the moderating role of industry specialisation (*ISPEC1* or *ISPEC2*) on the relationship between the proportion of fair-valued assets and audit fees; and Models (3 – 4) shows the moderating role of both the industry specialisation approaches (*ISPEC1* or *ISPEC2*) on the relationship between the proportion of fair-valued assets through the three level fair value inputs (Level 1, Level 2 and Level 3) and audit fees.

Table 6.4 shows that the *P – values* of Models (1 – 4) are highly significant at the 0.01 level, while *F = 27*, *F = 31*, *F = 27* and *F = 31,* respectively, with reasonable explanatory power of each model ranging between 64% and 65%, respectively. The current models' R^2 compares well with previous published work on audit fees of developing economies (see Abu Risheh & Al-Saeed 2014; Alhababsah 2019). Diagnostics do not suggest that a multicollinearity problem exists. The mean VIF of the tested models is less than 2, which significantly satisfy the collinearity condition for OLS regression. Generally, the current regression analysis tests the following hypotheses:

Hypothesis 6_A: There is no significant impact of auditor industry expertise on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.

Hypothesis 6_B: There is no significant impact of auditor industry expertise on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.

As expected, Model (1) of Table 6.4 results support the product differentiation scenario notion (Goncharov et al. 2014; Carson 2009; Fung et al. 2012; Reichelt & Wang 2010; Hegazy et al. 2015) and indicate that the interaction term of auditor industry expertise (*ISPEC1*) with the proportion of fair-valued assets is significant and positive at the 0.05 level (*Coeff. = 0.379, Robust t = 2.38*)[125]. It means the association between the proportion of fair-valued assets and audit fees is strengthened when the client hires a specialist auditor[126]. The analysis is consistent with Fields et al. (2004), Habib (2011), Griffith et al. (2015) and Glover et al. (2016). However, Ettredge et al. (2014) confirm that specialist auditors charge lower audit fees for auditing fair-valued assets. The ambiguous results are due to the different measures used to identify industry specialists. In this respect, Audousset-Coulier et al. (2015) confirmed that auditor industry specialisation measures lead to inconsistent conclusions even within a specific scenario due to the use of different industry specialisation proxies (i.e., client size and number of clients)[127].

[125] The analysis supports the product differentiation scenario and indicates the direct effect of auditor industry expertise on audit fees paid by Jordanian firms is very significant and positive at the 0.01 level (*Coeff. = 0.149, Robust t = 3.69*). This is consistent with Ettredge et al. (2014) and Goncharov et al. (2014), Carson (2009), Fung et al. (2012), Reichelt and Wang (2010), Shirinbakhsh et al. (2013), and Hegazy et al. (2015). It is also in line with the signalling and stakeholder theories where specialist auditors are likely to support stakeholders' demand for fully disclosed and credible financial information (Fields et al. 2004; Glover et al. 2016; Griffith et al. 2015; Habib 2011). In turn, auditors ask for an audit fee premium to convey signals to the interested parties regarding the credibility of financial statements.

[126] All significant control variable coefficients have the expected signs with the exception of the *UNQUALIFIED* variable, which is found to be insignificant in both models.

[127] In Ettredge et al.'s (2014) research, industry specialisation measured using the square root of the total assets, while in the current study, the total amount of audit fees was used instead.

This result is in line with agency theory, as auditing higher business risk and measurement uncertainty, like FVEs need further attention from auditors due to the agency conflict (Griffith 2020). Auditors need to spend additional effort and time, and this subsequently means more expensive audit fees being charged. With the passage of FVA, auditors are required to provide high quality audits (McDonough et al. 2020). This supports stakeholders' demand for transparent and credible FVEs and therefore curtail information asymmetry caused by the agency problem (Fields et al. 2004; Habib 2011; Griffith et al. 2015; Glover et al. 2016). In turn, auditors ask for an audit fee premium to convey signals to the interested parties regarding the credibility of disclosed financial statements.

Conversely, Model (2) of Table 6.4 supports the shared efficiency scenario notion and indicates that the interaction term of auditor industry expertise (*ISPEC2*) with the proportion of fair-valued assets is never significant and negative at the 0.05 level (*Coeff. = -0.170, Robust t = -0.530*)[128]. This conclusion is consistent with shared auditing efficiencies. Untabulated univariate analysis shows that non-Big 4 auditors are the majority of industry specialists based on portfolio metrics. In this case, specialist auditors pass cost savings from efficiencies to their clients by offering a fee discount[129]. The result does not agree with Ettredge et al. (2014) who documented a significant positive effect of the interaction term of auditor industry expertise (PS) on the proportion of fair-valued assets. Nonetheless it is in line with Audousset-Coulier et al. (2015) and Behn et al. (2008) in that specialist auditors according to the shared efficiency scenario earn lower audit fees due to competition between Jordan's auditors (Abdullatif 2016). They achieve economies of scale as addressed by Cairney and Young (2006). The results are generally similar to Ettredge et al. (2014) in that the analysis concludes the effect of one of the industry specialisation scenarios is confirmed to be significant, while the other scenario was never significant. Therefore, the analysis rejects the null $H6_A$ regarding the product differentiation scenario, while failing to reject the null hypothesis $H6_A$ in relation to shared efficiency scenario [130].

Models (3 – 4) of Table 6.4 below present the analysis results for the moderating role of auditor industry expertise using both discussed scenarios (i.e., product differentiation and shared efficiency) through the hierarchy levels of fair value inputs. Therefore, the proportion of fair-valued assets (*FVA_TA*) has been

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[128] The analysis supports the shared efficiency scenario notion and indicates the direct effect of auditor specialisation on audit fees is significant and positive (*Coeff. =0.159, Robust t =2.07*). The result is not consistent with Ettredge et al. (2014) where industry specialists are identified using client size (square root of assets). Consistent with other research (Almutairi et al. 2009; Audousset-Coulier et al. 2015; Neal & Riley 2004), the largest portfolio share assignment methods lead to fee discounts, which could be indicative of economies of scale (i.e., audit firms charge lower fees for the largest industries in their client portfolio). This is in line with Numan and Willekens (2012) who documented a significant positive effect of auditor industry expertise on audit fees.

[129] Untabulated independent t – test and Mann-Whitney U – test show that the mean of *Big4* variable differs significantly (*t= 1.510, z=1.510*) between the two sub-samples where clients of experts (0.39) vs clients of non-experts (0.46).

[130] As an additional analysis, the moderating effect of *ISPEC1(or ISPEC2)* on *FVA* and *LnAFFES* is conducted by modifying models (1 - 2) into the following models:

*LnAFEES=δ0+δ1ISPEC1(ISPEC2)+δ2FVA+δ3FVA*ISPEC1(orISPEC2)+δ4LnASSET+δ5SUBS+δ6LOSS+δ7ROA+δ8LEV+δ9QGROWTH + δ10BIG4+δ11CHANGE+ δ12UNQUALIFIED + IndFE + YearFE+ ε.*

Untabulated results confirm that the interaction term of auditor industry expertise of both scenarios and *FVA* is consistent with the primary analysis. *ISPEC1* emerges as being significant with the positive sign at the 0.05 level (*Coeff. =0.131, Robust t = 1.47*) and *ISPEC2* was insignificant with negative effect (*Coeff. =-0.136, Robust t = -1.08*). The results support the primary analysis and confirm that the influence of auditor industry expertise based on market share approach affects the association between firms with fair value model (relative to cost model firms) and audit fees.

breaking into the three fair value input levels (*FVA1_TA, FVA2_TA, FVA3_TA*). Model (3) reports a positive significant effect of the moderating auditor industry expertise (MS) on the association between fair-valued assets *FVA1_TA* and audit fees at the 0.01 level (*Coeff. = 0.564, Robust t = 3.26*). However, an insignificant and negative coefficient was documented for the moderating effect of auditor industry expertise (MS) on the association between Level 2 (Level 3) assets, and audit fees where the *Coeff. = -0.333, Robust t = -0.370 (Coeff. = -1.077, Robust t = -0.540*). Findings in relation to Level 1 assets are in line with the product differentiation scenario notion (Goncharovet al. 2014; Carson 2009; Fung et al. 2012; Reichelt & Wang 2010; Hegazy et al. 2015), whereas the outcomes in relation to the subjective fair values through Level 2 and Level 3 are consistent with Joe et al. (2017). They confirm that lower audit effort is allocated for testing FVEs by auditors when the level of client qualification and experience is high. The analysis findings regarding Level 2 and Level 3 assets agree with Ettredge et al. (2014) who failed to find any significant effect of auditor expertise on the relationship between fair value hierarchy levels and audit fees. Auditors of uncertain fair values are supposed to pass cost savings from efficiencies to their clients in the form of reduced audit fees.

However, unlike Ettredge et al. (2014), auditor expertise in Jordan strengthens the association between Level 1 assets and audit fees. The significance of the interaction of *ISPEC1* with Level 1 (but not Level 2 or Level 3) is attributed to the fact that the total portfolio of fair valued assets in Jordan is dominated by Level 1[131]. Following Ettredge et al. (2014), fair value input with a higher mean is more likely to have a strong explanatory power regarding audit fees. The result supports the agency theory notion in which the increasing use of Level 1 assets resulted in high audit complexity and risk which ultimately drives audit prices up. Another reason is the fact that specialist auditors charge more for auditing larger amounts of less subjective and complex fair-valued assets (Level 1), while specialists devote less effort to auditing less verifiable fair-valued assets (Level 2 and Level 3) because they are not likely to be used widely in Jordan[132].

Model (4) presents a significant and negative effect of the moderating auditor industry expertise (PS) on the association between the proportion of Level 1 assets and audit fees at the 0.01 level (*Coeff. = -1.016*, *Robust=-2.63*). However, insignificant and positive coefficients were documented for the interaction between auditor industry expertise (PS) and Level 2 (Level 3) assets, where *Coeff. = 1.396, Robust t = 0.980 (Coeff. = 2.366, Robust t = 0.310*). These results support the fact that auditors in the shared efficiency scenario are supposed to earn less audit fees from clients (Ettredge & Greenberg 1990; Behn et al. 2008; Krishnan 2005; Hay & Jeter 2011). In contrast the current conclusion contradicts that of Ettredge et al. (2014) in relation to Level 2 assets. They reported a significant coefficient of the interaction term between auditor industry expertise (PS) and the less verifiable fair valued assets (Level

[131] Based on the descriptive statistics addressed above, Level 1 constitutes the overwhelming type of fair-valued assets held by sample, on average, the mean value of each input level is as follows: Level 1 (0.095), Level 2 (0.012) and Level 3 (0.004).
[132] The lowest mean is documented for Level 2 (0.012) and Level 3 assets (0.004).

2 assets) mainly is due to the fact that Level 2 assets are the overwhelming type of fair value inputs held in the case of Ettredge et al.'s (2014) sample. Thus, the significant coefficient of Level 1 assets in the current study was expected as Level 1 assets are the predominant type of fair-valued assets throughout the sample of the current study. Another reason for the inconsistent conclusions is the fact that industry specialisation results are highly sensitive to the specialisation measure utilised (Hay & Jeter 2011). Furthermore, the contextual factors for economic and accounting developments are major drivers of this conclusion, as the less verifiable fair value accounts are less likely to be applied by firms operating in Jordan's capital market (Alhababsah 2019).

The results are consistent with the triangulation of the agency, signalling and stakeholder theories where specialist auditors in the shared efficiency scenario (PS), on average, are more likely to offer lower audit prices, compared to non-specialists (Bradley & Sun 2021; Griffith 2020; He et al. 2020). On the other hand, expensive fees are required for auditing less verifiable fair-valued assets (Level 2 and Level 3 assets). In the latter case, auditors deliver higher quality audit to meet stakeholders' demand for accurate financial information and therefore information asymmetry will fall greatly (Gul et al. 2013; Griffith et al. 2015; Glover et al. 2019). This could assist managers to convey signals to the interested parties regarding the credibility of financial statements. The results are highly consistent with Ettredge et al. (2014), who confirmed the significant effect of specialisation based on portfolio metrics on the association between the proportion of fair-valued assets (Level 2) and audit fees. Therefore, the analysis rejects the null hypothesis $H6_B$[133].

Table 6.4. Result of OLS Regression: Moderating Auditor Industry Expertise

DV = *LnAFEES*	**Model (1)**	**Model (2)**	**Model (3)**	**Model (4)**
Variables	***Coeff. (Robust t)***	***Coeff. (Robust t)***	***Coeff. (Robust t)***	***Coeff. (Robust t)***
Intercept	***2.968 (14.34)******	***2.880 (13.69)******	***2.871 (13.61)******	***2.716 (12.58)******
FVA_TA	0.263 (1.890)*	0.708 (2.71)***		
ISPEC1	0.149 (3.69)***		0.137 (3.37)***	
ISPEC2		0.159 (2.07)**		0.206 (2.64)***
FVA_TA ISPEC1*	0.379 (2.38)**			
FVA_TA ISPEC2*		-0.170		

(This Table is continued on the next page)

[133] 1- Following Ettredge et al. (2014) and Abernathy et al. (2019), the analysis is also repeated using panel data analysis to exploit a strongly balanced panel methodology. The Random effects model controlled by year and industry fixed effects is selected to re-test $H6_{A\&B}$ using panel data regression (the *P – value* of Hausman test was never significant, see *Appendix E*). All results remain unchanged with those reported in the primary analyses where the interaction term of *ISPEC1 (or ISPEC2) and FVA_TA, was* found significant with positive (negative) sign *Coeff. = 0.366, Robust t =1.88 (Coeff. = -0.089, Robust t =-0.260).* Furthermore, the interaction term of *ISPEC1 (or ISPEC2) and* each *FVA1_TA, FVA2_TA, and FVA3_TA was* found significant with negative sign for Level 1; while, positive for Levels 2 & 3 (negative for Level 1 assets only; while, positive for Levels 2 & 3) *Coeff. = 0.546, Robust t =2.52, Coeff. = -0.315, Robust t =-0.190, and Coeff. = -0.940, Robust t =-0.300 (Coeff. =-0.817, Robust t =-2.08, Coeff. = 2.101, Robust t =0.820, and Coeff. = 3.745, Robust t =0.470), respectively.*

2- It is worth mention that $H6_{A\&B}$ were re-tested excluding HC firms from the total sample. Untabulated regression results were not substantially different from ones reported in the main analysis. Moreover, following Lin et al. (2017) and Lawrence et al. (2011), as a robustness test, propensity-score matched research design (PSM) is employed to address the sample selection bias issue. The PSM is obtained through two steps. First, Model (1) used to predict the likelihood of a firm reporting non-zero *FVA*. Second, Model (2) matched each treatment firm (i.e., firms apply FVA) with a control firm (i.e., firms apply HC) with the closest propensity-score obtained in the first step. Untabulated results show similar evidence to the main analysis after controlling for the potential sample selection bias.

3- The coefficients of the control variables have the expected magnitude and signs consistent with prior literature with the exception of *UNQUALIFIED* variable, which was no longer significant after modifying the model with expertise proxies.

(Table 6.4. Continued)

DV = *LnAFEES* Variables	Model (1) *Coeff. (Robust t)*	Model (2) *Coeff. (Robust t)*	Model (3) *Coeff. (Robust t)*	Model (4) *Coeff. (Robust t)*
		(-0.530)		
FVA1_TA			0.308	1.551
			(2.05)**	(4.79)***
FVA2_TA			0.728	0.638
			(0.860)	(0.520)
FVA3_TA			1.823	0.760
			(1.070)	(0.120)
*FVA1_TA * ISPEC1*			0.564	
			(3.26)***	
*FVA2_TA * ISPEC1*			-0.333	
			(-0.370)	
*FVA3_TA * ISPEC1*			-1.077	
			(-0.540)	
*FVA1_TA * ISPEC2*				-1.016
				(-2.63)***
*FVA2_TA * ISPEC2*				1.396
				(0.980)
*FVA3_TA * ISPEC2*				2.366
				(0.310)
LnASSET	0.305	0.308	0.310	0.315
	(24.05)***	(24.26)***	(23.94)***	(24.29)***
ROI	0.000	0.000	0.000	0.000
	(4.98)***	(4.68)***	(4.70)***	(4.31)***
LOSS	0.115	0.108	0.112	0.107
	(2.66)***	(2.51)**	(2.60)***	(2.49)**
LEV	0.000	0.000	0.000	0.000
	(10.29)***	(10.10)***	(10.27)***	(10.00)***
GROWTH	-0.009	-0.009	-0.009	-0.008
	(-1.850)*	(-1.700)*	(-1.860)*	(-1.590)
SUBS	0.021	0.023	0.020	0.022
	(4.10)***	(4.49)***	(3.92)***	(4.29)***
BIG4	0.425	0.494	0.429	0.487
	(11.89)***	(14.37)***	(12.01)***	(14.14)***
CHANGE	0.074	0.096	0.072	0.090
	(2.12)**	(2.78)***	(2.05)**	(2.59)***
UNQUALIFIED	-0.071	-0.063	-0.070	-0.061
	(-1.420)	(-1.240)	(-1.400)	(-1.210)
Robust	***Yes***	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
N	***2100***	***3108***	***2100***	***2100***
Prob>F	***0.000***	***0.000***	***0.000***	***0.000***
F - Statistic	***(27)******	***(27)******	***(31)******	***(31)******
R^2	***64.38%***	***63.93%***	***64.66%***	***64.27%***
Mean VIF	***1.79***	***1.85***	***1.75***	***1.81***

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on FVD and the interaction of auditor industry expertise with the proportions of fair-valued assets (by input Level) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5, Chapter 3.

6.5.2. Dealing with Endogeneity in Relation to Auditor Type

To address the potential self-selection bias (i.e., Endogeneity in this study) of industry specialist auditor in the primary audit fees model, Heckman two-stage estimator is performed (Heckman 1979). Following previous evidence on auditing and fair value knowledge (Behn et al. 2008; Goncharove et al. 2014; Sangchan et al. 2020; Yao et al. 2015), auditor industry expertise variables based on the two controversial scenarios (market share-based and client portfolio-based) were included separately as the dependent variable in the first-stage probit regression model. The choice of audit firm is regressed using the dummy variables of both metrics on industry specialisation, separately on some of the likely determinants of the auditor choice decision[134]. Then, Models (1 – 4) are modified in the second-stage of Heckman test by adding inverse Mills ratio variable (*INVMILLS*) computed from the probit regression in the first-stage to control for self-selection issue[135].

The first and third columns of Table 6.5 show the results of probit regression analysis. The dependent variables are auditor industry expertise based on the two approaches: market share-based and client portfolio-based, respectively. The independent variables of interest are industry expertise attributes: natural logarithm of total assets (*LnASSET*), return on investment (*ROI*), firm loss (*LOSS*), leverage (*LEV*), growth ratio (*GROWTH*), number of subsidiaries (*SUBS*), asset turnover (*ATURN*) and current ratio (*CURR*). As shown in the table below the *P* – value of the tested models is highly significant at the 0.01 level (*Prob > chi2= 0.000*) with reasonable explanatory power of each model where the Pseudo R^2 ranging from 10% to 15%.

Models (1 – 2) and Models (3 – 4) of Table 6.5 show the result of the OLS regression analysis (including inverse *INVMILLS* variable computed in the probit regression). The dependent variable is the log of audit fees (*LnAFEES*). The independent variables of interest are the proportion of fair-valued assets (*FVA_TA*) and fair value level inputs (*FVA1_TA, FVA2_TA, FVA3_TA*). The moderating variables belong to auditor industry expertise; auditor market share (MS) and auditor portfolio share (PS). As shown in the table below, the *P* – value of the tested models is highly significant at the 0.01 level (*Prob>F = 0.000*) with reasonable explanatory power of each model ranging from 61% to 66%. The mean VIF of the probit regression and the second-stage regression models of Heckman (1979) is less than 4. Therefore, the reported results in Table 6.5 significantly satisfied the collinearity condition for OLS regression.

The findings of the second-stage estimation are reported in Table 6.5 (Models 1 – 2 and 3 – 4) and indicate that the sign and coefficients of the interaction term of proportion of fair-valued assets (and by input hierarchy Level) with industry specialisation approaches remain unchanged after considering the selection bias. Therefore, the outcomes of the second-stage estimation support the main analysis conclusions and confirm the regression findings of the main analysis are not driven by auditor-self-selection bias.

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[134] The first-stage probit regression is similar to Chaney et al.'s (2004) model which is also employed by Goncharove et al. (2014) and Sangchan et al. (2020) who examine the effect of fair value on audit fees in US and Australian real estate contexts, respectively. Chaney et al.'s (2004) and Cahan and Sun (2015) model obtains the probability of auditor selection bias where the dependent variable is a dummy variable coded 1 for clients employing a specialist audit firm, 0 otherwise as follows:

ISPEC1(or PS_Dummy) (0,1) =δ0+ δ2LnASSET + δ3SUBS+ δ4LOSS+ δ5ROI+ δ6LEV + δ7GROWTH+ δ3ATURN+δ4CURR+IndFE+ YearFE + ε.

Where: *ISPEC1*= dummy variable coded 1 if auditor market share is greater than 10%, 0 otherwise. *PS_ Dummy*= dummy variable coded 1 if auditor portfolio share greater than the industry-year cut-off, 0 otherwise. *ATURN* = sales/total assets; *CURR* = current assets/current liabilities; the rest of the variables are previously defined in Table 3.3, Chapter 3.

[135] Following previous literature, the *BIG4* variable has been excluded from the endogeneity test following Behn et al. (2008). Further, the first stage includes a set of control variables excluded from the second stage regression (namely *ATURN and CURR*) following Lawrence et al. (2011) and Behn et al. (2008).

Table 6.5. Pooled Regression Results with Controlling for Possible Endogeneity

Variables	*Probit Regression Coeff. (z)*	Model (1) *OLS Regression Coeff. (Robust t)*	Model (2) *OLS Regression Coeff. (Robust t)*	*Probit Regression Coeff. (z)*	Model (3) *OLS Regression Coeff. (Robust t)*	Model (4) *OLS Regression Coeff. (Robust t)*
Intercept	***-3.566 (-9.34)****	***-6.458 (-9.31)****	***-6.562 (-9.42)****	***-1.824 (-3.58)****	***0.329 (1.09)****	***1.715 (7.99)****
FVA_TA		0.236 (1.490)			0.767 (2.59)***	
ISPEC1		0.317 (8.38)***	0.319 (8.41)***			
ISPEC2					0.107 (1.630)	0.119 (1.860)*
FVA_TA ISPEC1*		0.413 (2.33)**				
FVA_TA ISPEC2*					-0.155 (-0.500)	
FVA1_TA			0.292 (1.740)*			1.140 (3.20)***
FVA2_TA			0.934 (1.300)			0.949 1.490
FVA3_TA			4.687 (3.14)***			1.289 0.230
*FVA1_TA * ISPEC1*			0.510 (2.68)***			
*FVA2_TA * ISPEC1*			-0.485 (-0.620)			
*FVA3_TA * ISPEC1*			-2.481 (-1.430)			
*FVA1_TA * ISPEC2*						-1.758 (-2.48)*
*FVA2_TA * ISPEC2*						0.437 (1.200)
*FVA3_TA * ISPEC2*						0.912 (0.160)
LnASSET	0.241 (10.73)***	0.746 (22.14)***	0.751 (22.16)***	0.172 (5.85)***	0.444 (29.80)***	0.464 (30.49)***
ROI	0.000 (0.730)	0.000 (7.52)***	0.000 (7.28)***	0.000 (3.41)***	0.000 (7.42)***	0.000 (7.98)***
LOSS	-0.084 (-0.860)	0.020 (0.430)	0.024 (0.520)	0.219 (1.820)*	0.211 (4.35)***	0.231 (4.76)***
LEV	-0.000 (-0.560)	0.000 (4.17)***	0.000 (4.20)***	-0.000 (-0.050)	0.000 (7.95)***	0.000 (7.79)***
GROWTH	-0.009 (-0.930)	-0.028 (-5.69)***	-0.028 (-5.68)***	-0.027 (-2.44)**	-0.025 (-4.31)***	-0.028 (-4.87)***
SUBS	0.026 (2.52)**	0.058 (10.36)***	0.057 (10.23)***	0.047 (2.46)**	0.034 (6.28)***	0.038 (6.93)***
CHANGE		0.015 (0.440)	0.014 (0.430)		0.019 (0.550)	0.017 (0.480)
UNQUALIFIED		-0.039 (-0.820)	-0.035 (-0.730)		-0.103 (2.01)**	-0.100 (-1.98)*
ATURN	-0.234 (-2.15)**			0.107 (0.830)		
CURR	-0.000 (-0.190)			0.002 (0.480)		
INVMILLS		3.737 (13.98)***	3.750 (13.99)***		1.748 (5.88)***	2.210 (7.21)***
Pseudo R^2	***10%***			***15%***		
Log likelihood	***-1136.90***			***-606.41***		
Wald chi2	***23***			***23***		
Prob > chi2	***0.000***			***0.000***		
Robust	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
N	***2100***	***2100***	***2100***	***2100***	***2100***	***2100***
Prob>F		***0.000***	***0.000***		***0.000***	***0.000***
F - Statistic		***(27)****	***(31)****		***(27)****	***(31)****
R^2		***65.75%***	***66.03%***		***61.15%***	***61.79%***
Mean VIF		***2.60***	***3.65***		***3.42***	***3.86***

Note: *this table presents the OLS regressions of log of audit fees (LnAFEES) paid by Jordanian firms over 2005-2018 on FVD and the interaction of auditor industry expertise with the proportions of fair-valued assets (by input Level) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*

(This Table is continued on the next page)

(Table 6.5. Continued)

Models (1 & 2): LnAFEES= δ0 + δ1FVA_TA+ δ2 ISPEC1+ δ3FVA_TA ISPEC1 (or ISPEC2) + δ4LnASSET+ δ5SUBS+ δ6LOSS+ δ7ROI+ δ8LEV+ δ9QGROWTH + δ10BIG4+ δ11CHANGE+ δ12UNQUALIFIED + INVMILLS+ IndFE + YearFE+ ε.*
Models (3 & 4): LnAFEES= δ0+ δ1FVA1_TA+ δ2FVA2_TA+ δ3FVA3_TA+ δ4 ISPEC1 (or ISPEC2)+ δ5FVA1_TA ISPEC1 (or ISPEC2)+ δ6FVA2_TA*ISPEC1(orISPEC2)+δ7FVA3_TA*ISPEC1(or ISPEC2)+δ8LnASSET+ δ9SUBS+δ10LOSS+δ11ROI+δ12LEV+δ13GROWTH +δ14BIG4+δ15CHANGE+δ16UNQUALIFIED+ INVMILLS+ IndFE+ YearFE+ ε.*
Where: FVA_TA = Firm's total fair-valued assets deflated by total assets. FVA1_TA, FVA2_TA, FVA3_TA = Firm's total fair-valued assets using Level 1, Level 2, and Level 3 inputs deflated by total assets. ISPEC1= Dummy variable coded as 1 if ISPEC1 higher than the market share cut-off (10%), 0 otherwise. ISPEC2= The percentage of auditor portfolio share of an exact industry. INVMILLS = The inverse Mills ratio calculated from the first stage probit regression on the probability of employing industry specialist auditors.
****, **, and *indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

6.6. Additional Analysis and Robustness Checks

A number of additional and sensitivity analyses are conducted to ensure that the main regression results are robust to different measurements and estimators. A detailed discussion is presented in the following subsections.

6.6.1. Bootstrap Standard Error

Table 6.6 shows the results for the resampling procedure repeated 1000 times following Minutti-Meza (2013) and Lawrence et al. (2011) to check the accuracy and stability of the OLS analysis results[136]. The benchmark models were the OLS, the results of which were checked and confirmed by bootstrapping analysis. Similar to previous literature (Prencipe et al. 2008; Jiraporn & DaDalt 2009; González & García-Meca 2014; Athanasakou et al. 2007) this study re-runs the regression models using bootstrap standard errors to ensure that the regression results are not driven by sampling error or data mining. The OLS regressions with standard errors corrected by bootstrap approach are employed for all models (1 – 4) using a randomised sample repeated 2100 times (i.e., total number of observations in our original sample to create a resample). Then this resampling process is repeated 100, 200, 500 and 1000 times to develop estimates of the standard errors and confidence intervals of the parameters shown.

Similar to previous regression models, the dependent variable is the log of audit fees (*LnAFEES*). The independent variables of interest are the proportion of fair-valued assets (*FVA_TA*) and fair value input levels (*FVA1_TA, FVA2_TA, FVA3_TA*). Moderating variables belong to auditor industry expertise; auditor market share (MS) and auditor portfolio share (PS). As shown in the table below the *P* – value of the tested models (1 – 4) is highly significant at the 0.01 level (*Prob > chi2 = 0.000*) with reasonable explanatory power of each model ranging from 64% to 65%. Results of the bootstrapping approach analyses produce qualitatively similar results as those documented in the primary analysis. Thus, the findings reported in the main regression analysis remain strong and significant[137].

[136] The bootstrap is a computer-based technique for estimating standard errors, biases, confidence intervals and other measures of statistical accuracy (Fernando et al. 2014).
[137] All factors of the control variables remain the same as in the original models the exception of the *UNQUALIFIED*.

Table 6.6. Bootstrapping (1000 times) OLS Analysis

DV = *LnAFEES* **Variables**	*Model (1)* *Coffe. (bootstrapping z)*	*Model (2)* *Coffe. (bootstrapping z)*	*Model (3)* *Coffe. (bootstrapping z)*	*Model (4)* *Coffe. (bootstrapping z)*
Intercept	***2.968***	***2.880***	***2.871***	***2.716***
	(14.32)*	***(14.05)****	***(13.87)****	***(13.02)****
FVA_TA	0.263	0.708		
	(1.890)*	(2.64)***		
ISPEC1	0.149		0.137	
	(3.70)***		(3.36)***	
ISPEC2		0.159		0.206
		(2.00)**		(2.66)***
FVA_TA ISPEC1*	0.379			
	(2.33)**			
FVA_TA ISPEC2*		-0.170		
		(-0.510)		
FVA1_TA			0.308	1.551
			(1.98)**	(4.59)***
FVA2_TA			0.728	0.638
			(0.580)	(0.330)
FVA3_TA			1.823	0.760
			(1.010)	(0.110)
*FVA1_TA * ISPEC1*			0.564	
			(3.12)***	
*FVA2_TA * ISPEC1*			-0.333	
			(-0.260)	
*FVA3_TA * ISPEC1*			-1.077	
			(-0.530)	
*FVA1_TA * ISPEC2*				-1.016
				(-2.53)**
*FVA2_TA * ISPEC2*				1.396
				(0.640)
*FVA3_TA * ISPEC2*				2.366
				(0.270)
LnASSET	0.305	0.308	0.310	0.315
	(24.06)***	(25.05)***	(24.56)***	(24.47)***
ROI	0.000	0.000	0.000	0.000
	(5.22)***	(4.47)***	(4.79)***	(4.20)***
LOSS	0.115	0.108	0.112	0.107
	(2.72)***	(2.37)**	(2.73)***	(2.50)**
LEV	0.000	0.000	0.000	0.000
	(10.36)***	(10.18)***	(10.52)***	(10.12)***
GROWTH	-0.009	-0.009	-0.009	-0.008
	(-1.870)*	(-1.680)*	(-1.870)*	(-1.520)
SUBS	0.021	0.023	0.020	0.022
	(4.00)***	(4.57)***	(4.00)***	(4.25)***
BIG4	0.425	0.494	0.429	0.487
	(11.71)***	(14.37)***	(12.36)***	(14.16)***
CHANGE	0.074	0.096	0.072	0.090
	(2.06)**	(2.73)***	(2.06)**	(2.54)**
UNQUALIFIED	-0.071	-0.063	-0.070	-0.061
	(-1.410)	(-1.220)	(-1.400)	(-1.200)
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
N	***2100***	***2100***	***2100***	***2100***
Replications	***1000***	***1000***	***1000***	***1000***
Wald chi2	***27***	***27***	***31***	***31***
Prob > chi2	***0.000***	***0.000***	***0.000***	***0.000***
R^2	***64.29%***	***64.57%***	***64.58***	***64.89%***
Adj. R^2	***64.09%***	***64.30%***	***64.38%***	***64.62%***
Mean VIF	***1.79***	***1.85***	***1.75***	***1.81***

Note: *this table presents the OLS regressions with standard errors corrected by bootstrap replications (1000) of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on FVD and the interaction of auditor industry expertise with the proportions of fair-valued assets (by input Level).*
*****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

6.6.2. Huber/White Standard Error

The residuals of all tested models passed through several tests for heteroscedasticity and non-normality as discussed above (see section 6.5). The Breusch-Pagan/Cook-Weisberg test ascertains the existence of a heteroscedasticity problem. Untabulated *p – value* indicates a kind of heteroscedasticity is evident in the linear model (*p – value = 0.0681*). Similar to Chapters 4 and 5 and following other research (Alhababsah 2019; Chambers et al. 2007; Mohrmann et al. 2013), the robust standard error method with Huber-White's sandwich estimator described in Diggle et al. (1994) can reliably diagnose this issue to test the robust of the regression in the presence of heteroscedasticity. Therefore, Models (1 – 4) are re-tested to adjust for this problem. Table 6.7 below presents the pooled regression results from the estimation of regression models (1 – 4) with Huber–White t-statistics. As shown below the *P – value* of the tested models (1 – 4) is highly significant at the 0.01 level (*Prob>F = 0.000*) with reasonable explanatory power of each model ranging from 71% to 72%. Overall, the outcome of Huber-White's sandwich estimator produces qualitatively similar results as those documented in the primary analysis[138].

Table 6.7. Pooled Regression Results with Huber–White t-statistics

DV = *LnAFEES*	**Model (1)**	**Model (2)**	**Model (3)**	**Model (4)**
Variables	***Coeff. (t)***	***Coeff. (t)***	***Coeff. (t)***	***Coeff. (t)***
Intercept	***2.437 (14.32)****	***2.495 (13.95)****	***2.310 (13.47)****	***2.293 (12.66)****
FVA_TA	0.197 (1.310)*	0.138 (1.520)*		
ISPEC1	0.162 (4.31)***		0.149 (3.95)***	
ISPEC2		0.040 (0.650)		0.090 (1.450)
FVA_TA ISPEC1*	0.303 (1.750)*			
FVA_TA ISPEC2*		-0.404 (-1.270)*		
FVA1_TA			0.254 (1.530)*	0.916 (2.98)***
FVA2_TA			0.176 (0.130)	1.683 (0.850)
FVA3_TA			1.406 (0.570)	5.821 (0.990)
*FVA1_TA * ISPEC1*			0.513 (2.66)***	
*FVA2_TA * ISPEC1*			-0.218 (-0.150)	
*FVA3_TA * ISPEC1*			-1.611 (-0.580)	
*FVA1_TA * ISPEC2*				-1.335 (-1.920)*
*FVA2_TA * ISPEC2*				2.119 (0.920)
*FVA3_TA * ISPEC2*				7.606 (1.060)
LnASSET	0.345 (34.28)***	0.345 (33.81)***	0.352 (34.76)***	0.354 (34.34)***
ROI	0.000 (3.87)***	0.000 (3.63)***	0.000 (3.52)***	0.000 (3.26)***
LOSS	0.098 (2.32)**	0.095 (2.24)**	0.095 (2.29)**	0.098 (2.31)**
LEV	0.000	0.000	0.000	0.000

(This Table is continued on the next page)

[138] All factors of the control variables remain the same as in the original models the exception of the *UNQUALIFIED*.

(Table 6.7. Continued)

DV = *LnAFEES*	Model (1)	Model (2)	Model (3)	Model (4)
Variables	***Coeff. (t)***	***Coeff. (t)***	***Coeff. (t)***	***Coeff. (t)***
	(10.69)***	(10.49)***	(10.67)***	(10.32)***
GROWTH	-0.007	-0.007	-0.007	-0.006
	(-1.750)*	(-1.760)*	(-1.750)*	(-1.500)
SUBS	0.014	0.018	0.014	0.017
	(3.36)***	(4.09)***	(3.15)***	(3.82)***
BIG4	0.407	0.487	0.411	0.479
	(12.17)***	(15.51)***	(12.37)***	(15.29)***
CHANGE	0.050	0.079	0.046	0.072
	(1.690)*	(2.70)***	(1.580)	(2.44)**
UNQUALIFIED	-0.002	-0.007	-0.001	-0.014
	(-0.040)	(-0.180)	(-0.020)	(-0.360)
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
N	***2100***	***2100***	***2100***	***2100***
Prob >F	***0.000***	***0.000***	***0.000***	***0.000***
F - Statistic	***(27)******	***(27)******	***(31)******	***(31)******
R^2	***71%***	***71%***	***72%***	***71%***
Mean VIF	***1.79***	***1.85***	***1.75***	***1.81***

Note: *this table presents the OLS regressions with Huber–White t-statistics of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on FVD and the interaction of auditor industry expertise with the proportions of fair-valued assets (by input Level).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

6.6.3. Excluding the Crisis Year

Following other studies (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a; Goncharov et al. 2014), additional research is conducted to ensure the robustness of the main regression results to the inclusion of a sample year potentially affected by the crisis. The hypotheses were re-tested (Models 1 – 4) after excluding the firm-year observations for the crisis year (2008) from the total sample. Thus, 150 firm-year observations are dropped from the total sample. Table 6.8 below shows the results of the retested models. As shown in the table below the *P* – value of the tested models (1 – 4) is highly significant at the 0.01 level (*Prob>F = 0.000*) with reasonable explanatory power of each model ranging from 64% to 65%. Results of these replications remain consistent with our primary analyses[139].

Table 6.8. Result of OLS Regression Excluding the Crisis Year (2008)

DV = *LnAFEES*	Model (1)	Model (2)	Model (3)	Model (4)
Variables	***Coeff. (t)***	***Coeff. (t)***	***Coeff. (t)***	***Coeff. (t)***
Intercept	***2.959***	***2.885***	***2.853***	***2.727***
	(13.91)**	***(13.28)******	***(13.16)******	***(12.22)******
FVA_TA	0.241	0.688		
	(1.680)*	(2.59)***		
ISPEC1	0.150		0.139	
	(3.53)***		(3.22)***	
ISPEC2		0.152		0.195
		(1.880)*		(2.37)**
FVA_TA ISPEC1*	0.400			
	(2.42)**			
FVA_TA ISPEC2*		-0.150		
		(-0.460)		
FVA1_TA			0.279	1.537
			(1.800)*	(4.57)***
FVA2_TA			0.697	0.234
			(0.820)	(0.190)
FVA3_TA			2.335	6.617
			(1.290)	(1.020)
*FVA1_TA * ISPEC1*			0.615	
			(3.43)***	

(This Table is continued on the next page)

[139] All factors of the control variables remain the same as in the original models the exception of the *UNQUALIFIED*.

(Table 6.8. Continued)

DV = *LnAFEES* Variables	Model (1) *Coeff. (t)*	Model (2) *Coeff. (t)*	Model (3) *Coeff. (t)*	Model (4) *Coeff. (t)*
*FVA2_TA * ISPEC1*			-0.284 (-0.310)	
*FVA3_TA * ISPEC1*			-2.230 (-1.070)	
*FVA1_TA * ISPEC2*				-0.996 (2.48)**
*FVA2_TA * ISPEC2*				0.946 (0.650)
*FVA3_TA * ISPEC2*				9.050 (1.130)
LnASSET	0.306 (23.26)***	0.308 (23.39)***	0.311 (23.23)***	0.315 (23.47)***
ROI	0.000 (4.84)***	0.000 (4.56)***	0.000 (4.55)***	0.000 (4.21)***
LOSS	0.101 (2.23)**	0.094 (2.08)**	0.099 (2.19)**	0.092 (2.05)**
LEV	0.000 (9.68)***	0.000 (9.47)***	0.000 (9.65)***	0.000 (9.37)***
GROWTH	-0.008 (-1.550)	-0.008 (-1.450)	-0.008 (-1.560)	-0.007 (-1.300)
SUBS	0.021 (3.93)***	0.023 (4.33)***	0.020 (3.75)***	0.022 (4.16)***
BIG4	0.429 (11.35)***	0.501 (13.89)***	0.434 (11.48)***	0.495 (13.70)***
CHANGE	0.061 (1.680)*	0.085 (2.36)**	0.059 (-1.610)	0.080 (2.21)**
UNQUALIFIED	-0.066 (-1.280)	-0.058 (-1.110)	-0.064 (-1.250)	-0.055 (-1.070)
Robust	***Yes***	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
N	***1950***	***1950***	***1950***	***1950***
Prob>F	***0.000***	***0.000***	***0.000***	***0.000***
F - Statistic	***(26)******	***(26)******	***(30)******	***(30)******
R^2	***64.26%***	***63.78%***	***64.55%***	***64.13%***
Mean VIF	***1.76***	***1.81***	***1.65***	***1.78***

Note: *this table presents the OLS regressions excluding firm-year observations (2008) of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on FVD and the interaction of auditor industry expertise with the proportions of fair-valued assets (by input Level and in total) excluding the crisis year of 2008 with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

6.6.4. Excluding BIG4 Variable

Following (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a, 2014b; Goncharov et al. 2014) models (1 – 4) were re-tested to ensure that the main analysis results are not driven by an auditor type factor (*BIG4*). All results remain unchanged with those reported in the primary analyses.

6.6.5. Alternative Measure of the Subjective Fair Values through Level 2 and Level 3 Assets

For further analysis, aggregate variable Level 2 and Level 3 *(FVA23_TA)* are used instead of (*FVA2_TA, FVA3_TA*) to robust the findings for the effect of auditor industry expertise measures on the association between the uncertain hierarchy level inputs and audit fees[140]. Table 6.9 below presents the analysis results of the re-tested models. As shown in table 6.9 below the *P* – value of the tested models (1 – 2) is highly significant at the 0.01 level (*Prob>F = 0.000*) with reasonable explanatory power of each

[140] All regression models are tested for multicollinearity employing VIF. The mean VIF in all models is below 2.

model ranging from 64% to 65%[141]. All results remain unchanged with those reported in the main analyses.

Table 6.9. Result of OLS Regression: Aggregate Level 2 and Level 3 Assets Variable (*FVA23_TA*)

DV = *LnAFEES* Variables	Model (1) *Coeff. (Robust t)*	Model (2) *Coeff. (Robust t)*
Intercept	***2.874 (13.64)****	***2.717 (12.59)****
ISPEC1	0.135 (3.33)***	
ISPEC2		0.206 (2.65)***
FVA1_TA	0.310 (2.06)**	1.554 (4.80)***
FVA23_TA	0.780 (1.280)	0.622 (0.570)
*FVA1_TA * ISPEC1*	0.564 (3.27)***	
*FVA23_TA * ISPEC1*	-0.345 (-0.520)	
*FVA1_TA * ISPEC2*		-1.015 (-2.63)***
*FVA23_TA * ISPEC2*		1.460 (1.120)
LnASSET	0.310 (23.94)***	0.315 (24.27)***
ROI	0.000 (4.70)***	0.000 (4.31)***
LOSS	0.113 (2.61)***	0.107 (2.50)**
LEV	0.000 (10.28)***	0.000 (10.01)***
GROWTH	-0.009 (-1.870)*	-0.008 (-1.600)
SUBS	0.021 (3.98)***	0.023 (4.35)***
BIG4	0.431 (12.08)***	0.488 (14.19)***
CHANGE	0.071 (2.04)**	0.089 (2.56)**
UNQUALIFIED	-0.071 (-1.420)	-0.062 (-1.220)
Robust	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***
N	***2100***	***2100***
Prob>F	***0.000***	***0.000***
F - Statistic	***(29)****	***(29)****
R^2	***64.66%***	***64.28%***
Mean VIF	***1.67***	***1.98***

Note: *this table presents the OLS regressions using aggregate variable Level 2 and Level 3 (FVA23_TA) of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on FVD and the interaction of auditor industry expertise with the proportions of fair-valued assets (by input Level and in total) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
Model (3.1): LnAFEES= δ0 + δ1FVA_TA+ δ2 ISPEC1+ δ3FVA_TA ISPEC1 (or ISPEC2) + δ4LnASSET+ δ5SUBS+ δ6LOSS+ δ7ROI+ δ8LEV+ δ9QGROWTH+ δ10CHANGE+ δ11UNQUALIFIED + IndFE + YearFE+ ε.*
Model (4.1): LnAFEES= δ0+ δ1FVA1_TA+ δ2FVA2_TA+ δ3FVA3_TA+ δ4 ISPEC1 (or ISPEC2) + δ5FVA1_TA ISPEC1 (or ISPEC2) +δ6FVA2_TA*ISPEC1(orISPEC2)+δ7FVA3_TA*ISPEC1(orISPEC2)+δ8LnASSET+ δ9SUBS+δ10LOSS+ δ11ROI+ δ12LEV+δ13GROWTH+ δ14CHANGE+δ15UNQUALIFIED+ IndFE+ YearFE+ ε.*
Where: FVA_TA = Firm's total fair-valued assets deflated by total assets. FVA1_TA, FVA2_TA, FVA3_TA = Firm's total fair-valued assets using Level 1, Level 2, and Level 3 inputs deflated by total assets. ISPEC1= Dummy variable coded as 1 if ISPEC1 higher than the market share cut-off (10%), 0 otherwise. ISPEC2= The percentage of auditor portfolio share of an exact industry.
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

[141] All factors of the control variables remain the same as in the original models the exception of the *UNQUALIFIED*.

6.6.6. Alternative Measure of Auditor Industry Expertise: Weighted Market Share (WMS)

Following Abbott et al. (2003), Almutairi et al. (2009), Audousset-Coulier et al. (2015) and Hegazy et al. (2015), weighted market share (WMS)[142] analysis demonstrates one approach capturing the complementary relationship between the MS and PS attributes of audit specialists. WMS is measured by multiplying the auditor MS by auditor PS. The WMS cut-off approach is a combined cut-off of both attributes of specialisation, MS and PS cut-off. WMS is a dummy variable coded 1 if the WMS value exceeds the certain WMS cut-off level, 0 otherwise. WMS fee-based audit has not yet been tested in the literature, especially in auditing fair value knowledge (Audousset-Coulier et al. 2015). Therefore, the current study contributes to the auditing literature by testing an alternative measure of auditor industry expertise other than the traditional specialisation measures: MS and PS.

Table 6.10 below presents the analysis results of the tested models. As shown in the table the *P* – value of the tested models (1 – 2) is highly significant at the 0.01 level (*Prob>F = 0.000*) with reasonable explanatory power of each model ranging from 64% to 65%. The regression fails to find any significant effect of the moderating WMS on the association between the proportion of fair-valued assets and audit fees. This finding is mainly driven by the fact that auditor specialisation identified by WMS incorporates both an auditor firm's market share and client's share of the auditor portfolio. Therefore, consistent with the primary analysis discussed above, the moderating specialisation attribute using MS was significant. However, the PS scenario was not significant with a positive sign, so the analysis using the combined measure is expected to be insignificant (*Coeff. = 0.233*, *Robust t = 1.340*).

Regarding the WMS interaction term with each fair value hierarchy level input, the analysis supports the primary analysis results and confirms that the interaction term of WMS and Level 1 assets is found to be significantly positive (*Coeff. = 0.349*, *Robust t = 1.880*); while the opposite is proven for Level 2 (Level 3) with positive nature of effect where *Coeff. = 0.069*, *Robust t = 0.050* (*Coeff. = 1.922*, *Robust t = 0.890*)[143]. This additional analysis confirms that the increased ratios of Level 1 assets relative to Level 2 and Level 3 encourage Jordanian firms to seek high-quality audits conducted by a specialist[144]. This, in turn, minimises the agency conflict, conveys positive signals to stakeholders, and provides an assurance on the validity of financial information to shareholders for allocating resources.

[142] WMS approach was first proposed by Neal and Riley (2004) to capture the complementary effect of both attributes of specialisation; MS and PS.
[143] All factors of the control variables remain the same as in the original models the exception of the *UNQUALIFIED*.
[144] All regression models are tested for multicollinearity employing VIF. The mean VIF in all models is below 2.

Table 6.10. Result of OLS Regression using Alternative *WMS* variable

DV = *LnAFEES* **Variables**	**Model (1)** ***Coeff. (Robust t)***	**Model (2)** ***Coeff. (Robust t)***
Intercept	***2.935*** ***(14.07)******	***2.834*** ***(13.39)******
FVA_TA	0.374 (2.39)**	
WMS	0.199 (4.53)***	0.188 (4.20)***
FVA_TA WMS*	0.233 (1.340)	
FVA1_TA		0.477 (2.90)***
FVA2_TA		0.330 (0.260)
FVA3_TA		0.965 (0.500)
*FVA1_TA * WMS*		0.349 (1.880)*
*FVA2_TA * WMS*		0.069 (0.050)
*FVA3_TA * WMS*		1.922 (0.890)
LnASSET	0.305 (23.96)***	0.310 (23.96)***
ROI	0.000 (4.76)***	0.000 (4.47)***
LOSS	0.113 (2.65)***	0.111 (2.59)***
LEV	0.000 (10.18)***	0.000 (10.14)***
GROWTH	-0.009 (-1.810)*	-0.009 (-1.820)*
SUBS	0.021 (4.13)***	0.021 (3.96)***
BIG4	0.431 (12.50)***	0.435 (12.61)***
CHANGE	0.072 (2.07)**	0.067 (1.940)*
UNQUALIFIED	-0.062 (-1.240)	-0.062 (-1.240)
Robust	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***
N	***2100***	***2100***
Prob>F	***0.000***	***0.000***
F - Statistic	***(27)******	***(31)******
R^2	***64.48%***	***64.75%***
Mean VIF	***1.16***	***1.30***

Note: *this table presents the OLS regressions of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on FVD and the interaction of WMS with the proportions of fair-valued assets (by input Level) with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*

Model (5): LnAFEES= δ0 + δ1FVA_TA+ δ2 WMS+ δ3FVA_TA WMS + δ4LnASSET+ δ5SUBS+ δ6LOSS+ δ7ROI+ δ8LEV+ δ9QGROWTH+ δ10CHANGE+ δ11UNQUALIFIED + IndFE + YearFE+ ε.*

*Model (6): LnAFEES=δ0+δ1FVA1_TA+δ2FVA2_TA+δ3FVA3_TA+δ4WMS+δ5FVA1_TA*WMS+δ6FVA2_TA*WMS+δ7FVA3_TA*WMS +δ8LnASSET+ δ9SUBS+δ10LOSS+δ11ROI+δ12LEV+δ13GROWTH+ δ14CHANGE+δ15UNQUALIFIED+ IndFE+ YearFE+ ε.*

Where: FVA_TA = Firm's total fair-valued assets deflated by total assets. FVA1_TA, FVA2_TA, FVA3_TA = Firm's total fair-valued assets using Level 1, Level 2, and Level 3 inputs deflated by total assets. ISPEC1= Dummy variable coded as 1 if ISPEC1 higher than the market share cut-off (10%), 0 otherwise. ISPEC2= The percentage of auditor portfolio share of an exact industry.

****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*

All variables are defined in Table 3.5 of Chapter 3.

6.6.7. Financial vs. Non-Financial Industry

Following Lin et al. (2017) the regression models (1 – 2) are re-tested by using corporate industry type variable (*INDS*) in order to capture the difference in the effect of interaction term of auditor industry expertise attributes with the proportion of fair-valued assets on audit fees among the two types of industries. The sample is split into two sub-samples based on client industry: finance industry vs non-finance industry. Models (1 – 2) are re-tested separately and modified by adding the industry type variable (*INDS*) interaction term to the proportion of fair-valued assets and auditor expertise variables (*ISPEC1*FVA_TA*INDS* and *ISPEC2*FVA_TA*INDS)* into Models (1 – 2). Models (1 – 2) of Table 6.11 below present the regression results. Similar to the primary model the dependent variable is the natural log of audit fees (*LnAFEES*) and the independent variables of interest are: the proportion of fair-valued assets (*FVA_TA*) and fair value input levels (*FVA1_TA*, *FVA2_TA*, *FVA3_TA*). The moderating variables belong to auditor industry expertise; auditor market share (MS) and auditor portfolio share (PS), and corporate industry type (*INDS*). As shown in the table below the P – value of the tested models is highly significant at the 0.01 level (*Prob > F = 0.000*) with reasonable explanatory power ranging from 64% to 65% which is similar to Sangchan et al. (2020)[145].

Models (1 – 2) show the difference in the auditor expertise (MS and PS, respectively) effect on the association between the proportion of fair-valued assets and audit fees amongst the finance and non-finance industries. Models (1 – 2) failed to find any significant difference in the moderating effect of auditor specialisation attributes, auditor market share (auditor portfolio share) on the association between the proportion of fair-valued assets and audit fees, i.e., *Coeff. = 1.010, Robust t = 1.350* (*Coeff. = -3.225, Robust t = -1.250*)[146]. This conclusion suggests there is no difference in the effect of both attributes of specialisation on the association between the proportion of fair-valued assets and audit fees across the finance vs non-finance industries[147].

[145] All regression models are tested for multicollinearity employing VIF. The mean VIF in all models is below 2.
[146] All factors of the control variables remain the same as in the original models the exception of the *UNQUALIFIED*.
[147] Untabulated analysis of the interaction terms of corporate industry type variable (*INDS*) and auditor specialisation attributes, auditor market share and auditor portfolio share and each fair value hierarchy levels confirms that auditing using subjective fair values (Level 2) by specialist auditor based on the product differentiation scenario is higher for finance industry versus the non-finance industry. The analysis is consistent with the findings noted in Chapter 4 which confirms the fact that high uncertain fair value (Level 2) is more complex and riskier in the finance industry since the majority of Level 2 assets is mainly used by the finance industry vs non-finance industry. Thus, having more uncertain fair values leads to higher audit fees. The analysis, further, confirms that auditing Level 3 assets by specialist auditor based on the shared efficiency scenario is higher for non-finance industry rather than finance industry. This result supports the discussion in Chapter 4 that using subjective fair values (Level 3) is more complex and riskier in the non-finance industry because companies in it have large inventories and receivables and therefore, suffers from higher agency costs. Specialist auditors in this case devote more effort to auditing less verifiable fair-valued assets and achieve cost savings in other aspects of the job that more than offset these incremental costs.

Table 6.11. Result of OLS Regression by Industry Type

DV = ***LnAFEES***	**Model (1)**	**Model (2)**
Variables	***Coeff. (Robust t)***	***Coeff. (Robust t)***
Intercept	***2.930***	***2.884***
	(14.54)***	***(14.55)******
FVA_TA	1.562	0.371
	(2.47)**	(1.030)*
ISPEC1	0.025	
	(0.320)	
ISPEC2		0.116
		(0.830)
INDS	-0.052	0.011
	(-0.490)	(0.080)
FVA_TA ISPEC1*INDS*	1.010	
	(1.350)	
FVA_TA ISPEC2*INDS*		-3.225
		(-1.250)
LnASSET	0.308	0.309
	(24.78)***	(24.67)***
ROI	0.000	0.000
	(4.88)***	(4.63)***
LOSS	0.117	0.108
	(2.68)***	(2.51)**
LEV	0.000	0.000
	(10.11)***	(9.85)***
GROWTH	-0.009	-0.009
	(-1.730)*	(-1.760)*
SUBS	0.021	0.023
	(4.08)***	(4.45)***
BIG4	0.420	0.500
	(11.81)***	(14.33)***
CHANGE	0.063	0.099
	(1.820)*	(2.86)***
UNQUALIFIED	-0.076	-0.064
	(-1.510)	(-1.250)
Robust	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***
N	***2100***	***2100***
Prob>F	***(30)******	***(30)******
F - Statistic	***0.000***	***0.000***
R^2	***64.53%***	***64.06%***
Mean VIF	***1.23***	***1.71***

Note: *this table presents the OLS regressions of log of audit fees (LnAFEES) paid by Jordanian firms over the period (2005-2018) on FVD and the interaction of auditor industry expertise with the proportions of fair-valued assets (by input Level) and corporate industry type with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
Model (1 & 2): LnAFEES= δ0 + δ1FVA_TA+ δ2 ISPEC1+INDS+ δ3FVA_TA ISPEC1 (or ISPEC2)*INDS + δ4LnASSET+ δ5SUBS+ δ6LOSS+ δ7ROI+ δ8LEV+ δ9QGROWTH+ δ10CHANGE+ δ11UNQUALIFIED + IndFE + YearFE+ ε.*
Where: FVA_TA = Firm's total fair-valued assets deflated by total assets. FVA1_TA, FVA2_TA, FVA3_TA = Firm's total fair-valued assets using Level 1, Level 2, and Level 3 inputs deflated by total assets. ISPEC1= Dummy variable coded as 1 if ISPEC1 higher than the market share cut-off (10%), 0 otherwise. ISPEC2= The percentage of auditor portfolio share of an exact industry.
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

6.6.8. Pre-Crisis vs. Post-Crisis

The effect of the GFC period on the tested models (1 – 2) is analysed using the crisis variables (*PERCRISIS* and *POSTCRISIS*) following Huang et al. (2020). This task aims to capture the difference in the association between FVD and audit fees among two major periods in the international economy. The sample is split into two sub-samples based on two periods: pre-crisis vs post-crisis. Models (1 – 2) are re-tested separately and modified by adding the crisis variables (*PERCRISIS* and *POSTCRISIS*) interaction term to the proportion of fair-valued assets and auditor expertise variables (*ISPEC1*FVA_TA*PRECRISIS* and *ISPEC2*FVA_TA*POSTCRISIS)* into Models (1 – 4). Models (1 – 4) of Table 6.12 below present the regression results. Similar to the primary model the dependent variable is the natural log of audit fees (*LnAFEES*) and the independent variables of interest are: the proportion of fair-valued assets (*FVA_TA*) and fair value input levels (*FVA1_TA*, *FVA2_TA*, *FVA3_TA*). The moderating variables belong to auditor industry expertise; auditor market share (MS) and auditor portfolio share (PS), and the crisis variables (*PERCRISIS* and *POSTCRISIS*). As shown in the table below the *P – value* of the tested models is highly significant at the 0.01 level (*Prob > F = 0.000*) with reasonable explanatory power ranging from 64% to 65% which is similar to Sangchan et al. (2020).

Models (1 – 4) show the difference in the auditor expertise (MS and PS, respectively) effect on the association between the proportion of fair-valued assets and audit fees during the pre-crisis and post-crisis periods[148]. Models (1 – 4) failed to find any significant difference in the moderating effect of each auditor specialisation attributes on the link between the proportion of fair-valued assets and audit fees over the pre-crisis (post-crisis) period where: MS: *Coeff. = 0.141, Robust t = 0.430 and PS: Coeff. = 0.609, Robust t = 0.940* (MS: *Coeff. = 0.072, Robust t = 0.240* and PS: *Coeff. = -0.633, Robust t = -0.960*)[149]. This conclusion suggests there is no difference in the effect of both attributes of specialisation on the association between the proportion of fair-valued assets and audit fees during the two tested crisis periods[150].

Table 6.12. Result of OLS Regression by GFC

DV = *LnAFEES* **Variables**	**Model (1)** ***Coeff. (Robust t)*** **Pre-crisis**	**Model (2)** ***Coeff. (Robust t)*** **Post-crisis**	**Model (3)** ***Coeff. (Robust t)*** **Pre-crisis**	**Model (4)** ***Coeff. (Robust t)*** **Post-crisis**
Intercept	***3.018*** ***(14.72)*****	***3.020*** ***(14.43)******	***2.936*** ***(13.99)******	***3.001*** ***(13.72)******
FVA_TA	0.335 (1.97)**	0.222 (1.230)	0.837 (2.34)**	0.381 (1.060)
ISPEC1	0.183 (4.05)***	0.062 (1.030)		
ISPEC2			0.226 (2.65)***	0.029 (0.270)
PRECRISIS	0.057 (0.570)		0.159 (1.180)	
POSTCRISIS		-0.043 (-0.430)		-0.068 (-0.530)
FVA_TA ISPEC1* PRECRISIS*	0.141 (0.430)			
FVA_TA ISPEC1* POSTCRISIS*		0.072 (0.240)		
FVA_TA ISPEC2* PRECRISIS*			0.609 (0.940)	
FVA_TA ISPEC2*POSTCRISIS*				-0.633 (-0.960)

(This Table is continued on the next page)

[148] All regression models are tested for multicollinearity employing VIF. The mean VIF is below 3.
[149] All factors of the control variables remain the same as in the original models.
[150] Untabulated analysis of the interaction terms of the crisis variables (PERCRISIS and POSTCRISIS) and auditor specialisation attributes, auditor market share and auditor portfolio share and each fair value hierarchy levels shows that auditing subjective fair values (Level 2) by specialist auditor based on the product differentiation scenario is higher during the pre-crisis period relative to the post-crisis period. However, during the period after the crisis auditing using subjective fair values (Level 2 and Level 3) by specialist auditor is less expensive than auditing the verifiable fair value level inputs (Level 1). The analysis, furthermore, confirms that auditing fair values (Level 1) by specialist auditor based on the shared efficiency scenario is higher during the pre-crisis period relative to the post-crisis period; however, the opposite is documented for the uncertain fair value levels (Level 3). Conversely, the analysis shows that auditing subjective fair values (Level 3) by specialist auditor based on the shared efficiency scenario will result in higher fees than those values belonging to Level 1 assets. Overall, the results confirm that the pre-crisis period overlaps with the transition year towards fair value model following IAS 39 in 2005 which comes with high audit risk and complexities. So the first application of FVA by Jordanian firms and additional reconciliation costs lead to high audit expenses. The analysis is consistent with the fact that auditors tried to share the pain of the crisis by offering lower fees.

(Table 6.12. Continued)

DV = *LnAFEES* Variables	Model (1) *Coeff. (Robust t)* Pre-crisis	Model (2) *Coeff. (Robust t)* Post-crisis	Model (3) *Coeff. (Robust t)* Pre-crisis	Model (4) *Coeff. (Robust t)* Post-crisis
LnASSET	0.305	0.306	0.306	0.306
	(24.06)***	(24.10)***	(23.99)***	(24.10)***
ROI	0.000	0.000	0.000	0.000
	(5.04)***	(4.99)***	(4.59)***	(4.56)***
LOSS	0.118	0.118	0.104	0.103
	(2.72)***	(2.74)***	(2.41)**	(2.40)**
LEV	0.000	0.000	0.000	0.000
	(10.42)***	(10.40)***	(10.07)***	(10.10)***
GROWTH	-0.009	-0.009	-0.009	-0.008
	(-1.910)*	(-1.830)*	(-1.730)*	(-1.670)*
SUBS	0.021	0.021	0.023	0.023
	(4.06)***	(4.07)***	(4.47)***	(4.47)***
BIG4	0.420	0.420	0.499	0.498
	(11.77)***	(11.76)***	(14.54)***	(14.48)***
CHANGE	0.072	0.067	0.096	0.098
	(2.06)**	(1.910)*	(2.77)**	(2.84)***
UNQUALIFIED	-0.061	-0.062	-0.055	-0.057
	(-1.220)	(-1.230)	(-1.070)	(-1.110)
Robust	***Yes***	***Yes***	***Yes***	***Yes***
Industry Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
Year Fixed Effects	***Yes***	***Yes***	***Yes***	***Yes***
N	***2100***	***2100***	***2100***	***2100***
Prob>F	***0.000***	***0.000***	***0.000***	***0.000***
F - Statistic	***(30)******	***(30)******	***(30)******	***(30)******
R^2	***64.48%***	***64.46%***	***64.05%***	***63.98%***
Mean VIF	***1.88***	***1.66***	***1.14***	***2.04***

Note: *this table presents the results of OLS regression of log of audit fees (LnAFEES) on the interaction auditor industry expertise variables with the proportions of fair-valued assets over the crisis period with Robust t – statistics and standard errors adjusted for both the firm and year cluster effects following Sangchan et al. (2020).*
Models (1 & 2): LnAFEES= δ0 + δ1FVA_TA+ δ2 ISPEC1+ δ3PRECRISIS +δ4FVA_TA ISPEC1 (or ISPEC2)*PRECRISIS + δ5LnASSET+ δ6SUBS+ δ7LOSS+ δ8ROI+ δ9LEV+ δ10QGROWTH+ δ11CHANGE+ δ12UNQUALIFIED + IndFE + YearFE+ ε.*
Models (3 & 4): LnAFEES= δ0 + δ1FVA_TA+ δ2 ISPEC1+ δ3 POSTCRISIS +δ4FVA_TA ISPEC1 (or ISPEC2)*POSTCRISIS + δ5LnASSET+ δ6SUBS+ δ7LOSS+ δ8ROI+ δ9LEV+ δ10QGROWTH+ δ11CHANGE+ δ12UNQUALIFIED + IndFE + YearFE+ ε.*
Where: FVA_TA = Firm's total fair-valued assets deflated by total assets. FVA1_TA, FVA2_TA, FVA3_TA = Firm's total fair-valued assets using Level 1, Level 2, and Level 3 inputs deflated by total assets. ISPEC1= Dummy variable coded as 1 if ISPEC1 higher than the market share cut-off (10%), 0 otherwise. ISPEC2= The percentage of auditor portfolio share of an exact industry.
****, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, using a two-tailed test.*
All variables are defined in Table 3.5 of Chapter 3.

6.6.9. Other Alternative Proxies for Industry Specialisation

Untabulated sensitivity analysis[151] confirms that changing the cut-off value of auditor specialisation market share to 15% or 20% following Almutairi et al. (2009), Habib (2011), and Neal and Riley (2004), does not alter the primary analysis outcomes. Therefore, the interaction term of auditor specialisation with the proportion of fair-valued assets remains significant and positive. Moreover, testing the percentage of industry specialisation market share-based following Audousset-Coulier et al. (2015) instead of the cut-off approach does not change the results either. Regarding the other industry specialisation attribute, re-testing of auditor specialisation portfolio share using the portfolio share cut-off approach following Audousset-Coulier et al. (2015) does not change the main analysis findings. Therefore, the interaction term of auditor specialisation with the proportion of fair-valued assets remains insignificant and negative.

[151] Following Audousset-Coulier, Jeny and Jiang (2015) and Neal and Riley (2004), there are 30 measures of auditor expertise for audit fee models. Inconsistent results are addressed regarding the effect of auditor expertise on the pricing of the audit. These inconsistent findings are in line with the fact that these measures are not robust to alternative definitions of industry expertise, especially those measures based on the number of clients audited, the assets of clients, or the sales of clients. Alternative analyses conducted in this study are based mainly on alternatives of cut-off value and weighted market share assignment approaches. They capture either higher audit effort or auditor bargaining power.

6.7. Summary

This chapter reports the empirical results on the moderating role of auditor industry expertise on the association between the proportion of fair valued assets (and by input hierarchy Level) and audit fees paid by Jordanian companies from 2005 to 2018. Previous results for auditor industry expertise are mixed or inconclusive, with many studies concluding that industry specialists earn an audit fee premium for industry specialists based on product differentiation scenario (Carson 2009; Fung et al. 2012), while other studies find that appointing specialist auditors leads to fee discounts, i.e., based on the shared efficiency scenario (Behn et al. 2008; Hay & Jeter 2011). Two basic methods for identifying industry specialists have been employed: the market share-based and client portfolio-based approaches. Both measurements for industry specialists examined the moderating effect of industry specialists on the relationship between the proportion of fair valued assets (and by input hierarchy Level) and audit fees (see Ettredge et al. 2014a).

The association between the proportion of fair-valued assets and audit fees is strengthened when the client hires specialist auditors identified by market share-based approaches. The analysis is in line with the triangulation of agency, signalling and stakeholder theories, as auditing the higher business risk and measurement uncertainty, like FVEs needs further attention from auditors due to the agency conflict. In this case, auditors can support stakeholders' demand for transparent and credible fair value measures and therefore curtail information asymmetry caused by the agency problem. Regarding the analysis outcome for the moderating role of auditor industry expertise using both scenarios (i.e., product differentiation and shared efficiency scenarios) through the hierarchy levels of fair value inputs, a positive significant effect of the moderating auditor industry expertise MS on the association between fair-valued assets (Level 1) and audit is evident.

Meanwhile, insignificant and negative coefficients were confirmed for the highly uncertain fair values through Level 2 and Level 3. The agency theory notion is supported in that the increasing use of Level 1 fair-valued assets resulted in high audit complexity and risk which ultimately drives audit prices up. However, the analysis presents a significant and negative effect of the moderating auditor industry expertise PS on the association between the proportion of Level 1 assets and audit fees, whereas insignificant and positive coefficients were recorded for the subjective fair values through Level 2 and Level 3. These results are consistent with the triangulation of the agency, signalling and stakeholder theories where specialist auditors under the shared efficiency scenario, on average, are more likely to offer lower audit prices, compared to non-specialists. Meanwhile expensive audit fees are required to compensate for auditing less verifiable fair-valued assets (Level 2 and Level 3 assets).

CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

7.1. Introduction

This study aims to identify the nature of the relationship between FVD and audit fees by developing a modified framework that incorporates the following: ownership structure, auditor industry specialisation, industry type and GFC proxies which accurately reflect Jordan's economic situation. In Jordan's case, FVA is aggressively used to serve managers' interests due to the agency conflict (Abdullatif, 2016). The need for independent assurance regarding FVMs has risen accordingly to avoid earnings management practices and ultimately led to higher audit prices. Risks of intentional or unintentional errors or bias in choosing the desired valuation technique to measure fair values escalated when moving down the hierarchy of levels: Level 1, Level 2 and Level 3 (Sangchan et al. 2020). Unlike other Arab-Gulf countries, Jordan was one of the first ME countries to implement IFRS/FVA and the ISA (Al-Htaybat, 2018). The increasing use of financial instruments by Jordanian companies as well as the publicity about financial instruments losses reported in the media further motivate this study in the context of Jordan (Siam & Abdullatif, 2011; Tahat et al., 2016; Abdullatif & Al-Rahahleh 2020). Jordan, moreover, is the only Arab country which requires listed firms to disclose the amount of audit fees in their annual reports as a legal requirement since 2001 (ALshbiel & Tahat 2014).

Scholars generally agree that auditors are considered as a monitoring mechanism to alleviate the information asymmetry problem caused by the agency conflict between principals and agents (Badia et al. 2017; Bradley & Sun 2021; Sangchan et al. 2020). In fact, auditing fair values not only compels auditors to spend additional effort and time in understanding and verifying the complex models and techniques used by corporates, but also exposes auditors to potential litigation and audit risks in the future. Consequently, auditors compensate for their extra effort and risks through asking for an audit fee premium (Huang et al. 2020). Consistent with the triangulation of the agency, signalling and stakeholder theories, previous research concluded contradictory findings on the relationship between FVD and audit fees. Some scholars reported a positive association between FVD and audit fees (Ettredge et al. 2014a); however, some found the opposite or no real significant correlation (Sangchan et al. 2020; Goncharov et al. 2014; Alexeyeva & Mejia-Likosova 2016). Therefore, the mixed results accompanying the impacts of FVD on audit fees have encouraged this thesis to provide additional evidence on the nature of this relationship in Jordan and discusses the difference in this relationship among different industry sectors for the first time.

Noticeably, the prior studies that have examined the relationship between fair value on audit pricing have used data from developed countries, such as the US, EU, and Australia focusing on different countries (GAAP vs IFRS), and different industries (banking, real estate, etc); however, there is no other effort documented so far from the context of developing countries, ME and Jordan, in particular. Therefore, the current thesis emphasis is on the ME and particularly Jordan, is the first of its kind to investigate the association between FVD and audit fees in a developing country (Abdullatif 2016). With an ever-growing interest from international investors and institutions, Jordan presents a vivid example of the importance of financial reporting and assurance. Therefore, the conclusions of this study contribute assisting policymakers to improve legislation and regulations on fair value best practices. The findings improve stakeholders' protection and provide a clear basis on audit fees determinants in Jordan especially after shifting to the FVA era.

Due to the unique characteristics of the current study's institutional environment, the effect of ownership structure on the association between FVD and audit fees as required by Khlif and Achek (2016) is examined. Ownership concentration introduces a need for additional assurance on the credibility of financial information due to the weak internal control and governance mechanisms, and especially in the case of using FVA. Typically, in the ME countries firms, Jordan in particular, are characterised by a high level of ownership concentration, and the dominant type of ownership is the family (Alzoubi 2016; Nguyen 2019). This research is the first of its kind to consider the ownership structure factors in FVA research, which reviews the majority of auditors' clients in Jordan.

Firms that are well-capitalised also require such approval from specialised auditors in a specific industry. Those auditors play a vital role in minimising the severity of the agency problem (Alhababsah 2019). Auditors could help firms' managers in sending positive signals on a company's information credibility to obtain finance from stakeholders (Nawaiseh et al. 2019). Auditors, consequently, are required to spend more time and effort to provide assurance to stakeholders and minimise the problem of asymmetric information especially for industries where a high level of agency conflict is evident. This has ultimately led to higher audit prices. Following the GFC in 2008, fair valuation was accused of being the primary reason for problems in the business world due to the growing use of subjective estimates (Huang et al. 2020). The GFC has put the audit profession under additional pressure, and many corrective actions had been implemented to avert potential disaster in Jordan. Auditors incurred additional burdens to improve the quality of audit services which resulted in higher audit prices (Siam & Abdullatif 2011).

This chapter addresses the overall findings, implications, limitations and future avenues of research on this topic. It is organised as follows. Section 7.2 summarises the study results. Section 7.3 outlines the implications of the findings, Section 7.4 addresses potential limitations of the study, section 7.5 suggests future avenues of research. Finally, section 7.6 concludes the chapter.

7.2. Summary of Analysis Findings

This thesis presents a detailed analysis of FVD and its consequences on audit profession, with a particular focus on audit fees. Chapter two reviews the theoretical and empirical research on FVA and audit fees. The research methodology, conceptual/theoretical framework, the hypotheses development, data selection and sample construction, and variables measurements are reviewed in chapter three. This thesis then examined six research questions in chapters four, five, and six using the OLS regression technique for the sample from Jordan during the years 2005 to 2018. In the next sections the main findings of these empirical chapters are presented. The findings of this study have adequately answered the research questions and fulfilled the research aim and objectives addressed in Chapter 1. A summary of the results of hypotheses concerning audit fees in Jordan are summarised as follows.

Chapter four presented the findings for four study objectives (objectives 1, 2, 5 & 6) employing both univariate and multivariate analysis. The first objective of this study is to explore the association between the presence of fair-valued assets and audit fees. One hypothesis was developed to meet this objective, and it is suggested that the presence of fair-valued assets affects the magnitude of audit fees. In particular, audit fees paid by fair value-oriented firms statistically lead to bearing expensive monitoring costs (i.e., audit fees). This supports *Hypothesis 1*, that there is a positive relationship between the presence of fair-valued assets and audit fees, as the study findings show that the nature of the relationship between FVD and audit fees in Jordan is significantly positive which is consistent with previous knowledge in this regard (Abdullatif & AL-Rahahleh 2020). Fair value-oriented firms are more likely to have higher levels of audit complexity and risk which drives audit prices up.

With respect to the second objective, which seeks to examine the relationship between the proportion of fair-valued assets and audit fees, the literature is limited and inconclusive. Some scholars confirmed the significant positive effect of the proportion of FVD on audit fees (Ettredge et al. 2014a), while others asserted that the nature of this relationship is negative (Sangchan et al. 2020), however, others failed to find any significant association (Alexeyeva & Mejia-Likosova 2016). To achieve this objective, two hypotheses were developed; the overall results state that the proportion of fair-valued assets do affect the magnitude of audit fees. This supports *Hypothesis* 2_A that there is a positive relationship between the proportion of fair-valued assets and audit fees; the regression results show this to be true. The application of FVA has resulted in more complex financial reporting, and the opportunity of material misstatement rises. Therefore, auditors respond to this situation by investing additional effort and time which leads to higher audit fees (Griffith 2020). *Hypothesis* 2_B predicted that the relationship between fair-valued assets and audit fees is stronger for fair-valued assets using highly subjective and complex inputs (Level 2 and Level 3) relative to Level 1 input. This result asserts that the relationship between the proportions of fair-valued assets through the hierarchy levels are found to be positive and significant for Level 1 and Level 3. Meanwhile the association was never significant for Level 2. The overall findings of the F – test confirm that the low and highly uncertain fair-valued assets exert a different impact on audit fees.

The fifth objective is to explore the moderating role of corporate industry type on the relationship between the proportion of fair-valued assets and audit fees. Two main hypotheses were formulated. *Hypothesis* 7_A expects there is no significant impact of corporate industry type on the relationship between the proportion of fair-valued assets and audit fees. The regression results reject the null hypothesis, indicating a significant and positive difference in the relationship between the proportion of fair-valued assets and audit fees is evident for finance industry vs. non-finance industry. Consistently, *Hypothesis* 7_B suggested there is no significant impact of corporate industry type on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees. The regression results also reject the null hypothesis and suggest that the moderating role of industry type is positive when it comes to the association between Level 2 and audit fees. In the meantime, its natural effect is negative for Level 1 and not significant for Level 3.

In respect to the sixth objective, which is to find the moderating role of the GFC on the proportion of fair-valued assets and audit fees, two null hypotheses (including $H8_A$ *and* $H8_B$) were devised. They investigated the moderating role of pre-crisis period and post-crisis period on the proportion of fair-valued assets (and through fair value hierarchy levels) and audit fees. The analysis, generally, rejects the null hypotheses and reveals that negative (positive) moderating effect of the pre-crisis (post-crisis) on the association between the proportion of fair valued assets and audit fees is found. Furthermore, the regression confirmed a negative impact of the moderating pre-crisis over the hierarchy levels, whereas a positive impact of post-crisis is documented and significant only for Level 1.

In relation to theory, Chapter 4's findings are consistent with the triangulation of agency, signalling and stakeholder theories. Agency theory expresses the conflict between shareholders and managers. Information asymmetry is caused by agency conflict resulting from the separation between managers and owners (McDonough et al. 2020). Following agency theory, the only way to minimise this agency problem is to hire an external auditor who provides assurance and monitoring on the reliability of the firm's disclosed financial reports (Sangchan et al. 2020). In line with signalling theory, auditors play a vital role in providing an assurance on fair values prepared by managers to stakeholders, to eliminate the information asymmetry problem and send a signal to stakeholders for making decisions (Glover et al. 2019). Consequently, auditors ask for expensive audit fees to compensate for their extra effort to assess reputation risk, litigation risk, and the time spent confirming FVEs (Alhababsah 2019; Christensen et al. 2012).

Chapter five outlines the findings relating to the third study objective which examines the moderating role of ownership structure on the proportion of fair-valued assets and audit fees, employing both univariate and multivariate analysis. Six null hypotheses were formulated ($H3_A$, $H3_B$, $H4_A$, $H4_B$, $H5_A$, and $H5_B$) to find the moderating role of family, government and financial institutional ownership on the proportion of fair-valued assets (and through fair value hierarchy levels) and audit fees. The regression findings reject the null hypotheses and suggested that family ownership leads to a smaller relationship between the proportion of fair-valued assets and audit fees. The regression, moreover, confirms that the nature of the impact of moderating family ownership on the association between Level 1 assets and audit fees is significantly negative (not for Level 2 and Level 3 assets). Regarding governmental ownership, the study confirms a positive and significant impact of the moderating role of government ownership on the link between the proportion of fair valued assets and audit fees. The analysis confirms that state ownership in the case of the subjective fair values (Level 3) leads to expensive audit fees being charged. With respect to financial institutional ownership, the analysis confirmed a positive and significant impact for the moderating role of financial institution ownership on the association between the proportion of fair valued assets and audit fees. Finally, the regression confirms that the association between the highly uncertain fair values (Level 3) and audit fees is strengthened when financial institution ownership exists.

In relation to theory, the conclusions related to family ownership are consistent with agency theory. Due to their being less of an agency problem in family-controlled firms in Jordan, audit complexity and risk are lower in such firms which leads to a fee discount scenario (Abdullatif & Al-Rahahleh 2020). The findings regarding the government and financial institutional ownership are mainly aligned with the agency and signalling theories where the application of FVA required additional check tests. Auditors, in this case, protect stakeholders' rights and reduce the agency problem between the owners and managers (Alzoubi 2018).

Chapter six addresses the findings relating to the fourth objective, which investigates the moderating role of auditor industry expertise on the proportion of fair-valued assets and audit fees, employing both univariate and multivariate analysis. Two null hypotheses ($H6_A$ *and* $H6_B$) were devised to examine the moderating role of industry specialisation, under two scenarios: firstly, the product differentiation scenario; and secondly, the shared efficiency scenario, on the proportion of fair-valued assets (and through fair value hierarchy levels) and audit fees.

The association between the proportion of fair-valued assets and audit fees is strengthened when the client hires specialist auditors identified by market share-based. However, the analysis confirmed the impact of industry specialist identified by the client portfolio-based approach, on the association between the proportion of fair-valued assets and audit fees is negative sign and insignificant. The null hypothesis is rejected regarding the product differentiation scenario (MS), while it failed to reject the null hypothesis regarding the shared efficiency scenario (PS). With respect to fair value hierarchy level inputs, Level 1 is the only type of fair value hierarchy inputs found to be significant in both scenarios with different signs: positive under the product differentiation scenario (MS); and negative under the shared efficiency scenario (PS). The results are in line with the agency and stakeholder theories, as auditors provide high-quality audits as demanded by stakeholders, therefore reducing information asymmetry to a minimal level (Griffith et al. 2020; Glover et al. 2019). In turn, this could assist managers to convey signals to the interested parties regarding the credibility of financial statements.

Overall, a number of sensitivity and additional tests were conducted in each chapter in several ways to control for possible biases or model specification matters. The primary analysis findings were not driven by the endogeneity problem of auditor self-selection bias. The other robustness check confirmed that the primary results are robust and consistent with the primary analysis findings. A summary of the overall findings of the main research objectives is presented in Table 7.1 as follows.

Table 7.1: Hypotheses Summary

Research Objective & Hypothesis	Variable/s in Interest	Analysis Result	Hypothesis Test
Panel 1: Chapter 4 tested hypotheses			
Objective (1): To find the relationship between the presence of fair-valued assets and audit fees of Jordanian listed firms.			
Hypothesis 1. There is a positive relationship between the presence of fair-valued assets and audit fees among Jordanian listed firms.	*FVA*	(+) sig	***Accepted***
Objective (2): To find the relationship between the proportion of fair-valued assets and audit fees of Jordanian listed firms.			
Hypothesis 2_A: There is a positive relationship between fair-valued assets and audit fees among Jordanian listed firms.	*FVA_TA*	(+) sig	***Accepted***
Hypothesis 2_B: The relationship between fair-valued assets and audit fees is stronger for firms with greater ratios of the subjective and complex fair-valued assets (Level 2 and Level 3) among Jordanian listed firms.	*FVA1_TA* *FVA2_ TA* *FVA3_ TA*	(+) sig (+) insig (+) sig	***Accepted***
Objective (5): To find the impact of corporate industry type (financial versus non-financial) on the relationship between the proportion of fair-valued assets and audit fees of Jordanian listed firms.			
Hypothesis 7_A: There is no significant impact of corporate industry type on the relationship between the proportion of fair-valued assets and audit fees in Jordanian listed companies.	*FVA_TA*INDS*	(+) sig	***Reject the null***
Hypothesis 7_B: There is no significant impact of corporate industry type on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.	*FVA1_TA*INDS* *FVA2_ TA*INDS* *FVA3_ TA*INDS*	(-) sig (+) sig (-) insig	***Reject the null***
Objective (6): To find the impact of the global financial crisis on the relationship between the proportion of fair-valued assets and audit fees of Jordanian listed firms.			
Hypothesis 8_A: There is no significant impact of the GFC on the proportion of fair-valued assets and audit fees among Jordanian listed firms.	*FVA_TA *PRECRISIS*	(-) sig	***Reject the null***
	*FVA_TA *POSTCRISIS*	(+) sig	***Reject the null***

(This Table is continued on the next page)

Research Objective & Hypothesis	Variable/s in Interest	Analysis Result	Hypothesis Test
Hypothesis 8_B: There is no significant impact of the GFC on the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.	*FVA1_TA*PRECRISIS,* *FVA1_TA *POSTCRISIS*	(-) sig, (+) sig	***Reject the null***
	*FVA2_TA*PRECRISIS,* *FVA2_TA *POSTCRISIS*	(-) sig, (+) insig	***Reject the null***
	*FVA3_TA*PRECRISIS,* *FVA3_TA *POSTCRISIS*	(-) sig, (+) insig	***Reject the null***
Panel 2: Chapter 5 tested hypotheses			
Objective (3): To find the moderating role of ownership structure on the relationship between proportion of fair-valued assets and audit fees among Jordanian listed firms.			
Family ownership			
$H3_A$: There is no significant impact of family ownership on the relationship between the proportion of fair-valued assets and audit fees in Jordanian listed firms.	*FVA_TA* FAMILY_OWN*	***(-) sig***	***Reject the null***
$H3_B$: There is no significant impact of family ownership on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.	*FVA1_TA*FAMILY_OWN* *FVA2_ TA* FAMILY_OWN* *FVA3_ TA* FAMILY_OWN*	***(-) sig*** ***(+) Insig*** ***(+) Insig***	***Reject the null***
Government ownership			
$H4_A$: There is no significant impact of government ownership on the relationship between the proportion of fair-valued assets and audit fees in Jordanian listed firms.	*FVA_TA* GOV_OWN*	***(+) sig***	***Reject the null***
$H4_B$: There is no significant impact of government ownership on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.	*FVA1_TA*GOV_OWN* *FVA2_ TA* GOV_OWN* *FVA3_ TA* GOV_OWN*	***(-) Insig*** ***(+) Insig*** ***(+) sig***	***Reject the null***
Financial institutions ownership			
$H5_A$: There is no significant impact of financial institutional ownership on the relationship between the proportion of fair-valued assets and audit fees in Jordanian listed firms.	*FVA_TA* FIN_INST_OWN*	***(+) sig***	***Reject the null***
$H5_B$: There is no significant impact of financial institutional ownership on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.	*FVA1_TA* FIN_INST_OWN* *FVA2_ TA* FIN_INST_OWN* *FVA3_ TA* FIN_INST_OWN*	***(+) Insig*** ***(+) sig*** ***(+) sig***	***Reject the null***

(This Table is continued on the next page)

(Table 7.1. Continued)

Research Objective & Hypothesis	Variable/s in Interest	Analysis Result	
Panel 3: Chapter 6 tested hypotheses			
Objective (6): To find the moderating role of auditor industry expertise on the relationship between proportion of fair-valued assets and audit fees among Jordanian listed firms.			
Hypothesis6A: There is no significant impact of auditor industry expertise on the relationship between the proportion of fair-valued assets and audit fees among Jordanian listed firms.	*FVA_TA* ISPEC1*	***(+) sig***	***Reject the null***
	FVA1_TA ISPEC2*	***(-) Insig***	***Accept the null***
Hypothesis6B: There is no significant impact of auditor industry expertise on the relationship between the proportion of fair-valued assets through hierarchy levels and audit fees among Jordanian listed firms.	*FVA1_ TA* ISPEC1* *FVA2_ TA* ISPEC1* *FVA3_ TA* ISPEC1*	***(+) sig*** ***(-) Insig*** ***(-) Insig***	***Reject the null***
	FVA1_ TA ISPEC2* *FVA2_ TA* ISPEC2* *FVA3_ TA* ISPEC2*	***(-) sig*** ***(+) Insig*** ***(+) Insig***	***Reject the null***

Where: Sig = significant, Insig = insignificant

7.3. The study's Implications and Recommendations

To the best of the researcher's knowledge, this study is the first attempt to examine the integration of the agency, signalling and stakeholder theories with fair value proxies to establish the nature of the relationship between FVD and audit fees in Jordan. The new empirical evidence on how audit fees are determined and how the adoption of the FVA affects audit fees were presented. This study answered the call for bridging the gap in the existing knowledge by investigating the impact of FVD on audit fees in Jordan over a 14-year period (2005-2018). Then it examined the impact of ownership structure and auditor industry specialisation on audit fees and its moderating role on the relationship between FVD and audit fees following IFRS adoption for the first time. Third, it further investigated the impact of corporate industry type (financial versus non-financial) on audit fees and its moderating role on the relationship between FVD and audit fees. Fourth and finally, this thesis documented new empirical evidence on the impact of the GFC on audit fees, specifically its far-reaching influence on the link between FVD and audit fees.

The study confirms a significant influence of FVD on audit prices in Jordan which assists to improve the understanding of Jordanian authorities of the conditions auditors face when auditing FVEs. Therefore, this investigation created empirical evidence for stock market authorities concerning the role of audit fees structure as a monitoring tool to improve the quality of financial reporting following the application of FVA. Ownership structure is often seen as a method for devising corporate governance frameworks. The study findings confirm the significant role of ownership concentration on the association between FVD and audit fees, hence the findings' reference to ownership structure may have practical implications for audit quality in Jordan and, correspondingly, enhanced audit quality, especially since investor protection procedures and related policies are not strong enough (Fiechter & Novotny-Farkas 2017). Results regarding auditor industry expertise statistically support the significant role of industry specialisation (MS) following the application of fair value model. Therefore, such findings practically contributed by acknowledging the audit fee determinants which could be useful for both auditors and clients. Audit clients can benefit from being knowledgeable about the factors which influence the cost of auditors' fees and negotiating them, thereby controlling the internal aspects that shape auditing prices. This can be useful for auditors in determining the appropriate prices for their services.

It is confirmed that there are still a number of firms that have not yet applied fair value model and those that already adopting a fair value model do not fully comply with disclosure requirements. Therefore, this study assists government agencies in Jordan to meet the Jordan 2025 plan and recommends the government provide more specific guidelines and legislations which improve compliance with FVD requirements. In doing so, the preparers and the auditors will be guided by the government on how to determine and audit fair values. Such legislation could play a vital role in protecting investors through enacting more strict penalties against the auditors who violate the laws. High quality financial reporting will deliver an attractive investment environment in Jordan (Alhababsah 2019).

7.4. The Study's Limitations

Despite substantial efforts to ensure the objectives were met, it should be noted that the study suffers several limitations regarding the findings' generalisability, study period, data collection and method. These are explained in more detail as follows. First, the nature of the audit market in which financial statements are audited, differs between developed and developing countries, and Jordan is typical of the latter. Accordingly, the findings relevant for Jordan may not be appropriate for firms operating in other developed economies. However, previous literature suggests the current study's findings can be generalised to and benefit a large number of developing countries, especially those in the ME where the same standards, regulations and reporting framework system are applied.

Second, the data used in this study was collected from publicly available sources such as firms' annual reports. Therefore, any concerns of significance affecting the disclosure of data or accounting practice, may undermine the validity of the study's findings. Third, the data is collected for the period 2005 to 2018, mainly because 2005 was the first year in which the fair value for financial assets in Jordan following IAS 39 was implemented, followed by the amendment IFRS 7 in 2008, which required corporations to disclose in detail their fair value hierarchy measurements of financial assets through Level 1, Level 2 and Level 3. Furthermore, the current study's period stops in 2018 as there is no available data for the subsequent years.

Fourth, similar to most quantitative analysis, this study's findings are constrained by the research design and variables tested. Due to the lack of available data on other accounts measured by FVA, such as investment properties, intangible assets, goodwill and real estate accounts, it is mainly financial assets valued by FVA that are examined. Further explanation of this limitation is justified in Chapter 1 (see section 1.2.5). Consequently, this issue may limit the generalisation of the results in fair value knowledge to the knowledge of specific IFRSs, such as IAS 39, IFRS 7, IFRS 9 and IFRS 13. Moreover, the current study was limited in examining audit fees as a dependent variable, while non-audit fees were not tested for two reasons: firstly, non-audit fees data is not available in Jordanian firms' annual reports as normal audit fees data as this type of disclosures is not legally required from Jordanian firms (Abdullatif 2016); and secondly, the main purpose of this thesis is limited to the main characteristics of determining audit fees following the substantial refinements in IAAS. Data about the periods preceding the application of fair value model, mainly including audit fees metrics could not be collected. Testing the model during periods preceding the application decision of FVA could enrich the study's results and provide a comparison basis to ensure the findings' validity. Similarly, some ownership concentration types were excluded from the current examination due to the limited disclosures available in Jordanian annual reports.

Fifth, the study model may suffer from the omission of variables issue, in effect resulting in bias correlated to both audit fees and FVD. Several tests have been undertaken to reduce the probability of correlated variables, including using change analysis technique following Ettredge et al. (2014) and retesting using different measurements and tests for endogeneity. The quantitative research method is the only methodology applied here due to the difficulties in collecting qualitative data concerning auditors' perspectives on the issue of auditing challenging fair value accounts and pricing decision procedure. Combining both qualitative and quantitative methods could have enriched the results. However, the study's methodology is consistent with previous studies (Alexeyeva & Mejia-Likosova 2016; Ettredge et al. 2014a; Huang et al. 2020; Sangchan et al. 2020) where the deductive positivism approach using OLS recognises their theoretical framework, and it meets the research objectives and answered the research questions.

Finally, the choice of control variables may not be comprehensive, and there may be other factors that significantly affect the audit fees and FVD. Specifically, the study model and results do not include a proxy for other factors that may have an effect on the determinant of the amount of audit fees, such as corporate governance, internal control and non-audit service. This issue is mainly driven by the unavailability of data meaning that factors were excluded from the study model. However, this research considers the most appropriate variables of Jordan following other literature, and the model compares well with other published work on audit fees in developing countries, Jordan in particular (see Alhababsah 2019; Abu Risheh & Al-Saeed 2014). Furthermore, the selected variables in the study's model meet the main aim and objectives of this topic and the unique characteristics of the study context.

7.5. Suggestions for Future Research

There are several avenues for future research on the fair value and audit fees literature.

First, the study findings reveal there is a significant association between FVD and audit fees, thus, it would be worth seeking further evidence among different proxies of FVA or other type of accounts measured using fair value model (McDonough et al. 2020). Examples include investment properties, intangible assets, goodwill and real estate accounts, in case a clear data disclosure is available (see Miah 2019). This significant positive relationship makes further investigation into the effect of fair value model on non-audit fees possible.

Second, the study results confirmed a significant role of ownership concentration on the association between FVD and audit fees since ownership concentration is deemed by previous literature as an example of corporate governance schemas. It is worth re-investigating this relationship considering further proxies of corporate governance, such as audit committee, number of board meetings and audit committee expertise. Such considerations will contribute to a comprehensive understanding of the effect of the applying subjective fair values on audit fees.

Third, since the period analysed here stops in 2018, it would be advantageous for future research to extend the time period, and especially the current economic volatility caused by the devastating COVID-19 pandemic.

Fourth, while the current study mainly employed the quantitative research methodology, other possible avenues of future research could consider a mixed method research design in order to enrich the results. Gathering auditors' and preparers' perspectives, opinions, etc., regarding the main challenges they are facing while auditing and preparing FVEs would extend the knowledge, especially regarding the limitation towards full compliance with FVDs[152] (McDonough et al. 2020).

Fifth, while macro-economic events exert great influence the accounting and auditing profession the GFC is a topic of research. Therefore, additional empirical research could be extended on the role of FVA during this crisis, and how the eruption of the credit crisis affected audit pricing. It is worth extending this examination to other countries such as those in the Gulf region where experiences of the GFC may have been subtly different.

Sixth, a comparative case study will be an interesting future research strategy using the advantages of institutional theory, which is rarely applied in research on developing countries. To the best of the researcher's knowledge, no effort has so far been undertaken for the purpose of testing institutional theory on this topic and especially in the context of developing countries (see Samaha & Khlif 2016).

[152] It is worth noting this thesis found that full compliance with FVD requirements following IFRS is not really applicable in Jordan. As mentioning in Chapter 4 (section 4.3), 22% of the current sample firms still use the traditional accounting method.

Seventh and finally, while no effort has yet been undertaken in developing countries, the ME and Jordan in particular, are good subjects for analysing the main topics related to the application of FVA and its noticeable impacts on various accounting and auditing issues. A comprehensive analysis of the evolution of FVA in the ME and Jordan is strongly preferred.

7.6. Summary

This chapter provided a summary of the research and conclusions. The main results were explained with the appropriate detail. The implications of the study were also highlighted. The potential limitations and avenues for future research on this topic were described.

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Appendix A: IFRS Adoption by Country

Country	IFRS Application Status	Country	IFRS Application Status	Country	IFRS Application Status
1. Afghanistan	*Required*	2. Albania	*Required*	3. Angola	*Required*
4. Anguilla	*Required*	5. Antigua and Barbuda	*Required*	6. Argentina	*Required*
7. Armenia	*Required*	8. Australia	*Required*	9. Austria	*Required*
10. Azerbaijan	*Required*	11. Bahamas	*Required*	**12. Bahrain***	*Required*
13. Bangladesh	*Required*	14. Barbados	*Permitted*	15. Belarus	*Required*
16. Belgium	*Required*	17. Belize	*Required*	18. Benin	*Required*
19. Bermuda	*Permitted*	20. Bhutan	*Permitted*	21. Bolivia	*None*
22. Bosnia and Herzegovina	*Required*	23. Botswana	*Required*	24. Brazil	*Required*
25. Brunei Darussalam	*Required*	26. Bulgaria	*Required*	27. Burkina Faso	*Required*
28. Cambodia	*Required*	29. Cameroon	*Required*	30. Canada	*Required*
31. Cayman Islands	*Permitted*	32. Central African Republic	*Required*	33. Chad	*Required*
34. Chile	*Required*	35. China	*None*	36. Colombia	*Required*
37. Comoros	*Required*	38. Costa Rica	*Required*	39. Croatia	*Required*
40. Cyprus	*Required*	41. Czech Republic	*Required*	42. Côte d'Ivoire	*Required*
43. Democratic Republic of Congo	*Required*	44. Denmark	*Required*	45. Dominica	*Required*
46. Dominican Republic	*Required*	47. Ecuador	*Required*	**48. Egypt***	None
49. El Salvador	*Required*	50. Equatorial Guinea	*Required*	51. Estonia	*Required*
52. Eswatini	*Required*	53. European Union	*Required*	54. Fiji	*Required*
55. Finland	*Required*	56. France	*Required*	57. Gabon	*Required*
58. Gambia	*Required*	59. Georgia	*Required*	60. Germany	*Required*
61. Ghana	*Required*	62. Greece	*Required*	63. Grenada	*Required*
64. Guatemala	*Permitted*	65. Guinea	*Required*	66. Guinea-Bissau	*Required*
67. Guyana	*Required*	68. Honduras	*Required*	69. Hong Kong SAR	*Required*
70. Hungary	*Required*	71. Iceland	*Required*	72. India	*None*
73. Indonesia	*None*	74. Iran	*Required*	**75. Iraq***	*Required*
76. Ireland	*Required*	77. Israel	*Required*	78. Italy	*Required*
79. Jamaica	*Required*	80. Japan	*Permitted*	**81. Jordan***	*Required*
82. Kazakhstan	*Required*	83. Kenya	*Required*	84. Kosovo	*Required*
85. Kuwait*	*Required*	86. Latvia	*Required*	87. Lesotho	*Required*
88. Liberia	*Required*	89. Liechtenstein	*Required*	90. Lithuania	*Required*
91. Luxembourg	*Required*	92. Macao SAR	*None*	93. Macedonia	*Required*
94. Madagascar	*Permitted*	95. Malawi	*Required*	96. Malaysia	*Required*
97. Maldives	*Required*	98. Mali	*Required*	99. Malta	*Required*
100. Mauritius	*Required*	101. Mexico	*Required*	102. Moldova	*Required*
103. Mongolia	*Required*	104. Montenegro	*Required*	105. Montserrat	*Required*
106. Myanmar	*None*	107. Namibia	*Required*	108. Nepal	*Required*
109. Netherlands	*Required*	110. New Zealand	*Required*	111. Nicaragua	*Permitted*
112. Niger	*Required*	113. Nigeria	*Required*	114. Norway	*Required*
115. Oman*	*Required*	116. Pakistan	*Required*	**117. Palestine***	*Required*
118. Panama	*Permitted*	119. Papua New Guinea	*Required*	120. Paraguay	*Permitted*
121. Peru	*Required*	122. Philippines	*Required*	123. Poland	*Required*
124. Portugal	*Required*	**125. Qatar***	*Required*	126. Republic of the Congo	*Required*
127. Romania	*Required*	128. Russia	*Required*	129. Rwanda	*Required*
130. Saudi Arabia*	*Required*	131. Senegal	*Required*	132. Serbia	*Required*
133. Sierra Leone	*Required*	134. Singapore	*Required*	135. Slovakia	*Required*
136. Slovenia	*Required*	137. South Africa	*Required*	138. South Korea	*Required*
139. Spain	*Required*	140. Sri Lanka	*Required*	141. St Kitts and Nevis	*Required*
142. St Lucia	*Required*	143. St Vincent and the Grenadines	*Required*	144. Suriname	*Permitted*
145. Sweden	*Required*	146. Switzerland	*Permitted*	**147. Syria***	*Required*
148. Chinese Taipei	*Both*	149. Tanzania	*Required*	150. Thailand	*None*
151. Timor-Leste	*None*	152. Togo	*Required*	153. Trinidad and Tobago	*Required*
154. Turkey	*Required*	155. Uganda	*Required*	156. Ukraine	*Required*
157. United Arab Emirates*	*Required*	158. United Kingdom	*Required*	159. United States	*None*
160. Uruguay	*Required*	161. Uzbekistan	*Required*	162. Venezuela	*Required*
163. Vietnam	*None*	**164. Yemen***	*Required*	165. Zambia	*Required*
166. Zimbabwe	*Required*				

Key:	*Count:*
Required: require IFRS Standards for all or most companies.	*144*
Permitted: permit all or most companies to use IFRS Standards.	*12*
None: no official IFRS adoption, local GAAP applicable.	*11*
Both: IFRS adoption is Required or permitted.	*1*

**Arab countries*

Source: this table is developed by the researcher based on IASB's Report 2018 published by IFRS Foundation (2018a, 2018b).

Appendix B: ISA Adoption by Country (2019)

Adopted			Partially Adopted		Not Adopted
Albania	Greece	United Kingdom	Argentina	Macedonia	Brunei
Lithuania	Sweden	Zambia	Azerbaijan	Moldova	Darussalam
Armenia	Guyana	Cameroon	Bolivia	Mongolia	Haiti
Luxembourg	Switzerland	Peru	Cayman Islands	Morocco	Honduras
Australia	Hong Kong	Canada	China	Nepal	
Madagascar	Thailand	Philippines	Chinese Taiwan	**Palestinian Territory ***	
Austria	Hungary	Chile	Colombia	Paraguay	
Malawi	Togo	Portugal	Cyprus	Poland	
Bahamas	Iceland	Costa Rica	Dominican Republic	Russian Federation	
Malaysia	Tunisia	Romania	**Egypt ***	Serbia	
Bahrain *	Indonesia	Cote d'Ivoire	Fiji	Sierra Leone	
Malta	Uganda	Rwanda	France	Sri Lanka	
Bangladesh	Ireland	Croatia	Germany	Turkey	
Mauritius	Ukraine	Saudi Arabia	Guatemala	United States	
Barbados	Italy	Czech Republic	India	Uruguay	
Mexico	Zimbabwe	Senegal	**Iraq ***	Uzbekistan	
Belgium	Jamaica	Denmark	Israel	Viet Nam	
Montenegro	**Jordan ***	Singapore	Japan		
Benin	Kenya	El Salvador	Kazakhstan		
Namibia	Korea	Slovakia	**Kuwait ***		
Bosnia and	Kosovo	Estonia			
Netherlands	Kyrgyz Republic	Slovenia			
Herzegovina	Latvia	Finland			
New Zealand	**Lebanon ***	South Africa			
Botswana	Lesotho	Georgia			
Nicaragua	Liberia	Spain			
Brazil	Papua New	Ghana			
Nigeria	Guinea	Swaziland			
Bulgaria	Tanzania, United				
Norway	Republic				
Burkina Faso	Trinidad and				
Pakistan	Tobago				
Cambodia					
Panama					

** Arab Countries.*
Source: IFAC (2019): International Standards 2019 global status report

Appendix C: Summary of FVA Literature Review

Table C.1: FVA Literature Review

Authors & date	Journal	Title	Sample	Methodology	Findings
Panel A: Value Relevance of Fair Value Accounting					
Song et al. (2010b)	*The Accounting Review*	Value relevance of FAS No. 157 fair value hierarchy information and the impact of corporate governance mechanism	431 US banks reports in 2008	Ohlson (1995)'s model, OLS regression	- The value relevance of fair value level 1 and level 2 inputs is greater than level 3 inputs. - Corporate governance approach play vital role in enhancing the value relevance of fair value, especially for the more complex estimates, level 3.
Koonce et al. (2011)	*The Accounting Review*	Judging the relevance of fair value for financial instruments	79 US MBA students	Survey	- Fair value is not value relevant form the investors perspective due to the opportunity to fraud and misstatements caused by the growing use of unrealised fair value gains and losses.
Du et al. (2014)	*Research in Accounting Regulation*	Adjustment of valuation inputs and its effect on value relevance of fair value measurement	All US commercial banks (2008-2009)	Regression analysis	- Higher value relevance linked with the banks that use level 3 inputs to measuring assets. - Under growing uncertain economic situations, fair values contained substantial managerial judgment and potential valuation errors and manipulation.
Evans et al. (2014)	*Contemporary Accounting Research*	The predictive ability of fair values for future financial performance of commercial banks and the relation of predictive ability to banks' share prices	650 US financial institutions (1994-2007)	Regression analysis	- The predictive value of fair value accounting is value relevant.
Tama-Sweet & Zhang (2015)	*Journal of Finance and Bank Management*	The value relevance of fair value financial assets during and after the 2008 financial crisis: evidence from the banking industry	186 banks (2008-2009), and (2012-2013)	Regression analysis	- Fair value of financial assets is value relevant relative to assets value prepared by historical cost basis. - Value relevance of fair valued assets prepared using level 1 and level 2 inputs and traditional accounting methods are greater than value relevance of fair values prepared using level 3 inputs.
Müller et al. (2015)	*The Accounting Review*	Recognition versus disclosure of fair values	245 EU real estate firms (2003-2012)	OLS regression	- Lower correlation between equity prices and fair value disclosure compared to recognised property fair valued assets in the balance sheet due to the premise of lower reliability of fair values disclosed in the footnotes than those recognised in the financial statements.
Ball et al. (2015)	*Journal of accounting research*	Contractibility and transparency of financial statement information prepared under IFRS: Evidence from debt contracts around IFRS adoption	616 firms from 43 countries (2001-2010)	Regression analysis	- Lower value relevance documented for debt contracting following the application of fair value basis to prepare these amounts.
Goh et al. (2015)	*Journal of Accounting and Public Policy*	Market pricing of banks' fair value assets reported under	All US banks on Compustat Quarterly with	Regression analysis	- Investors discount fair values' market pricing because they argue that the reliability of fair values declining across the three levels of fair value hierarchy.

(This Table is continued on the next page)

Authors & date	Journal	Title	Sample	Methodology	Findings
		SFAS 157 since the 2008 financial crisis	fiscal quarter end dates in 2008–2011 (6893 bank-quarters)		
Magnan et al. (2015)	*The Accounting Review*	The interaction of communicating measurement uncertainty and the dark triad on managers' reporting decisions	309 US banks (1996-2009)	Mixed-effects regression	- High earnings forecast dispersion linked to fair value measurements. - Higher accurate forecasts associated with level 2 fair value inputs - Higher forecast dispersion is highly associated with level 3 fair value inputs. - Lower forecast accuracy recorded to banks with high percentage of fair valued assets.
Siekkinen (2016)	*Accounting forum*	Value relevance of fair values in different investor protection environments	355 financial institutions from 34 countries (2012-2014)	Regression analysis	- Fair value hierarchy amounts are value relevant. - Fair value level 1 assets are more value relevant relative to level 2 and level 3 assets. - Level 1 and level 2 fair value inputs are more value relevant relative to level 3.
Freeman et al. (2017)	*Abacus*	Measurement Model or Asset Type: Evidence from an Evaluation of the Relevance of Financial Assets	5672 bank-quarters (2008-2014) under US GAAP	Wald Chi-Squared Test	- Fair value inputs level 1, level 2 and level 3 are found value relevant. - Level 1 fair valued assets are considerably more value relevant relative to level 3 fair valued assets.
Fiechter & Novotny-Farkas (2017)	*Review of Accounting Studies*	The impact of the institutional environment on the value relevance of fair values	907 bank-years from several countries (2006-2009).	OLS regression	- Fair valued assets held-for trading and available for sale are more value relevant than fair valued assets for option especially in bank-based markets.
Siekkinen (2017)	*Journal of Management & Governance*	Board characteristics and the value relevance of fair values	150-180 financial institutions from 29 EU and EEA countries (2012-2013)	Regression analysis	- Fair valued assets and liabilities from the all three levels are value relevant. - Fair valued assets are more value relevance than non-fair valued assets.
McInnis et al. (2018)	*The Accounting Review*	Does Fair Value Accounting Provide More Useful Financial Statements than Current GAAP for Banks?	9,844 bank-year observations under US GAAP	Regression analysis	- Fair value income is less value relevant relative to US GAAP income due to the recognition of unrealized gains and losses. - Book value of equity based on fair value is less value relevant relative to those prepared based on US GAAP, due both to significant difference between exit value and value-in-use and to intentional or unintentional measurement errors in fair value estimates. - Banks financial statements prepared using fair value accounting lead to less relevant information for than statements prepared using US GAAP.
Yao et al. (2018)	*Accounting & Finance*	Determinants of discretionary fair value measurements: the case of Level 3 assets in the banking sector	300 non-US banks from 22 countries (210 banks) (2009-2013)	Regression analysis	- The incentives to highly use level 3 fair values is heavily associated with firm-level and country-level factors.
Panel B: The Economic Consequences of Fair Value Accounting					
He et al. (2012)	*Contemporary Accounting Research*	Challenges for implementation of fair value accounting in	All A-share listed companies in	Regression analysis	- Negative correlation is found between gains or losses on the sale of available for sale securities and fair-value variability

(This Table is continued on the next page)

Authors & date	Journal	Title	Sample	Methodology	Findings
		emerging markets: Evidence from China	nonfinancial industries (786 firm) (2007-2008)		in trading securities. - Fair value accounting for debt restructuring is more transparent information. - Fair value accounting is significantly subject earnings management practices among firms operating in nations with weak legal environment and poor corporate governance mechanisms.
Arouri et al. (2012)	*International journal of business*	Relevance of fair value accounting for financial instruments: some French evidence	25 French Companies (2005-2007)	Ohlson (1995)'s model, OLS regression analysis	- No significant association between changes in fair value income and both stock return and stock price volatility.
Liang & Riedl (2013)	*The Accounting Review*	The effect of fair value versus historical cost reporting model on analyst forecast accuracy	all US and UK publicly traded investment property companies (2002–2010)	Regression analysis	- Higher net asset value forecast accuracy prepared under fair value accounting for UK firms relative to US firms. - lower earnings per share forecast accuracy prepared under fair value accounting for UK firms due to the inclusion of unrealized fair value gains and losses to net income. - Fair value measurement basis leads to significant enhancements in analysts' ability to forecast the balance sheet, but the opposite finding is recorded for forecasting net income.
Durocher & Gendron (2014)	*Accounting and Business Research*	Epistemic commitment and cognitive disunity toward fair-value accounting	27 Canadian experienced accountants	Interviews	- Poor cognitive institutionalisation in practitioner communities. - Lack uniformity on a knowledge basis.
Song (2015)	*Accounting perspectives*	Value relevance of fair values—Empirical evidence of the impact of market volatility	1402 US financial institutions (2008-2013)	Ohlson's model (1995), OLS regression analysis	- Market volatility significantly affects how investors price fair values.
Huang et al. (2016)	*Review of Quantitative Finance and Accounting*	Corporate governance, SFAS 157 and cost of equity capital: evidence from US financial institutions	814 US financial firms (2008-2009)	Regression analysis	- Negative association between firms' cost of equity capital and verifiable fair value assets. - The positive relationship between less verifiable fair-valued assets and the cost of equity capital is diminished under better corporate governance.
Reddic et al. (2016)	*Journal of Accounting and Finance*	How Fair Value Information Changes Portfolio Rebalancing Behavior in the Property and Casualty Insurance Industry	6,766 US insurer-year observations (1996-2013)	Regression analysis	- The relationship between operating and investment losses and rebalancing investment portfolios to taxable investments is reinforced following the (SSAP) No. 100 period.
Daly & Skaife (2016)	*Journal of International Accounting Research*	Accounting for biological assets and the cost of debt	127 publicly traded firms that report biological assets from 28 countries (2001-2013)	Regression analysis	- Higher cost of debt is found for firms using the fair value accounting for measuring their biological assets compared to firms using historical cost.
Ayres (2016)	*Journal of Accounting and Public Policy*	Fair value disclosures of level three assets and credit ratings	8432 US firm-year observations (2007-2014)	Regression analysis	- Negative association between fair valued assets level 3 and credit ratings.

(This Table is continued on the next page)

Authors & date	Journal	Title	Sample	Methodology	Findings
Barron et al. (2016)	*Journal of Accounting and Public Policy*	The effect of Statement of Financial Accounting Standards No. 157 Fair Value Measurements on analysts' information environment	8432 US firm-years observations (2007-2014)	Regression analysis	- Higher using of fair valued assets level 3 is negatively associated with credit ratings.
Iselin and Nicoletti (2017)	*Journal of Accounting and Economics*	The effects of SFAS 157 disclosures on investment decisions	6363 US bank-quarter observations for the available for sale analysis and 4240 US bank-quarter observations for the held to maturity (2006–2009)	Regression analysis	- Compared to private banks, public banks attempting to avoid disclosure of fair-valued assets level 3 by altering both asset composition and classification.
Badia et al. (2017)	*Journal of Accounting and Economics*	Conditionally conservative fair value measurements	27904 firm-year observations (2007-2014)	Regression analysis	- Fair value level 2 and level 3 are significantly associated with higher levels of conservatism, especially for firms with high non-transient institutional ownership and audit quality.
Ayres et al. (2017)	*Advances in Accounting*	Fair value accounting and analyst forecast accuracy	US 13,990 firm-year observations (2007-2013)	Regression analysis	- High using of fair value leads to more accurate analysts' earnings forecasts. - positive associations is documented between analyst forecast accuracy and level 1 and level 2 fair value inputs; while no association find with fair value level 3 inputs, especially in the non-financial industry relative to the financial industry.
Panel C: The Consequences of Fair Value Accounting on Financial Reporting Quality					
Bischof (2009)	*Accounting in Europe*	The effects of IFRS 7 adoption on bank disclosure in Europe	171 banks from 28 European countries (2006-2007)	Univariate analysis	- The disclosure quality level has generally increased following the application of IFRS in both financial statements and risk reports - The effect of the first-time adoption significantly differs across countries due to the differences in such countries regarding the enforcement and interpretation of IFRS 7 by national banking supervision.
Laghi et al. (2012)	*Journal of Governance and Regulation*	Fair Value Hierarchy in Financial Instruments Disclosure-Is There Transparency for Investors? Evidence from the Banking Industry	281 insurance and banks from 19 countries (2008-2011)	Survey	- Analysts' reluctant to inclusion negative information in the financial reports. - Managers incentive the flexibility available in fair value measurement models to smooth earnings. - The application of fair value is subject to subjectivity problem in value estimation and short-term volatility due to variability in macroeconomic factors.
Lawrence et al. (2015)	*The Accounting Review*	Who's the fairest of them all? Evidence from closed-end funds	459 US banks (2008-2013)	Regression analysis	- Fair value under level 3 inputs is value relevance similar to the value relevance to fair value under level 1 and level 2.

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Authors & date	Journal	Title	Sample	Methodology	Findings
Majors (2015)	*The Accounting Review*	The interaction of communicating measurement uncertainty and the dark triad on managers' reporting decisions	48 US business school students	Survey	- Financial reports reported fair values are less aggressively prepared by managers in the case of the availability of additional disclosures regarding fair values.
Hoitash & Hoitash (2017)	*The Accounting Review*	Measuring accounting reporting complexity with XBRL	6232 US firm-years (2011-2014)	Fixed effect regressions	- The complex financial reports contain fair values discourage financial analysts from covering a company. - Higher analysts' expertise with high complex fair values leads to more earnings forecast accuracy.
Lin et al. (2017)	*Advances in Accounting*	Fair value measurement and accounting restatements	10104 US firm-year observation (2008-2010)	OLS regression	- Fair value level 3 is mostly leads to higher probability of restatement.
Barth et al. (2017)	*Review of Accounting Studies*	Bank earnings and regulatory capital management using available for sale securities	728 publicly listed and 5862 non-listed US commercial banks (1996-2011)	OLS regression	- Banks intentionally using realized Available for Sale (AFS) securities gains and losses in order to smooth earnings and manage regulatory capital.
Lim and Loosemore (2017)	*International Journal of Project Management*	The effect of inter-organisational justice perceptions on organisaational citizenship behaviours in construction projects	704 Singapore chartered accountants and appraisers in 2016	Survey	- Fair value level 3 is under significant scepticism. - Additional disclosures regarding how fair values are measured would assist in enhance the creditability of the financial reports.
Barker & Schulte (2017)	*Accounting, Organizations and Society*	Representing the market perspective: Fair value measurement for non-financial assets	Managers at 11 non-financial European firms	Interview	- Fair value level 3 for non-financial assets are not value relevance due to the non-availability of active markets. - Firms mainly rely on independent specialists' auditors to estimate fair value level 3.
Chung et al. (2017)	*Review of Accounting Studies*	Voluntary fair value disclosures beyond SFAS 157's three-level estimates	555 US banks and 126 US insurance firms (2007-2011)	Regression analysis	- Voluntary disclosure about controls and estimation processes are more likely to be found in firms with higher fair values prepared using level 3 inputs. - Voluntary disclosures leads to lower information risk and higher market prices.
Sundgren et al. (2018)	*The International Journal of Accounting*	Analyst coverage, market liquidity and disclosure quality: a study of fair-value disclosures by European real estate companies under IAS 40 and IFRS 13	57 EU publicly traded real estate companies (2009-2014)	Logistic regression	- Disclosure quality is significantly increased following the adoption of IFRS 13; while this improvement in disclosure quality is not associated with economic consequences. - The application of IFRS 13 did not lead to solve the market imperfection situation.
Vergauwe & Gaeremynck (2019)	*Accounting and Business Research*	Do measurement-related fair value disclosures affect information asymmetry?	372 firm-year observations from all European real estate firms (2007-2010)	OLS regression	- the association between the extent of fair value disclosures and the bid-ask spread is found to be negative. - Using model estimates exclusively and provide additional measurement-related disclosures have caused lower measurement errors and more accurate fair values.
Huang et al. (2020)	*Finance Research Letters*	Fair value and economic consequences of financial restatements	2837 restatement firm-year observations with fair value data in	OLS regression	This study finds that negative market reactions to restatement announcements are more severe when firms disclose higher ratios of Level 3 fair values. In addition, this negative association is stronger

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Authors & date	Journal	Title	Sample	Methodology	Findings
			Compustat during the years (2008–2017)		during financial crisis periods, showing that market investors prefer conservative fair values.
Panel D: Evidence from Developing Middle Eastern Countries					
Al-Khadash & Abdullatif (2009)	*Jordan journal of business administration*	Consequences of fair value accounting for financial instruments in the developing countries: The case of the banking sector in Jordan	Jordanian banks (2002-2006)	Regression analysis	- Positive correlation between banks' financial performance and using fair value in measuring financial instruments. - Positive correlation found between earnings per share and the application of fair value.
Khanagha (2011)	*International Journal of Economics and Financial Issues*	Value relevance of accounting information in the United Arab Emirates	17 UAE firms (2001-2008)	Regression analysis and portfolio approach	- Fair value information in UAE stock market are value relevant. - Based on portfolio approach cash flows information contents increased dramatically following IFRS application.
Al-Yaseen & Al-Khadash (2011)	*Journal of Accounting in Emerging Economies*	Risk relevance of fair value income measures under IAS 39 and IAS 40	28 Jordanian Insurance firms (2003-2006)	Regression analysis	- Lower value relevance recorded to air valued information relative to historical cost basis. - Higher income volatility recorded in the case of using fair value due to the recognition of unrealised gains/losses on financial instruments; while, the opposite is found in the case of using fair value for property assets.
Siam & Abdullatif (2011)	*Accounting in Asia*	Fair value accounting usefulness and implementation obstacles: Views from bankers in Jordan	126 Jordanian bankers (14 banks) in 2008	Structured questionnaire	- Fair value relevance is questioned in terms of predictive value. - Fair value is less reliable than historical cost accounting. - Fair value application in Jordan encountered several challenges; misusing of fair value, the lack of acceptable guidance for accurate application, the lack of liquid market.
Al-Khadash (2012)	*International Journal of Accounting, Auditing and Performance Evaluation*	The value relevance of fair value accounting of investment properties in the Jordanian shareholding companies paper withdrawn	40 Jordanian real estate	Regression analysis	- Positive association documented between the market value of share prices and fair value disclosure. - Fair value of stock prices is value relevant.
Aladwan & Saaydah (2015)	*Jordan journal of business administration*	The Relevance of Fair Value Revaluation in Measurement of Jordanian Firms Future Performance (An Empirical Study on Jordanian Listed Commercial Banks and Real Estate Companies)	55 Jordanian commercial banks and real estate firms (2008-2012)	Regression analysis	- Fair value is found value relevant in both Jordanian banks and real estate firms. - Positive association is documented between financial performance and fair values.
Ahmad & Aladwan (2015)	*International Journal of Financial Research*	The Effect of Fair Value Accounting on Jordanian Investment Properties	Jordanian real estate firms (2008-2011)	Regression analysis	- Positive correlation between firms' financial performance and investment properties that are fair-valued. - The application of fair value has led to increase the quality of the book value incremental information content. The adaptation also resulted in higher explanatory power of real estate firms' market value. - The fair values of real estate firms are found value relevant.
Al-Kassar & Dannoun (2016)	*Research Journal of Finance and Accounting*	The Importance of Fair Value Accounting to Information Quality on Financial Statements (Field Study of Jordanian Commercial Banks)	82 bankers in Jordanian commercial banks (13 banks)	Questionnaire	- Fair values reported in Jordanian banks financial statements are value relevant.

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Authors & date	Journal	Title	Sample	Methodology	Findings
Abdullatif & Al-Rahahleh (2020)	*International Journal of Auditing*	Applying a new audit regulation: Reporting Key Audit Matters in Jordan	18 interviewees from 13 audit firms	Interview	- The number of Key Audit Matters (KAM) reported in Jordan is relatively small, and that they emphasize items such as accounts receivable, inventory, investment property, and revenue. - Audit firms generally disagree on the nature and content of KAMs, overwhelmingly tend to report industry-specific KAMs rather than entity-specific KAMs, and avoid reporting KAMs related to governance or internal controls.
Panel E: Auditing Challenging Fair Value Accounting					
Martin et al. (2006)	*Accounting horizons*	Auditing fair value measurements: A synthesis of relevant research	Research on auditing fair value from the context of US GAAP.	Synthesis review	- Shifting towards fair value accounting as an accounting measurement basis poses substantial difficulties to auditing process. - Auditing fair values need advanced knowledge and skills in finance and statistics. - Using fair value in accounting landscape leads to the essential need for specialised valuation knowledge and experience from audit perspective to effectively audit such uncertain estimates.
Kumarasiri and Fisher (2011)	*International Journal of Auditing*	Auditors' Perceptions of Fair-Value Accounting: Developing Country Evidence	21 audit firms (156 external auditor) in Sri Lanka auditing market	Survey	Auditors face some challenges when dealing with fair values; lack of liquid market, lack of sufficient technical knowledge, complexities linked with assuring fair value amounts, the availability of various valuation techniques.
Christensen et al. (2012)	*Auditing: A Journal of Practice & Theory*	Extreme estimation uncertainty in fair value estimates: Implications for audit assurance	US securities publicly available data	Review of sensitivity analysis	Fair values prepared based on managers assumptions and subjective models contain estimation uncertainty.
Alexander, Bonaci and Mustata (2012)	*Procedia Economics and Finance*	Fair value measurement in financial reporting	Romanian professional valuers	Content analysis and survey	Fair value provides lower relevant financial information for the users and manipulate economic reality due to the weak clarification provided by preparers to all groups of users.
Smith-Lacroix et al. (2012)	*Critical perspectives on accounting*	The erosion of jurisdiction: Auditing in a market value accounting regime	18 Canadian current or former partners and managers of the Big4, one national accounting firm, and government audit offices (2009-2010)	Interview	- Auditors suffer their lack of specialised knowledge on auditing subjective fair values. - Using complex and uncertain fair value measures leads to greater reliance on independent specialist auditors or external valuers. - Auditors face significant difficulties in arbitering valuers' audits.
Bratten et al. (2013)	*Auditing: A Journal of Practice & Theory*	The audit of fair values and other estimates: The effects of underlying environmental, task, and auditor-specific factors	Archival and experimental research on auditing fair value based on US GAAP	Literature review	- Auditors suffer their lack of sufficient readability to assessing fair value measurements. - Environment, the task and auditor-specific factors are considered the main three factors influence auditors' judgments.
Christensen & Nikolaev (2013)	*Review of Accounting Studies*	Does fair value accounting for non-financial assets pass the market test?	703 UK firms and 605 German firms	Logistics regression analysis	- Limited use of fair value accounting found. - Fair value only used in the case of the availability of reliable fair value estimates.

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Authors & date	Journal	Title	Sample	Methodology	Findings
Hui et al. (2014)	*Research in Accounting Regulation*	Adjustment of valuation inputs and its effect on value relevance of fair value measurement	2524 quarterly observations in the banking industry (2008-2009).	Regression analysis	- In the case of variance market circumstances, fair value measurements lead to significant managerial judgment, errors and manipulation.
Griffin (2014)	*Journal of Accounting Research*	The effects of uncertainty and disclosure on auditors' fair value materiality decisions	106 practicing auditors	Manipulation checks, Two-way ANOVA test	- Auditors attend to accept high potential misstatement in client's financial statements in the case of providing additional disclosures on fair value estimates. - Auditors also prefer to audit managerial prepared fair values rather than prepared their own values to discover the managerial misstatements due to the greater complex and cost carried by this process.
Griffith et al. (2015)	*Contemporary Accounting Research*	Audits of complex estimates as verification of management numbers: How institutional pressures shape practice	24 US experienced auditors	Interview	The main two sources of challenges in auditing fair values; the tacitly accepting of the verification process of auditing fair values, and the auditors' lack of technical knowledge.
Abdullatif (2016)	*Asian Journal of Business and Accounting*	Auditing fair value estimates in developing countries: The case of Jordan	13 experienced Jordanian auditors from the Big Four audit firms, other internationally affiliated audit firms, and local Jordanian audit firms	Semi-structured interviews	- Auditors in Jordan suffer the lack of reliable evidence on fair value measurements and weak of corporate governance. - Fair value abuse is greater in the context of Jordan; auditors in a sensitive position to accepts clients questioned fair values, at the same time, under significant pressure from accounting bodies and regulatory to provide high-quality audits.
Brink et al. (2016)	*Behavioral Research in Accounting*	The Impact of Estimate Source and Social Pressure on Auditors' Fair Value Estimate Choices	95 Chinese experienced auditors	Survey	- Lower auditors' ability to evaluate specialists'' evidence due to the highly complex specialists' reports.
Glover et al. (2017)	*Auditing: A Journal of Practice & Theory*	Current practices and challenges in auditing fair value measurements and complex estimates: Implications for auditing standards and the academy	32 Auditor partners with fair value experience	Survey	- Auditors mainly rely on independent specialist auditors to develop their own estimates especially for the case of non-financial fair value. - Managers lack technical valuation knowledge. - Due to the non-availability of required data for preparing fair values, auditors are significantly relying on managers' prepared assumptions. - Auditors heavily encounter managerial uncertain measurements and the risk of financial misstatement when auditing highly complex fair value estimates.
Cannon & Bedard (2017)	*The Accounting Review*	Auditing challenging fair value measurements: Evidence from the field	96 US firms' senior managers and managers	Questionnaire, OLS regression	Challenges linked to auditing fair value are mainly due to the high subjectivity, complex estimates and variation of valuation models. Greater uncertain estimates caused by the higher inherent risk evaluations leads to more unreliable fair values, fraud and misstatement.

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Authors & date	**Journal**	**Title**	**Sample**	**Methodology**	**Findings**
Joe et al. (2017)	*The Accounting Review*	Use of High Quantification Evidence in Fair Value Audits: Do Auditors Stay in their Comfort Zone?	92 US Big 4 audit seniors	Qualitative analysis	- Lower auditors ability to test fair value inputs due to managerial manipulation and complex fair value estimates that are subject to managers fraud and misstatement.
Nguyen (2019)	*Journal of Accounting & Organizational Change*	The (un) suitability of fair-value accounting in emerging economies: the case of Vietnam	12 Vietnamese regulators and auditors	Semi-structured interviews	The major barriers of fair value application in Vietnam are correlated with the business and institutional environment, such as the lack of efficient infrastructure for this evaluation; thus, these circumstances expected to lead managers to behave opportunistically.
Glover et al. (2019)	*Contemporary Accounting Research*	Mind the gap: Why do experts have differences of opinion regarding the sufficiency of audit evidence supporting complex fair value measurements?	32 US Audit partners	Survey	There is a significant gap in interpreting and evaluating audit pieces of evidence between audit experts and inspectors in regard to what creates a reported deficiency.
Miah et al. (2019)	*Journal of Corporate Accounting & Finance*	Fair value, management discretion, and audit fees: An empirical analysis	9,619 firm-year observations from the US	OLS regression	- The greater level of complexity arising from the above sources increase auditors' efforts and risks level, thereby, results in higher audit fees. - Auditors do not charge additional audit fees for complexity arising from goodwill if they have intangibles. - the results support the proposition that judgmental or discretionary choice available for management increases audit risks, and auditors, to compensate higher risks, charge greater audit fees.
Griffith (2020)	*Contemporary Accounting Research*	Auditors, Specialists, and Professional Jurisdiction in Audits of Fair Values	28 auditors and 14 valuation specialists	Interview	- Institutional considerations are the primary factors to influence the quality of auditing fair values. This in addition to the auditors' lack of sufficient expertise and knowledge regarding auditing FVEs. - Auditors seek to gain support from valuation specialists to deal with the complexity of auditing fair values. - The level of accepting valuers audits by firms may subject to some institutional and competition with experts factors.
Oyewo et al. (2020)	*Journal of Financial Reporting and Accounting*	Challenges in auditing fair value measurement and accounting estimates	277 auditors	Structured-questionnaire	The two highest-ranking and most-prevalent challenges of auditing fair value measurement and accounting estimates are the tendency for managers to manipulate earnings owing to the inability of auditor to effectively test fair value estimates; and the difficulty in testing unobservable inputs due to the application of assumptions and judgement in arriving at estimates by preparers of financial reports.
Oyewo (2020)	*African Journal of Economic and Management Studies*	Post-implementation challenges of fair value measurement (IFRS 13): some empirical evidence	277 auditors	Structured-questionnaire	The severest challenge of FV measurement bothers on the paucity of information for valuation of items. The magnitude of the challenges of applying FV measurement in various industry sectors appears similar. Although audit firm attributes affect perception on the challenges, there is concurrence among auditors that manipulation of values of assets/liabilities with no market price during estimation, leveraging on non-availability of market information on assets/liabilities by managers to manipulate financial statements, inappropriateness/non-compliance of valuation methods with IFRS 13, and low level of awareness among preparers of financial reports are notable post-implementation challenges of FV measurement.

(This Table is continued on the next page)

Authors & date	Journal	Title	Sample	Methodology	Findings
Panel F: IFRS and Audit Fees					
Griffin et al. (2009)	*Journal of Accounting and Economics*	Non-audit fees, audit tenure and auditor independence: Evidence from going concern opinions	New Zealand 653 firm-year observations (2002-2006)	Regression analysis	- Audit prices have increased substantially for the next two years of IFRS implementation relative to the year before such implementation.
Hart et al. (2009)	*Chartered Accountants Journal*	NZ IFRS–the impact on fees paid to auditors	private sector firms in New Zealand	Regression analysis	- Audit prices rose by 48% in the two years prior to IFRS and in the transition year.
Vieru & Schadewitz (2010)	*University Library of Munich, Germany*	Impact of IFRS transition on audit and non-audit fees: evidence from small and medium-sized listed companies in Finland	73 Finland listed firms (2004-2005)	Regression analysis	- Positive association between IFRS adoption and audit fees.
Lin & Yen (2011)	*Asian Review of Accounting*	The effects of IFRS experience on audit fees for listed companies in China	4,129 firm-year observations in the Shanghai and Shenzhen stock exchanges (2005-2008)	Regression analysis	- Audit prices have significantly risen after the adoption of IFRS.
De George et al. (2012)	*The Accounting Review*	How much does IFRS cost? IFRS adoption and audit fees	907 publicly traded firms on the Australian Stock Exchange (2002–2006)	Regression analysis	- Transition to IFRS leads to higher complexity and risk in auditing thereby greater audit prices.
Kim et al. (2012)	*The Accounting Review*	The impact of mandatory IFRS adoption on audit fees: Theory and evidence	29206 firm-year observations from 14 EU countries (2004-2008)	Regression analysis	- Audit prices are a growing function of audit risk and complexity which often increases under IFRS.
Yaacob & Che-Ahmad (2012)	*Eurasian Business Review*	Audit fees after IFRS adoption: Evidence from Malaysia	firm-year observations from the companies listed on the main board and the second board of Bursa Malaysia (2004-2008)	Regression analysis	- The association between audit fees and the implementation of IFRS is found positive.
Zhu & Sun (2012)	*China Journal of Accounting Research*	The reform of accounting standards and audit pricing	802 non-financial Chinese listed firms in 2007	Regression analysis	- The new IFRS-based Chinese accounting standards resulted in higher audit fees. - IFRS implementation caused additional disclosures required more work on firms regarding their market risk.
De George et al. (2013)	*The Accounting Review*	How much does IFRS cost? IFRS adoption and audit fees.	907 listed Australian firms (2002-2006)	Regression analysis	- Audit prices have increased by 23% in the year following IFRS adoption. - Following IFRS implementation, additional effort and knowledge and skills to report to complex standards required from external auditors.

(This Table is continued on the next page)

Authors & date	Journal	Title	Sample	Methodology	Findings
Hassan et al. (2014)	*Cited by Khlif and Achek (2016)*	Audit fees, IFRS adoption and the recent global financial crisis	7,958 firm-year observations for listed UK firm (2003- 2011)	Regression analysis	- Audit fees have substantially improved after IFRS implementation, especially for non-Big 4 auditors.
Abu Risheh & Al-Saeed (2014)	*Accounting & Management Information Systems/Contabilitate si Informatica de Gestiune*	The Impact of IFRS Adoption on Audit Fees: Evidence from Jordan	1,274 firm-year observations from Jordan (1998-2011)	Regression analysis	- IFRS significantly resulted in higher audit fees for Jordanian companies.
Choi & Yoon (2014)	*Asian Journal of Business and Accounting*	Effects of IFRS Adoption, Big N Factor, and the IFRS-Related Consulting Services of Auditors on Audit Fees: The Case of Korea	3,293 firm-years from Korea (2006 – 2011)	Regression analysis	- Korean auditor who affiliated with foreign Big 4 audit firms have a positive influence on the association between IFRS application and auditing prices. - IFRS-related audit firms are negatively impact on the association between IFRS application and auditing prices.
Cameran & Perotti (2014)	*International Journal of Auditing*	Audit fees and IAS/IFRS adoption: evidence from the banking industry	136 listed and unlisted Italian banks (1999-2006)	OLS regression	- IFRS implementation has led to further auditing being done by external auditors. - Moving towards IFRS has led to higher audit fees.
Ye et al. (2018)	*Australian Accounting Review*	Accounting standards, earnings transparency and audit fees: convergence with IFRS in China	13204 firm-year observation from China's listed companies operating on the Shanghai Stock Exchange and the Shenzhen Stock Exchange (2001-2012)	Regression analysis	- The adoption of new Chinese standards and the introduction of fair value measurement led to increased earnings transparency which negatively affected audit fees
Raffournier & Schatt (2018)	*International Journal of Auditing*	The impact of International Financial Reporting Standards (IFRS) adoption and IFRS renouncement on audit fees: The case of Switzerland	122 non-financial Swiss firms (2002-2016)	Regression analysis	- Firms adopting IFRS are more likely to incur higher audit fees.
Panel G: Fair Value Accounting and Audit Fees					
Ettredge et al. (2014)	*Auditing: A Journal of Practice & Theory*	Fair value measurements and audit fees: Evidence from the banking industry	299 US banks (2008-2011)	OLS regression analysis	- The proportions of fair-valued financial assets are positively associated with audit fees. - Audit fees are related to the increased risk and complexity of fair-valued assets. - The relationship between the proportions of fair-valued assets and audit fees become higher when level 2 and level 3 fair value inputs have been used.
Goncharov et al. (2014)	*Review of Accounting Studies*	Fair value and audit fees	UK and US real estate firms (2001-2008)	OLS Regression analysis	- Lower audit fees recorded for UK real estate firms (where property assets reported at fair value) compared to a matched sample of US real estate firms (where property assets reported at historical cost).

(This Table is continued on the next page)

Authors & date	Journal	Title	Sample	Methodology	Findings
					- Higher audit fees linked with impairments for depreciation cost firms. - Higher audit fees reported for more complex fair values (level 2 and level 3 inputs).
Yao et al. (2015)	*Journal of Contemporary Accounting & Economics*	Fair value accounting for non-current assets and audit fees: Evidence from Australian companies	300 firms listed on the Australian Stock Exchange (ASX) (2003-2007)	Linear regression analysis	- Significant positive association between non-financial assets (i.e. property, plant and equipments, investment properties and intangible assets) that are fair-valued and audit fees. - Corporate governance successfully moderated the effect on audit pricing.
Alexeyeva & Mejia-Likosova (2016)	*International Journal of Auditing*	The impact of fair value measurement on audit fees: Evidence from financial institutions in 24 European countries	177 banks from 24 European countries	OLS regression analysis	- Failed to find a significant association between the proportion of fair-valued assets and audit fees. - The amount of level 3 fair value estimates is positively associated with audit fees.
Sangchan et al. (2020)	*Australian Accounting Review*	Fair Value Exposure, Changes in Fair Value and Audit Fees: Evidence from the Australian Real Estate Industry	84 Australian real estate companies (2007 – 2015)	OLS Regression analysis	- Negative association between the proportion of fair-valued investment properties and audit fees. - Positive association is recorded between the total changes in fair-valued property assets and audit fees - Audit fees charged for fair values prepared based on managers estimates and assumptions are lower than those prepared by external valuers and mixed valuers.

Appendix D: Graphical Test Results

D.1. Chapter 4. P-P lot and plotted Histogram

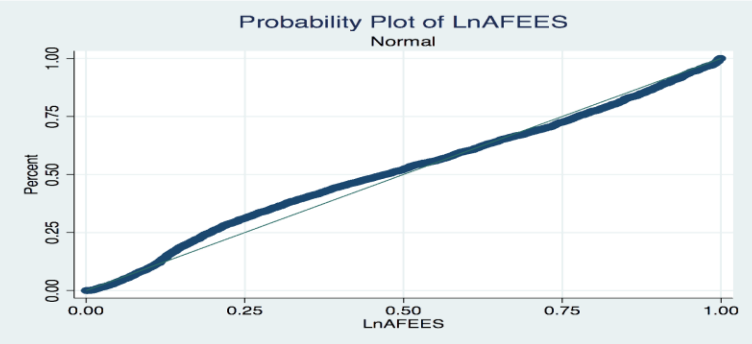


Figure D.1.1: Probability Plot of Dependent Variable (*LnAFEES*)

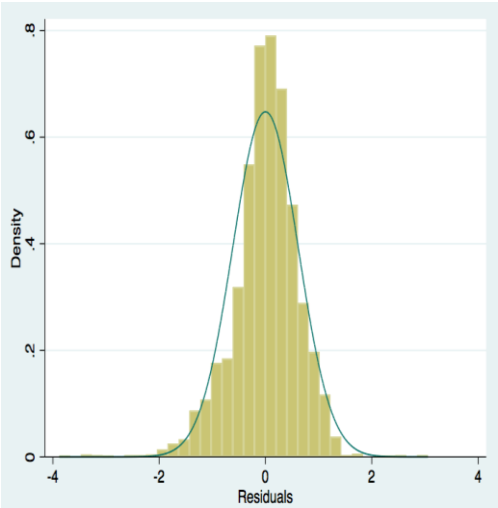


Figure D.1.2: Histogram with Normal Curve for the Residuals

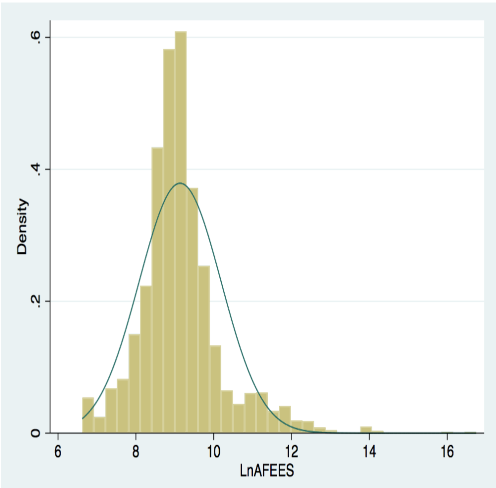


Figure D.1.3: Histogram with Normal Curve for the Dependent Variable

D.2. Chapter 4. Scatterplot Test of Residuals

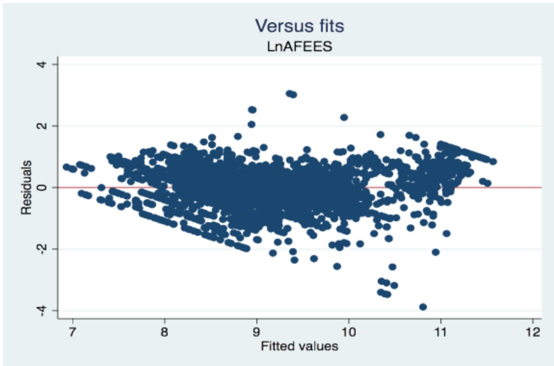


Figure D.2.1: Scatterplot of Fitted Values on Residuals for the Dependent Variable

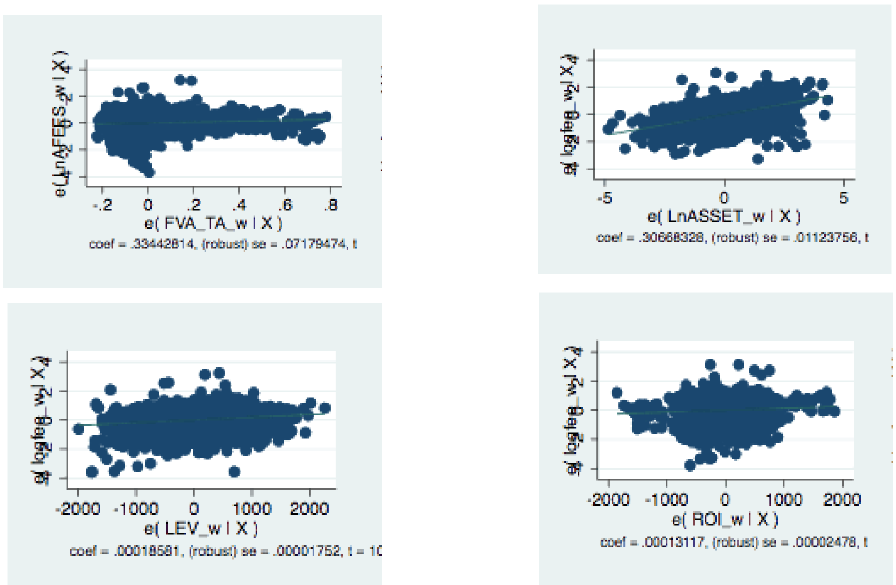
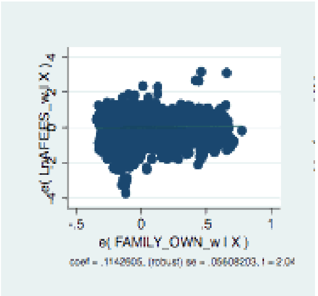
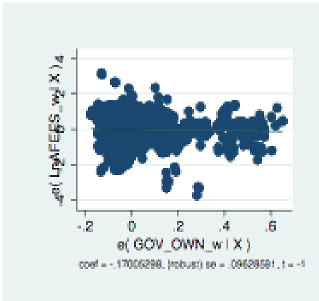


Figure D.2.2 – D.2.5: Scatterplot of Fitted Values on Residuals for Selected Independent Variables

D.3. Chapter 5. Scatterplot Test of Residuals





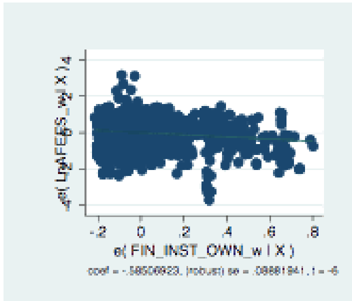
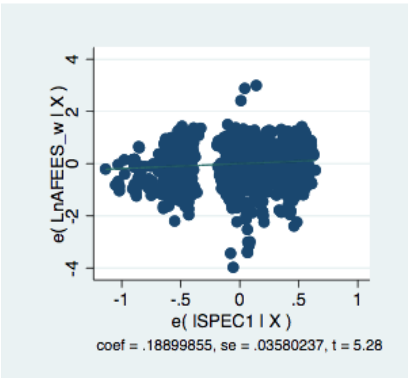


Figure D.3.1 – D.2.3: Scatterplot of Fitted Values on Residuals for Selected Independent Variables

D.4. Chapter 6. Scatterplot Test of Residuals



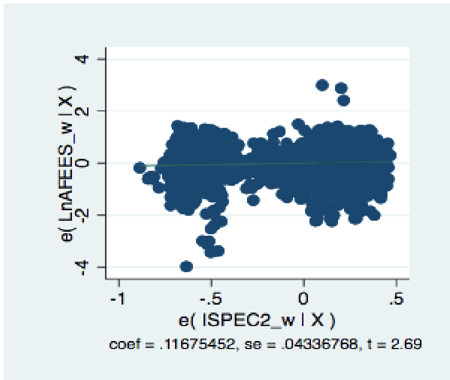


Figure D.4.1 – D.4.2: Scatterplot of Fitted Values on Residuals for Selected Independent Variables

Appendix E: Examples of Stata Outputs for Hausman Test

. **estimate store fe**

. **hausman fe re**

Note: the rank of the differenced variance matrix (**8**) does not equal the number of coefficients being tested (**10**); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

	Coefficients (b) fe	Coefficients (B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
FVA	.5454924	.545986	-.0004936	.0009027
LnASSET_w	.2895012	.2919097	-.0024085	.0009027
ROI_w	.000064	.0000636	4.04e-07	1.92e-06
LOSS	.0723629	.0671757	.0051871	.0047233
LEV_w	.0001864	.0001832	3.19e-06	1.25e-06
GROWTH_w	-.0112928	-.0108386	-.0004543	.0004815
SUBS_w	.0216194	.0207314	.0008879	.0003267
Big4	.4251446	.4135896	.011555	.0054704
CHANGE	.0990612	.0748602	.0242011	.0114386
UNQUALIFIED	-.0953455	-.1082798	.0129343	.0046921

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(**8**) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= **9.03**
Prob>chi2 = **0.3400**

. **hausman fe re**

Note: the rank of the differenced variance matrix (**8**) does not equal the number of coefficients being tested (**10**); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

	Coefficients (b) fe	Coefficients (B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
FVA_TA_w	.4625604	.4783838	-.0158235	.0102713
LnASSET_w	.3085219	.3106313	-.0021094	.0011405
ROI_w	.0001068	.0001059	8.99e-07	2.23e-06
LOSS	.1077626	.104997	.0027656	.0053138
LEV_w	.000202	.0001996	2.32e-06	1.40e-06
GROWTH_w	-.0089907	-.0088455	-.0001452	.0005155
SUBS_w	.0271856	.0264643	.0007213	.0003938
Big4	.4250332	.4169662	.008067	.0059742
CHANGE	.0856858	.0695066	.0161792	.0122382
UNQUALIFIED	-.1039322	-.1134422	.00951	.0048978

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(**8**) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= **5.03**
Prob>chi2 = **0.7545**

. **hausman fe re**

Note: the rank of the differenced variance matrix (**10**) does not equal the number of coefficients being tested (**12**); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

	Coefficients (b) fe	Coefficients (B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
FVA_TA_w	.819692	.8339658	-.0142738	.009697
FAMILY_OWN_w	.2345971	.223085	.0115121	.0060576
c.FVA_TA_w#c.FAMILY_OWN_w	-1.424371	-1.408234	-.0161369	.017753
LnASSET_w	.309628	.3117762	-.0021482	.0010294
ROI_w	.0001068	.0001057	1.11e-06	2.16e-06
LOSS	.1141616	.1097935	.0043682	.0053835
LEV_w	.0002017	.0001991	2.65e-06	1.37e-06
GROWTH_w	-.0091185	-.008889	-.0002295	.000507
SUBS_w	.0274743	.0266841	.0007902	.0003757
Big4	.440662	.4305786	.0100834	.0062204
CHANGE	.0905996	.0714959	.0191037	.0122762
UNQUALIFIED	-.09424	-.105755	.011515	.005255

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(**10**) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= **6.39**
Prob>chi2 = **0.7811**

Appendix F: Descriptive Statistics of Auditor Industry Expertise

F.1. Distribution of Sample Client-Year by Sector

Table F.1. Sample Distribution

		Total Sample		*Expertise Sample*	
Sector #	***Sector***	***Freq.***	***Percent***	***Freq.***	***Percent***
1	*Banks*	224	7	224	11
2	*Chemical Industries**	98	3	0	0
3	*Commercial Services**	112	4	0	0
4	*Diversified Financial Services*	616	20	616	29
5	*Educational Services**	84	3	0	0
6	*Electrical Industries**	56	2	0	0
7	*Engineering and Construction**	112	4	0	0
8	*Food and Beverages**	126	4	0	0
9	*Health Care Services**	56	2	0	0
10	*Hotels and Tourism*	140	5	140	7
11	*Insurance*	322	10	322	15
12	*Media**	28	1	0	0
13	*Mining and Extraction Industries*	140	5	140	7
14	*Paper and Cardboard Industries**	56	2	0	0
15	*Pharmaceutical and Medical Industries**	84	3	0	0
16	*Printing and Packaging**	14	0	0	0
17	*Real Estate*	504	16	504	24
18	*Technology and Communication**	28	1	0	0
19	*Textiles Leathers and Clothing**	42	1	0	0
20	*Tobacco and Cigarettes**	28	1	0	0
21	*Transportation*	154	5	154	7
22	*Utilities and Energy**	84	3	0	0
	Total	***3108***	***100***	***2100***	***100***

*Note: * = Sectors with less than 10 firms.*

F.2. Distribution of Sample Auditor-Year

Table F.2. Auditor Distribution

		Total Sample		*Expertise Sample*	
Auditor #	*Audit Firm*	*Freq.*	*Percent*	*Freq.*	*Percent*
Panel A: Big4 Audit Firms					
1	Deloitte	356	11.45	283	13.48
2	Ernst & Young	632	20.33	460	21.90
3	KPMG	118	3.800	71	3.380
4	PWC	40	1.290	19	0.900
Panel B: Audit Firms with International Affiliation					
5	International Professional Bureau for Consulting and Auditing Company	42	1.350	18	0.860
6	Abbasi Group International	122	3.930	73	3.480
7	Arab Auditors*	1	0.030	0	0.000
8	Arab professionals	418	13.45	248	11.81
9	Audit & Consult Consortium - Dweik & Co	41	1.320	27	1.290
10	BDO Jordan (Samman & Co.)	12	0.390	9	0.430
11	Kreston International	2	0.060	2	0.100
12	Modernity International Public Accountants & Business Advisers	4	0.130	4	0.190
13	Matrix Consulting International	27	0.870	26	1.240
14	Michael Sindaha & Partners Co.	4	0.130	4	0.190
15	PKF Pro Group Auditing & Consulting (Khattab & Co)	4	0.130	3	0.140
16	Talal Abu-Ghazaleh Audit	184	5.920	126	6.000
Panel C: Local Audit Firms					
17	Al-Abbasi, Samman & Co.	6	0.190	3	0.140
18	Brothers Auditing and Consulting*	12	0.390	0	0.000
19	Jamal Al-Nalawi Office*	2	0.060	0	0.000
20	Professional auditing complex	2	0.060	2	0.100
21	Redha Al-Kabariti Foundation	8	0.260	8	0.380
22	AWJ Public Accountants	6	0.190	6	0.290
23	Al Rajabi For Auditing	6	0.190	6	0.290
24	Al-Aqsa Financial, Tax & Accounting Consulting Office	2	0.060	2	0.100
25	Al-Dar Al-Arabia Auditing & Verification of Financial Matters	11	0.350	7	0.330
26	Al-Hendi Chartered Accountants and Consultants	5	0.160	5	0.240
27	Arab Society for Certified Accountants*	6	0.190	0	0.000
28	Arabian Audit Group	111	3.570	50	2.380
29	Associators For Auditing	10	0.320	10	0.480
30	Bassam Eses & Co Chartered Accountants	5	0.160	5	0.240
31	Certified Auditors*	1	0.030	0	0.000
32	Elite Performance for Audit & Advisory*	1	0.030	0	0.000
33	Experts for Auditing	11	0.350	11	0.520
34	Fathi Al-Samhoury Office*	8	0.260	0	0.000
35	Ghawi CPA Jordan*	2	0.060	0	0.000

(This Table is continued on the next page)

Auditor #	Audit Firm	Total Sample Freq.	Percent	Expertise Sample Freq.	Percent
36	Hawit & Fasheh Auditors and Consultants*	3	0.100	0	0.000
37	Ibrahim Yasin & Co	13	0.420	13	0.620
38	Ibrahim abbasi & co	205	6.600	115	5.480
39	Jadara Audit & Professional Services Co	3	0.100	3	0.140
40	Jordan Audit House	6	0.190	6	0.290
41	Khalifeh & Rayyan Auditors and Financial Consultants	19	0.610	19	0.900
42	Khleif & Samman Auditing co.	20	0.640	14	0.670
43	Khleif Co	5	0.160	2	0.100
44	Modern for Auditing	364	11.71	277	13.19
45	Mohammed Ibrahim Al-Karaki	2	0.060	2	0.100
46	Nobani & Co. (BDO)	9	0.290	9	0.430
47	Osama Al-Zarqa Office for Auditing & Accounting	10	0.320	10	0.480
48	Ramadan Naser & Partners Co*	11	0.350	0	0.000
49	Riad El Jinieni & Co.	29	0.930	29	1.380
50	Saba & Co	32	1.030	11	0.520
51	Scientific Office for Auditing Accounting & Consulting	47	1.510	44	2.100
52	Sulaiman & Partners Auditing Co*	1	0.030	0	0.000
53	The Professional Controllers*	13	0.420	0	0.000
54	The Professionals for auditing and consultation	12	0.390	4	0.190
55	The Standard Auditing*	1	0.030	0	0.000
56	Tohme Abu Al-Shaar Office*	6	0.190	0	0.000
57	United Accountants	70	2.250	54	2.570
58	United Auditing Public Accountants Auditing*	1	0.030	0	0.000
59	Wise Auditors*	4	0.130	0	0.000
	Total	***3,108***	***100***	***2,100***	***100***

*Note: * = Auditors with less than 10 clients per year.*

F.3. The Audit Firm Percentage Market Share by Sector (Total Sample)

Sector	Auditor#	Auditor Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Bank	1	Deloitte	80%	72%	68%	68%	64%	69%	40%	53%	63%	64%	62%	70%	32%	33%
	2	Ernst & Young	12%	20%	32%	32%	36%	31%	60%	47%	35%	35%	32%	24%	52%	51%
	3	Ibrahim abbasi & co	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	4%	0%	0%
	4	KPMG	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	3%
	5	PWC	0%	0%	0%	0%	0%	0%	0%	0%	2%	1%	2%	2%	13%	13%
	6	United Accountants	8%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Diversified Financial Services	1	International Professional Bureau for Consulting and Auditing Company	0%	0%	0%	0%	0%	0%	0%	0%	3%	2%	2%	3%	3%	3%
	2	Abbasi Group International	6%	5%	4%	4%	2%	2%	2%	4%	4%	3%	2%	2%	2%	3%
	3	Al-Dar Al-Arabia Auditing & Verification of Financial Matters	0%	0%	0%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	4	Arab professionals	22%	22%	24%	24%	30%	30%	31%	32%	29%	24%	24%	22%	24%	19%
	5	Arabian Audit Group	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%
	6	Associators For Auditing	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	5%	5%	5%	6%
	7	Audit & Consult Consortium - Dweik & Co.	2%	1%	1%	1%	2%	2%	2%	6%	2%	1%	1%	0%	0%	0%
	8	AWJ Public Accountants	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	0%	0%
	9	Deloitte	12%	9%	11%	10%	11%	12%	11%	13%	11%	11%	7%	11%	8%	7%
	10	Ernst & Young	23%	22%	36%	34%	23%	21%	17%	17%	20%	22%	22%	21%	18%	21%
	11	Experts For Auditing	2%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	12	Ibrahim abbasi & co	2%	1%	4%	6%	6%	6%	5%	4%	4%	1%	2%	2%	1%	2%

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(Table F.3. Continued)

Sector	Auditor#	Auditor Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	13	Ibrahim Yasin & Co	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	1%	1%
	14	Jadara Audit & Professional Services Co	0%	0%	0%	0%	0%	0%	0%	1%	5%	0%	0%	0%	0%	0%
	15	Jordan Audit House	0%	0%	0%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%	0%
	16	Khalifeh & Rayyan Auditors and Financial Consultants	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	17	Khleif & Samman Auditing co.	0%	0%	4%	4%	4%	4%	4%	0%	0%	0%	0%	0%	0%	0%
	18	Khleif Co	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	19	KPMG	1%	1%	1%	2%	8%	7%	7%	2%	2%	4%	8%	4%	4%	3%
	20	Kreston International	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%
	21	Matrix Consulting International	0%	0%	0%	0%	0%	2%	2%	2%	2%	2%	2%	2%	2%	2%
	22	Modern For Auditing	19%	13%	9%	9%	9%	10%	10%	11%	10%	10%	11%	7%	6%	7%
	23	Mohammed Ibrahim Al-Karaki	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	24	Nobani & Co. (BDO)	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%
	25	Osama Al-Zarqa Office for Auditing & Accounting	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	26	PWC	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	6%	6%
	27	Riad El Jinieni & Co.	2%	3%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%	0%	0%
	28	Scientific Office For Auditing Accounting & Consulting	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	5%	6%	6%	7%
	29	Sulaiman & Partners Auditing Co	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
	30	Talal Abu-Ghazaleh Audit	1%	1%	1%	1%	1%	2%	4%	4%	7%	7%	8%	8%	7%	7%
	31	United Accountants	4%	16%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
	32	United Auditing Public Accountants Audit Financial & Tax Consult	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%

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(Table F.3. Continued)

Sector	Auditor#	Auditor Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Hotels and Tourism	1	Arab professionals	10%	8%	8%	7%	8%	0%	0%	0%	0%	0%	0%	8%	5%	5%
	2	Arabian Audit Group	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	0%
	3	Audit & Consult Consortium - Dweik & Co.	0%	5%	6%	7%	5%	7%	7%	7%	7%	8%	7%	7%	5%	5%
	4	Deloitte	33%	31%	44%	44%	24%	24%	27%	27%	28%	31%	33%	16%	12%	53%
	5	Ernst & Young	0%	0%	28%	39%	45%	44%	56%	39%	40%	42%	40%	40%	29%	31%
	6	Ibrahim abbasi & co	0%	0%	0%	0%	0%	7%	0%	0%	0%	0%	0%	0%	0%	0%
	7	KPMG	0%	0%	0%	0%	15%	15%	0%	17%	15%	10%	0%	20%	43%	0%
	8	Modern For Auditing	0%	0%	0%	0%	0%	0%	7%	7%	7%	8%	8%	7%	5%	5%
	9	Talal Abu-Ghazaleh Audit	5%	5%	5%	3%	3%	3%	2%	2%	2%	1%	1%	1%	1%	1%
	10	United Accountants	52%	51%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Insurance	1	Abbasi Group International	8%	8%	7%	6%	6%	3%	6%	10%	9%	8%	3%	3%	5%	7%
	2	Arab professionals	4%	4%	4%	7%	4%	5%	4%	4%	3%	4%	3%	7%	8%	8%
	3	BDO Jordan (Samman & Co.)	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	9%	6%	6%	6%
	4	Deloitte	17%	16%	18%	25%	39%	34%	35%	31%	30%	28%	32%	36%	45%	31%
	5	Ernst & Young	11%	13%	25%	27%	25%	32%	26%	29%	35%	30%	32%	29%	20%	31%
	6	Ibrahim abbasi & co	15%	15%	9%	16%	9%	10%	10%	10%	10%	10%	8%	9%	7%	7%
	7	Khleif & Samman Auditing co.	2%	3%	4%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	8	KPMG	0%	0%	0%	0%	0%	4%	3%	3%	0%	0%	0%	0%	0%	2%
	9	Michael Sindaha & Partners Co.	4%	1%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	10	Modern For Auditing	6%	6%	5%	4%	4%	5%	5%	5%	6%	8%	7%	7%	7%	7%

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(Table F.3. Continued)

Sector	Auditor#	Auditor Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	11	Saba & Co	5%	5%	5%	4%	4%	4%	4%	4%	4%	4%	4%	0%	0%	0%
	12	Scientific Office for Auditing Accounting & Consulting	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%	2%
	13	Talal Abu-Ghazaleh Audit	9%	9%	10%	9%	9%	3%	6%	3%	3%	3%	0%	0%	0%	0%
	14	The Professionals for auditing and consulting	3%	3%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	15	United Accountants	17%	16%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Mining and Extraction Industries	1	Arab professionals	8%	9%	13%	10%	10%	10%	9%	9%	9%	9%	9%	9%	6%	6%
	2	Arabian Audit Group	3%	4%	5%	4%	4%	4%	4%	4%	4%	4%	4%	4%	3%	3%
	3	Deloitte	35%	24%	6%	4%	4%	0%	0%	0%	0%	0%	0%	0%	19%	18%
	4	Ernst & Young	0%	0%	54%	66%	68%	72%	76%	75%	76%	78%	77%	79%	27%	32%
	5	Ibrahim Yasin & Co	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%
	6	Khalifeh & Rayyan Auditors and Financial Consultants	3%	3%	4%	3%	3%	3%	2%	2%	2%	0%	0%	0%	0%	0%
	7	Modern for Auditing	3%	4%	8%	3%	2%	2%	2%	2%	2%	1%	1%	6%	5%	5%
	8	PWC	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%	37%	33%
	9	Talal Abu-Ghazaleh Audit	10%	12%	11%	9%	8%	8%	7%	7%	7%	5%	5%	0%	0%	0%
	10	The Standard Auditing	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%
	11	United Accountants	37%	44%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Real Estate	1	Al-Abbasi, Samman & Co.	0%	0%	0%	0%	0%	0%	0%	0%	3%	4%	0%	0%	0%	0%
	2	Professional auditing complex	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	3	Redha Al-Kabariti Foundation	0%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%
	4	Al Rajabi For Auditing	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%

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(Table F.3. Continued)

Sector	Auditor#	Auditor Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	5	Al-Aqsa Financial, Tax & Accounting Consulting Office	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	6	Al-Dar Al-Arabia Auditing & Verification of Financial Matters	2%	2%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%
	7	Al-Hendi Chartered Accountants and Consultants	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%
	8	Arab professionals	11%	12%	17%	20%	19%	16%	17%	18%	18%	18%	18%	21%	22%	19%
	9	Arabian Audit Group	0%	1%	1%	1%	2%	3%	4%	8%	5%	8%	9%	10%	6%	9%
	10	Audit & Consult Consortium - Dweik & Co.	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	11	AWJ Public Accountants	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	0%
	12	Bassam Eses & Co Chartered Accountants	0%	0%	0%	0%	0%	0%	3%	3%	3%	3%	3%	0%	0%	0%
	13	Deloitte	0%	0%	0%	0%	3%	2%	2%	2%	3%	3%	2%	2%	3%	0%
	14	Ernst & Young	18%	16%	29%	26%	26%	29%	27%	22%	15%	15%	9%	10%	16%	16%
	15	Experts For Auditing	2%	2%	2%	2%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%
	16	Ibrahim abbasi & co	15%	15%	4%	3%	3%	3%	3%	1%	3%	1%	1%	1%	4%	4%
	17	Ibrahim Yasin & Co	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%	2%	2%
	18	Jordan Audit House	0%	0%	0%	0%	0%	0%	2%	2%	0%	1%	0%	0%	0%	0%
	19	Khalifeh & Rayyan Auditors and Financial Consultants	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	20	KPMG	8%	7%	8%	8%	11%	11%	8%	3%	0%	0%	7%	17%	16%	19%
	21	Matrix Consulting International	5%	5%	5%	5%	4%	2%	2%	0%	5%	1%	1%	1%	0%	0%
	22	Modern for Auditing	23%	24%	23%	25%	20%	20%	21%	26%	28%	28%	30%	26%	24%	22%
	23	Modernity International Public Accountants & Business Advisers	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	24	Nobani & Co. (BDO)	3%	3%	3%	3%	4%	4%	2%	2%	0%	0%	0%	0%	0%	0%

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(Table F.3. Continued)

Sector	Auditor#	Auditor Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	25	PKF Pro Group Auditing & Consulting (Khattab & Co)	0%	0%	0%	0%	0%	0%	0%	0%	8%	8%	6%	0%	0%	0%
	26	Riad El Jinieni & Co.	4%	4%	3%	2%	2%	1%	1%	1%	1%	0%	0%	0%	0%	0%
	27	Scientific Office for Auditing Accounting & Consulting	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	1%	1%	1%	3%
	28	Talal Abu-Ghazaleh Audit	5%	5%	3%	3%	3%	3%	3%	4%	4%	4%	5%	5%	4%	5%
	29	United Accountants	2%	2%	0%	0%	0%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Transportation	1	International Professional Bureau for Consulting and Auditing Company	0%	0%	4%	5%	4%	4%	4%	4%	4%	4%	3%	4%	0%	0%
	2	Abbasi Group International	0%	0%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%	2%
	3	Al-Dar Al-Arabia Auditing & Verification of Financial Matters	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	4%
	4	Arab professionals	0%	0%	0%	0%	0%	0%	0%	4%	7%	8%	8%	8%	7%	0%
	5	Deloitte	99%	99%	11%	10%	11%	13%	16%	15%	30%	32%	32%	32%	34%	30%
	6	Ernst & Young	0%	1%	47%	48%	54%	54%	52%	53%	49%	46%	46%	46%	44%	48%
	7	Ibrahim abbasi & co	0%	0%	3%	3%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
	8	Khleif & Samman Auditing co.	0%	0%	10%	10%	9%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	9	KPMG	0%	0%	0%	0%	0%	10%	14%	12%	0%	0%	0%	0%	0%	0%
	10	Modern for Auditing	0%	0%	9%	8%	8%	0%	0%	0%	0%	0%	0%	0%	0%	2%
	11	PWC	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%	0%
	12	Scientific Office for Auditing Accounting & Consulting	0%	0%	5%	5%	4%	4%	4%	4%	4%	4%	4%	4%	4%	5%
	13	Talal Abu-Ghazaleh Audit	0%	0%	3%	4%	4%	4%	4%	4%	4%	4%	4%	4%	5%	9%
	14	United Accountants	0%	0%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

F.4. The Audit Firm Percentage Portfolio Shares by Sector (Total Sample)

Sector	Auditor#	Auditor Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Bank	1	Deloitte	9%	16%	89%	87%	85%	86%	72%	73%	84%	84%	84%	84%	69%	69%
	2	Ernst & Young	55%	68%	61%	59%	61%	53%	65%	55%	61%	59%	57%	52%	75%	71%
	3	Ibrahim abbasi & co	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	61%	66%	0%	0%
	4	KPMG	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	16%	34%
	5	PWC	0%	0%	0%	0%	0%	0%	0%	0%	93%	61%	68%	75%	75%	77%
	6	United Accountants	44%	40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Diversified Financial Services	1	International Professional Bureau for Consulting and Auditing Company	0%	0%	0%	0%	0%	0%	0%	0%	47%	38%	38%	36%	50%	49%
	2	Abbasi Group International	31%	31%	32%	30%	18%	21%	15%	21%	20%	19%	19%	16%	5%	6%
	3	Al-Dar Al-Arabia Auditing & Verification of Financial Matters	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	4	Arab professionals	19%	26%	31%	31%	40%	43%	46%	43%	37%	35%	39%	31%	33%	30%
	5	Arabian Audit Group	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	8%	8%
	6	Associators For Auditing	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%
	7	Audit & Consult Consortium - Dweik & Co.	29%	22%	25%	23%	45%	41%	41%	69%	41%	25%	28%	0%	0%	0%
	8	AWJ Public Accountants	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	33%	24%	0%	0%
	9	Deloitte	0%	0%	2%	2%	2%	2%	4%	4%	2%	2%	1%	1%	2%	1%
	10	Ernst & Young	13%	10%	10%	9%	6%	6%	4%	5%	4%	5%	5%	5%	3%	3%
	11	Experts For Auditing	57%	56%	54%	49%	45%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	12	Ibrahim abbasi & co	4%	4%	19%	21%	22%	19%	15%	11%	13%	8%	3%	3%	6%	9%
	13	Ibrahim Yasin & Co	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	38%	20%
	14	Jadara Audit & Professional Services Co	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%
	15	Jordan Audit House	0%	0%	0%	0%	0%	100%	38%	38%	0%	0%	0%	0%	0%	0%

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(Table F.4. Continued)

Sector	Auditor#	Auditor Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	16	Khalifeh & Rayyan Auditors and Financial Consultants	0%	0%	0%	0%	0%	0%	0%	0%	26%	100%	38%	38%	38%	38%
	17	Khleif & Samman Auditing co.	0%	0%	34%	38%	46%	79%	79%	0%	0%	0%	0%	0%	0%	0%
	18	Khleif Co	90%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	19	KPMG	13%	13%	11%	21%	32%	20%	23%	6%	7%	13%	17%	4%	3%	4%
	20	Kreston International	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
	21	Matrix Consulting International	0%	0%	0%	0%	0%	56%	56%	100%	30%	65%	65%	71%	100%	100%
	22	Modern for Auditing	29%	25%	20%	21%	23%	26%	24%	23%	19%	19%	20%	14%	13%	15%
	23	Mohammed Ibrahim Al-Karaki	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
	24	Nobani & Co. (BDO)	0%	0%	0%	0%	0%	0%	66%	0%	0%	0%	0%	0%	0%	0%
	25	Osama Al-Zarqa Office for Auditing & Accounting	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%
	26	PWC	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	4%	4%
	27	Riad El Jinieni & Co.	39%	51%	25%	38%	38%	0%	0%	50%	57%	100%	100%	0%	0%	0%
	28	Scientific Office for Auditing Accounting & Consulting	0%	0%	0%	0%	0%	0%	0%	0%	0%	68%	41%	44%	45%	42%
	29	Sulaiman & Partners Auditing Co	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
	30	Talal Abu-Ghazaleh Audit	2%	2%	2%	3%	5%	8%	15%	18%	27%	28%	31%	34%	30%	28%
	31	United Accountants	3%	11%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	67%
	32	United Auditing Public Accountants Audit Financial & Tax Consult	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%
Hotels and Tourism	1	Arab professionals	3%	3%	2%	2%	3%	0%	0%	0%	0%	0%	0%	3%	3%	4%
	2	Arabian Audit Group	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	0%	0%	0%
	3	Audit & Consult Consortium - Dweik & Co.	0%	24%	34%	38%	33%	41%	41%	21%	41%	51%	49%	83%	83%	83%
	4	Deloitte	0%	0%	2%	2%	1%	1%	2%	2%	1%	1%	1%	1%	1%	5%

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(Table F.4. Continued)

Sector	Auditor#	Auditor Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	5	Ernst & Young	0%	0%	2%	2%	3%	3%	3%	3%	2%	2%	2%	3%	2%	2%
	6	Ibrahim abbasi & co	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%
	7	KPMG	0%	0%	0%	0%	15%	13%	0%	14%	15%	8%	0%	5%	13%	0%
	8	Modern for Auditing	0%	0%	0%	0%	0%	0%	4%	4%	4%	4%	4%	4%	5%	5%
	9	Talal Abu-Ghazaleh Audit	4%	4%	4%	3%	3%	3%	2%	3%	2%	1%	1%	1%	1%	1%
	10	United Accountants	11%	10%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Insurance	1	Abbasi Group International	30%	29%	29%	28%	31%	19%	35%	40%	41%	40%	23%	21%	12%	17%
	2	Arab professionals	3%	3%	3%	6%	3%	5%	4%	4%	4%	4%	5%	10%	11%	14%
	3	BDO Jordan (Samman & Co.)	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	73%	73%	73%
	4	Deloitte	0%	0%	2%	3%	5%	5%	9%	7%	4%	4%	5%	5%	11%	8%
	5	Ernst & Young	4%	3%	4%	5%	4%	6%	4%	6%	7%	6%	7%	8%	3%	5%
	6	Ibrahim abbasi & co	26%	24%	24%	38%	24%	21%	22%	24%	28%	48%	17%	18%	42%	42%
	7	Khleif & Samman Auditing co.	27%	32%	21%	18%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	8	KPMG	0%	0%	0%	0%	0%	7%	8%	8%	0%	0%	0%	0%	0%	3%
	9	Michael Sindaha & Partners Co.	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	10	Modern for Auditing	7%	7%	6%	6%	6%	8%	8%	8%	9%	12%	12%	13%	17%	17%
	11	Saba & Co	52%	22%	22%	49%	55%	37%	37%	53%	49%	51%	59%	0%	0%	0%
	12	Scientific Office for Auditing Accounting & Consulting	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	16%	15%	15%	14%
	13	Talal Abu-Ghazaleh Audit	15%	15%	23%	20%	22%	8%	17%	10%	9%	10%	0%	0%	0%	0%
	14	The Professionals for auditing and consulting	78%	53%	55%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	15	United Accountants	8%	7%	24%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

(Table F.4. Continued)

Sector	Auditor#	Auditor Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Mining and Extraction Industries	1	Arab professionals	4%	5%	6%	5%	5%	6%	6%	6%	6%	7%	8%	6%	6%	6%
	2	Arabian Audit Group	20%	19%	17%	18%	17%	13%	15%	12%	12%	11%	10%	10%	11%	9%
	3	Deloitte	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	3%
	4	Ernst & Young	0%	0%	5%	7%	7%	9%	7%	10%	9%	9%	9%	11%	3%	3%
	5	Ibrahim Yasin & Co	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	30%	31%	40%
	6	Khalifeh & Rayyan Auditors and Financial Consultants	100%	100%	100%	100%	100%	100%	100%	100%	74%	0%	0%	0%	0%	0%
	7	Modern for Auditing	3%	3%	6%	3%	2%	3%	2%	2%	2%	1%	1%	6%	8%	8%
	8	PWC	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	0%	14%	13%
	9	Talal Abu-Ghazaleh Audit	16%	16%	15%	13%	13%	14%	12%	16%	13%	10%	10%	0%	0%	0%
	10	The Standard Auditing	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%
	11	United Accountants	15%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Real Estate	1	Al-Abbasi, Samman & Co.	0%	0%	0%	0%	0%	0%	0%	0%	100%	35%	0%	0%	0%	0%
	2	Professional auditing complex	0%	0%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	3	Redha Al-Kabariti Foundation	0%	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%
	4	Al Rajabi For Auditing	0%	0%	0%	0%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%
	5	Al-Aqsa Financial, Tax & Accounting Consulting Office	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%
	6	Al-Dar Al-Arabia Auditing & Verification of Financial Matters	100%	100%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%
	7	Al-Hendi Chartered Accountants and Consultants	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%
	8	Arab professionals	8%	9%	15%	17%	18%	18%	18%	18%	18%	20%	22%	23%	24%	25%
	9	Arabian Audit Group	3%	5%	8%	10%	12%	17%	21%	38%	25%	35%	33%	37%	27%	31%
	10	Audit & Consult Consortium - Dweik & Co.	22%	17%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

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Sector	Auditor#	Auditor Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	11	AWJ Public Accountants	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	67%	76%	0%	0%
	12	Bassam Eses & Co Chartered Accountants	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	0%	0%	0%
	13	Deloitte	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%
	14	Ernst & Young	8%	5%	6%	5%	5%	6%	4%	4%	3%	3%	1%	2%	2%	2%
	15	Experts for Auditing	43%	44%	46%	51%	55%	100%	0%	0%	0%	0%	0%	0%	0%	0%
	16	Ibrahim abbasi & co	28%	30%	11%	8%	8%	7%	7%	4%	9%	6%	2%	2%	19%	17%
	17	Ibrahim Yasin & Co	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	30%	31%	40%
	18	Jordan Audit House	0%	0%	0%	0%	0%	0%	63%	63%	0%	100%	0%	0%	0%	0%
	19	Khalifeh & Rayyan Auditors and Financial Consultants	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	63%	63%	63%	63%
	20	KPMG	87%	87%	89%	57%	31%	25%	19%	9%	0%	0%	11%	13%	9%	21%
	21	Matrix Consulting International	100%	100%	100%	100%	100%	44%	44%	0%	57%	35%	35%	29%	0%	0%
	22	Modern for Auditing	28%	32%	36%	39%	37%	40%	37%	41%	44%	39%	39%	37%	43%	40%
	23	Modernity International Public Accountants & Business Advisers	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%
	24	Nobani & Co. (BDO)	100%	100%	100%	100%	100%	100%	34%	100%	0%	0%	0%	0%	0%	0%
	25	PKF Pro Group Auditing & Consulting (Khattab & Co)	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	0%	0%	0%
	26	Riad El Jinieni & Co.	61%	49%	75%	62%	63%	100%	100%	50%	43%	0%	0%	0%	0%	0%
	27	Scientific Office for Auditing Accounting & Consulting	0%	0%	0%	0%	0%	0%	35%	35%	35%	0%	8%	8%	8%	14%
	28	Talal Abu-Ghazaleh Audit	10%	11%	9%	8%	8%	9%	8%	14%	12%	12%	15%	17%	15%	15%
	29	United Accountants	1%	1%	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	100%	33%
Transportation	1	International Professional Bureau for Consulting and Auditing Company	30%	30%	30%	33%	33%	39%	39%	50%	27%	31%	31%	29%	0%	0%
	2	Abbasi Group International	7%	7%	7%	7%	8%	10%	8%	6%	6%	7%	10%	6%	2%	2%

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(Table F.4. Continued)

Sector	Auditor#	Auditor Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	3	Al-Dar Al-Arabia Auditing & Verification of Financial Matters	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	42%	44%
	4	Arab professionals	0%	0%	0%	0%	0%	0%	0%	3%	4%	6%	7%	6%	5%	0%
	5	Deloitte	90%	82%	1%	1%	1%	1%	2%	2%	3%	3%	3%	3%	4%	3%
	6	Ernst & Young	11%	7%	5%	5%	5%	6%	5%	7%	6%	6%	6%	7%	4%	4%
	7	Ibrahim abbasi & co	4%	4%	5%	4%	3%	3%	3%	3%	2%	3%	1%	0%	1%	1%
	8	Khleif & Samman Auditing co.	73%	54%	36%	35%	42%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	9	KPMG	0%	0%	0%	0%	0%	13%	20%	20%	0%	0%	0%	0%	0%	0%
	10	Modern for Auditing	7%	7%	7%	7%	7%	0%	0%	0%	0%	0%	0%	0%	0%	2%
	11	PWC	0%	0%	0%	0%	0%	54%	0%	0%	0%	0%	0%	0%	0%	0%
	12	Scientific Office for Auditing Accounting & Consulting	100%	100%	100%	100%	100%	100%	65%	65%	65%	32%	18%	18%	17%	16%
	13	Talal Abu-Ghazaleh Audit	4%	4%	4%	5%	7%	7%	7%	9%	8%	9%	9%	10%	12%	17%
	14	United Accountants	4%	3%	11%	74%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

F.5: Experts Auditors Identified by MS & PS-based Distribution over Year and Industry

Table F.5: Experts Auditors by Sector over the Study Period

Year	Sector	Industry Specialists MS-based	Industry Specialists PS-based
2005	Banks	Deloitte, Ernst & Young+1 Local	Ernst & Young, Deloitte+ 1 Local
2006	Banks	Deloitte, Ernst & Young+1 Local	Ernst & Young, Deloitte+ 1 Local
2007	Banks	Deloitte, Ernst & Young	Deloitte, Ernst & Young
2008	Banks	Deloitte, Ernst & Young	Deloitte, Ernst & Young
2009	Banks	Deloitte, Ernst & Young	Ernst & Young, Deloitte
2010	Banks	Deloitte, Ernst & Young	Ernst & Young, Deloitte
2011	Banks	Deloitte, Ernst & Young	Ernst & Young, Deloitte
2012	Banks	Deloitte, Ernst & Young	Deloitte, Ernst & Young
2013	Banks	Deloitte, Ernst & Young	PWC, Deloitte, Ernst & Young
2014	Banks	Deloitte, Ernst & Young	Ernst & Young, Deloitte, PWC
2015	Banks	Deloitte, Ernst & Young	Deloitte, PWC, Ernst & Young+ 1 Local
2016	Banks	Deloitte, Ernst & Young	Ernst & Young, Deloitte, PWC+ 1 Local
2017	Banks	Deloitte, Ernst & Young, PWC	PWC, Deloitte, Ernst & Young, KPMG
2018	Banks	Deloitte, Ernst & Young, PWC, KPMG	PWC, Deloitte, Ernst & Young, KPMG
2005	Diversified Financial Services	Deloitte+1 inter-affiliation+1 Local	Ernst & Young, KPMG+ 5 inter-affiliation+ 6 Local
2006	Diversified Financial Services	Deloitte, Ernst & Young+1 inter-affiliation+ 3 Local	KPMG, Ernst & Young+ 4 inter-affiliation+ 7 Local
2007	Diversified Financial Services	Deloitte, Ernst & Young+1 inter- affiliation + 1 Local	Ernst & Young, Deloitte, KPMG+ 3 inter-affiliation+ 7 Local
2008	Diversified Financial Services	Deloitte, Ernst & Young+1 inter-affiliation+ 2 Local	Ernst & Young, Deloitte, KPMG+ 6 inter-affiliation+ 7 Local
2009	Diversified Financial Services	Deloitte, Ernst & Young, KPMG+1 inter-affiliation+ 2 Local	Ernst & Young, Deloitte, KPMG+ 4 inter-affiliation+ 7 Local
2010	Diversified Financial Services	Deloitte, Ernst & Young, KPMG+1 inter-affiliation+ 2 Local	Ernst & Young, Deloitte, KPMG+ 3 inter-affiliation+ 6 Local
2011	Diversified Financial Services	Deloitte, Ernst & Young, KPMG+2 inter-affiliation+ 1 Local	KPMG, Ernst & Young, Deloitte+ 4 inter-affiliation+ 7 Local
2012	Diversified Financial Services	Deloitte, Ernst & Young+ 2 inter-affiliation+ 1 Local	Deloitte, Ernst & Young+ 5 inter-affiliation+ 7 Local
2013	Diversified Financial Services	Deloitte, Ernst & Young+ 2 inter-affiliation+ 1 Local	Ernst & Young, Deloitte+ 5 inter-affiliation+ 7 Local
2014	Diversified Financial Services	Deloitte, Ernst & Young+ 2 inter-affiliation+ 1 Local	Ernst & Young, KPMG, Deloitte+4 inter-affiliation+ 7 Local
2015	Diversified Financial Services	Deloitte, Ernst & Young+ 2 inter-affiliation+ 1 Local	Ernst & Young, KPMG Deloitte+5 inter-affiliation+ 7 Local
2016	Diversified Financial Services	Deloitte, Ernst & Young+ 2 inter-affiliation+ 3 Local	Ernst & Young, Deloitte PWC KPMG+ 5 inter-affiliation+ 6 Local
2017	Diversified Financial Services	Deloitte, Ernst & Young, PWC, KPMG+ 2 inter-affiliation+ 2 Local	Ernst & Young, KPMG Deloitte PWC+ 6 inter-affiliation+ 8 Local
2018	Diversified Financial Services	Ernst & Young, KPMG, PWC+2 inter-affiliation+ 2 Local	Deloitte, PWC Ernst & Young KPMG+ 5 inter-affiliation+ 9 Local
2005	Insurance	Deloitte, Ernst & Young+ 1 inter-affiliation+ 3 Local	Ernst & Young+ 4 inter-affiliation+ 6 Local
2006	Insurance	Deloitte, Ernst & Young+ 1 inter-affiliation+ 3 Local	Deloitte, Ernst & Young+ 4 inter-affiliation+ 5 Local
2007	Insurance	Deloitte, Ernst & Young+ 1 inter-affiliation+ 1 Local	Ernst & Young, Deloitte+ 5 inter-affiliation+ 6 Local
2008	Insurance	Deloitte, Ernst & Young+ 2 inter-affiliation+ 2 Local	Ernst & Young, Deloitte+ 3 inter-affiliation+ 4 Local
2009	Insurance	Deloitte, Ernst & Young+ 1 inter-affiliation+1 Local	Ernst & Young, Deloitte+ 3 inter-affiliation+ 2 Local

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(Table F.5. Continued)

Year	Sector	Industry Specialists MS-based	Industry Specialists PS-based
2010	Insurance	Deloitte, Ernst & Young+ 1 inter-affiliation+ 2 Local	Deloitte, KPMG Ernst & Young+ 3 inter-affiliation+ 3 Local
2011	Insurance	Deloitte, Ernst & Young+ 1 inter-affiliation+ 2 Local	Deloitte, Ernst & Young KPMG+ 3 inter-affiliation+ 3 Local
2012	Insurance	Deloitte, Ernst & Young+ 2 Local	Ernst & Young, Deloitte KPMG+ 3 inter-affiliation+ 3 Local
2013	Insurance	Deloitte, Ernst & Young+ 2 Local	Ernst & Young, Deloitte+ 3 inter-affiliation+ 3 Local
2014	Insurance	Deloitte, Ernst & Young+ 1 Local	Ernst & Young, Deloitte+ 4 inter-affiliation+ 3 Local
2015	Insurance	Deloitte, Ernst & Young+ 2 Local	Ernst & Young, Deloitte+ 3 inter-affiliation, 4 Local
2016	Insurance	Deloitte, Ernst & Young+ 1 inter-affiliation+ 2 Local	Deloitte, Ernst & Young+ 3 inter-affiliation+ 3 Local
2017	Insurance	Deloitte, Ernst & Young+ 1 inter-affiliation+ 1 Local	Deloitte, Ernst & Young+ 3 inter-affiliation+ 3 Local
2018	Insurance	Deloitte, Ernst & Young, KPMG+ 1 Local	Ernst & Young, Deloitte KPMG+ 6 inter-affiliation+ 6 Local
2005	Real Estate	Ernst & Young+ 1 inter-affiliation+1 Local	Ernst & Young+ 2 inter-affiliation+ 3 Local
2006	Real Estate	Ernst & Young+ 2 inter-affiliation+ 3 Local	Ernst & Young+ 3 inter-affiliation+ 3 Local
2007	Real Estate	Ernst & Young+ 1 inter-affiliation+ 1 Local	Ernst & Young, KPMG+ 3 inter-affiliation+ 3 Local
2008	Real Estate	Ernst & Young+ 1 inter-affiliation+ 2 Local	KPMG, Ernst & Young+ 3 inter-affiliation+ 3 Local
2009	Real Estate	Deloitte, Ernst & Young, KPMG+1 inter-affiliation+ 1 Local	KPMG, Ernst & Young+ 3 inter-affiliation+ 3 Local
2010	Real Estate	Deloitte, Ernst & Young, KPMG+ 1 inter-affiliation+ 1 Local	Ernst & Young, KPMG+ 2 inter-affiliation+ 4 Local
2011	Real Estate	Deloitte, Ernst & Young, KPMG+ 2 inter-affiliation+ 1 Local	Ernst & Young, KPMG+ 2 inter-affiliation+ 3 Local
2012	Real Estate	Deloitte, Ernst & Young+2 inter-affiliation+ 1 Local	Ernst & Young+ 2 inter-affiliation+ 2 Local
2013	Real Estate	Deloitte, Ernst & Young+ 2 inter-affiliation+ 1 Local	Ernst & Young+ 4 inter-affiliation+ 3 Local
2014	Real Estate	Deloitte, Ernst & Young+ 2 inter-affiliation+ 1 Local	Ernst & Young+ 2 inter-affiliation+ 3 Local
2015	Real Estate	Deloitte, Ernst & Young	Ernst & Young, KPMG+ 2 inter-affiliation+ 2 Local
2016	Real Estate	Deloitte, Ernst & Young, KPMG	Ernst & Young, KPMG+ 2 inter-affiliation+ 2 Local
2017	Real Estate	Deloitte, Ernst & Young+ 1 inter-affiliation+ 1 Local	Ernst & Young, KPMG+ 2 inter-affiliation+ 3 Local
2018	Real Estate	Ernst & Young, KPMG+ 1 inter-affiliation+ 1 Local	Ernst & Young, KPMG+ 2 inter-affiliation+ 3 Local
2005	Hotels and Tourism	Deloitte	Deloitte+ 2 inter-affiliation+ 1 Local
2006	Hotels and Tourism	Deloitte	Deloitte+ 3 inter-affiliation+ 1 Local
2007	Hotels and Tourism	Deloitte, Ernst & Young+ 1 inter-affiliation+ 1 Local	Ernst & Young+ 3 inter-affiliation+ 1 Local
2008	Hotels and Tourism	Deloitte, Ernst & Young+ 1 inter-affiliation	Ernst & Young+ 3 inter-affiliation
2009	Hotels and Tourism	Deloitte, Ernst & Young, KPMG+1 inter-affiliation	Ernst & Young, KPMG+ 3 inter-affiliation
2010	Hotels and Tourism	Deloitte, Ernst & Young, KPMG+1 inter-affiliation	Ernst & Young, KPMG+ 3 inter-affiliation+ 1 Local
2011	Hotels and Tourism	Deloitte, Ernst & Young+ 1 inter-affiliation	Ernst & Young+ 3 inter-affiliation
2012	Hotels and Tourism	Deloitte, Ernst & Young, KPMG+ 1 inter-affiliation	Ernst & Young, KPMG+ 3 inter-affiliation
2013	Hotels and Tourism	Deloitte, Ernst & Young, KPMG+ 1 inter-affiliation	Ernst & Young, KPMG+ 2 inter-affiliation
2014	Hotels and Tourism	Deloitte, Ernst & Young+ 1 inter-affiliation	Ernst & Young, KPMG+ 3 inter-affiliation

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(Table F.5. Continued)

Year	Sector	Industry Specialists MS-based	Industry Specialists PS-based
2015	Hotels and Tourism	Deloitte, Ernst & Young+ 1 inter-affiliation	Ernst & Young+ 3 inter-affiliation+ 1 Local
2016	Hotels and Tourism	Deloitte, Ernst & Young, KPMG+ 1 inter-affiliation	Ernst & Young, KPMG+ 3 inter-affiliation
2017	Hotels and Tourism	Deloitte, Ernst & Young, KPMG+ 1 inter-affiliation	Ernst & Young, KPMG+ 3 inter-affiliation
2018	Hotels and Tourism	Deloitte, Ernst & Young+ 1 inter-affiliation+ 1 Local	Ernst & Young, Deloitte+ 3 inter-affiliation
2005	Mining and Extraction Industries	Deloitte+ 2 inter-affiliation+ 2 Local	2 inter-affiliation+ 3 Local
2006	Mining and Extraction Industries	Deloitte+ 2 inter-affiliation+ 2 Local	2 inter-affiliation+ 3 Local
2007	Mining and Extraction Industries	Deloitte, Ernst & Young+ 2 inter-affiliation+ 2 Local	Ernst & Young+ 2 inter-affiliation+ 3 Local
2008	Mining and Extraction Industries	Ernst & Young+ 2 inter-affiliation+ 1 Local	Ernst & Young+ 2 inter-affiliation+ 2 Local
2009	Mining and Extraction Industries	Ernst & Young+ 2 inter-affiliation	Ernst & Young+ 2 inter-affiliation+ 2 Local
2010	Mining and Extraction Industries	Ernst & Young+ 2 inter-affiliation	Ernst & Young+ 2 inter-affiliation+ 2 Local
2011	Mining and Extraction Industries	Ernst & Young+ 2 inter-affiliation	Ernst & Young+ 2 inter-affiliation+ 2 Local
2012	Mining and Extraction Industries	Ernst & Young+ 2 inter-affiliation	Ernst & Young+ 2 inter-affiliation+ 2 Local
2013	Mining and Extraction Industries	Ernst & Young+ 2 inter-affiliation	Ernst & Young+ 2 inter-affiliation+ 2 Local
2014	Mining and Extraction Industries	Ernst & Young+ 2 inter-affiliation+ 1 Local	Ernst & Young+ 2 inter-affiliation+ 1 Local
2015	Mining and Extraction Industries	Ernst & Young, PWC+ 2 inter-affiliation	PWC, Ernst & Young+ 2 inter-affiliation+ 1 Local
2016	Mining and Extraction Industries	Ernst & Young+ 1 inter-affiliation+ 1 Local	Ernst & Young+ 1 inter-affiliation+ 3 Local
2017	Mining and Extraction Industries	Deloitte, Ernst & Young, PWC+ 1 inter-affiliation+ 1 Local	PWC+ 1 inter-affiliation+ 3 Local
2018	Mining and Extraction Industries	Deloitte, Ernst & Young, PWC+ 1 inter-affiliation+ 1 Local	PWC+ 1 inter-affiliation+ 3 Local
2005	Transportation	Deloitte	Ernst & Young, Deloitte+ 2 inter-affiliation+ 3 Local
2006	Transportation	Deloitte	Deloitte+ 2 inter-affiliation+ 3 Local
2007	Transportation	Deloitte, Ernst & Young+ 1 inter-affiliation	Ernst & Young+ 2 inter-affiliation+ 3 Local
2008	Transportation	Deloitte, Ernst & Young+ 1 inter-affiliation	Ernst & Young+ 2 inter-affiliation+ 3 Local
2009	Transportation	Deloitte, Ernst & Young+ 1 inter-affiliation	Ernst & Young+ 3 inter-affiliation+ 2 Local
2010	Transportation	Deloitte, Ernst & Young, PWC, KPMG+ 1 inter-affiliation+ 1 Local	Ernst & Young, KPMG PWC+ 3 inter-affiliation+ 3 Local
2011	Transportation	Deloitte, Ernst & Young, KPMG+ 1 inter-affiliation+ 1 Local	Ernst & Young, KPMG+ 3 inter-affiliation+ 1 Local
2012	Transportation	Deloitte, Ernst & Young, KPMG+ 1 inter-affiliation+ 1 Local	Ernst & Young, KPMG+ 2 inter-affiliation+ 1 Local
2013	Transportation	Deloitte, Ernst & Young+ 2 inter-affiliation+ 1 Local	Ernst & Young+3 inter-affiliation+ 1 Local
2014	Transportation	Deloitte, Ernst & Young+ 2 inter-affiliation+ 1 Local	Ernst & Young+ 3 inter-affiliation+ 1 Local
2015	Transportation	Deloitte, Ernst & Young+ 2 inter-affiliation+ 1 Local	Ernst & Young+ 4 inter-affiliation+ 1 Local
2016	Transportation	Deloitte, Ernst & Young+ 2 inter-affiliation+ 1 Local	Ernst & Young+ 5 inter-affiliation+ 1 Local
2017	Transportation	Deloitte, Ernst & Young+ 2 inter-affiliation+ 1 Local	Ernst & Young, Deloitte+ 2 inter-affiliation+ 2 Local
2018	Transportation	Deloitte, Ernst & Young+ 1 inter-affiliation+ 2 Local	Ernst & Young, Deloitte+ 1 inter-affiliation+ 2 Local

Note: Inter-affiliation= external auditors belong to audit firms with international affiliation. Local= local licenced auditors by JACPA.