# AN INVESTIGATION OF THE EFFECT OF FINANCIAL LEVERAGE ON FIRM FINANCIAL PERFORMANCE IN SAUDI ARABIA'S PUBLIC LISTED COMPANIES

BY

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# Abstract

Since the development of the Saudi Arabian stock market in 2003, corporations have been able to substitute equity for debt more freely. However, new banks have entered the financial market, giving corporations more opportunity to borrow funds. Both fund resources (loan and equity) have experienced their own crises. This research was conducted to investigate the effect of the debt and equity mix, as measured by financial leverage, on a firm's financial performance. It focuses on profitability, specifically in the Saudi Arabian capital market. This study was developed to extend understandings in the literature of how financial leverage operates in a no-interest based financial system, and how it may affect financial performance. This research examined 57 publicly trading firms listed in the Saudi Arabian stock market between 2002 and 2010. This study extends the understandings previously reported in the literature of how financial performance is linked to financial structure, *zakat* (Islamic tax), and the ages and sizes of Saudi Arabian firms in a no-interest based financial system. A great motivator of this study was the 2006 Saudi Arabia stock market collapse and the 2008 global financial crisis (GFC) which lowered the businesses' trust in bank loans as a source of funds.

The overall results of this study were that, in the long term, in the absence of acute economic downturns, lower leverage levels tend to lead to higher profit margins and returns on both assets and equity. It also provides evidence to recommend that, under normal economic conditions, Saudi Arabian firms could attempt to improve their financial performance by balancing their *zakat* liabilities with their leverage borrowing levels. Another recommendation made by this study is that more studies are needed to examine *zakat* calculation standards and *zakat's* effect on firms' capital structure and society. The way *zakat* is calculated and presented in firms' financial statements is currently vague. Thus, a separate study to examine the effect of *zakat* on capital structure and financial performance for each sector may provide more in-depth knowledge about this relationship.

# Declaration

"I, Hasan Al-Tally, declare that the DBA thesis entitled 'An Investigation of the Impact of Financial Leverage on Firm Financial Performance in Saudi Arabia's Public Listed Companies' is no more than 65,000 words in length, including quotations, 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."

Signature…….  Date…….

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# List of Abbreviations

AAOIFI: Accounting and Auditing Organization for Islamic Financial Institutions

ANOVA: analysis of variance

BOT: build-operate-transfer

CCC: cash conversion cycle

CEO: chief executive officer

CMA: Capital Market Authority

CML: Capital Market Law

DZIT: Department of Zakat and Income Tax

ESIS: electronic securities information system

FCF: free cash flows

GCC: Gulf Cooperation Council

GDB: Government Development Bond

GDP: gross domestic product

GFC: global financial crisis

GPM: gross profit margin

IDB: Islamic Development Bank

IMF: International Monetary Fund

IPO: initial public offering

NAICS: North American Industry Classification System

NPM: net profit margin

NPV: net present value

OIC: Organization of Islamic Cooperation

P/E: price–earnings ratio

PIMS: profit impact of market strategy

PPE: private placement of equity

QDP: Quinquennial Development Plan

R&D: research and development

ROA: return on assets

ROE: return on equity

ROS: return on sale

SABIC: Saudi Arabia Basic Industrial Corporation

SAMA: Saudi Arabian Monetary Agency

SD: standard deviation

SEC: Supreme Economic Council

SIC: Standard Industrial Classification

SME: small and medium enterprise

SOCPA: Saudi Organization for Certified Public Accountants

SOE: state-owned enterprise

SPSS: Statistical Package for the Social Sciences

SSARC: Saudi Share Registration Company

STC: Saudi Arabian Telecommunication Company

UK: United Kingdom

US: United States

VIF: variance inflation factor

# Chapter 1: Introduction

## 1.1 General Background

### *1.1.1 Kingdom Foundation*

Countries with large area and population, with limited economic resources encounter great economic challenges. Saudi Arabia is one of those countries. Founded in 1932, it is the largest Arab country by area and population in the Arabian Peninsula and it plays a major role in global economic stabilization. Although its land consists largely of dry desert and rocky, infertile territory, it has its own influence on the world economy because it is the homeland of Islam, and the world's largest oil producer. Before the discovery of oil, the main resources of Saudi Arabia's economy were based on agriculture and pilgrimages' incomes from a few seasons of each year. This caused difficultly for the Saudi Arabian government, until the discovery of oil in March 1938 in the Al-Hasa region. After discovering oil, Saudi Arabia's economy became oil based and oil became the main source of income for the government. Since then, the Saudi Arabian economy has experienced continuous development in both the government and private sectors (Al-Rasheed 2002).

### *1.1.2 The Beginnings of Saudi's Economy*

During the 1950s and 1960s, the government began to establish regulations and authorities to manage the unstable revenue derived from oil and to improve economic development. According to Hitti and Abed (1974), during the mid-1950s, the growth in oil revenue was lower than the growth in government expenditure. This caused major fiscal deficits and resulted in the reduction of foreign exchange reserves, and depreciation of the Saudi Arabian riyal in the free exchange market. During that period, the Saudi Arabian Monetary Agency (SAMA) was established, in 1952, to act as the central bank of the government. One of SAMA's functions was to conduct monetary policy to promote price and exchange rate stability, in addition to promoting growth and ensuring the soundness of the financial system. As a result of establishing SAMA, the Ministry of Finance and National Economy was founded in 1954. SAMA and the Ministry of Finance and National Economy enabled greater control over government finances. As reported by Hitti and Abed (1974), Saudi Arabia's government initiated strict stabilisation policies in late 1958, which eliminated fiscal deficits and led to substantial improvements in the external payment

position. These policies and regulations were fundamental to enable the continuous economic and financial regulation development of Saudi Arabia's economy. Thus, the economic development and regulations of the 1950s were the starting point of the contemporary Saudi Arabian economy.

However, the most significant results of the oil revenue were not recognisable until the 1970s. Saudi Arabia's economy has achieved enormous strength and development from the 1970s to the present (Al-Dukheil 1988). This development has increased its ability to deal with changes and survive global economic fluctuations. However, the economy has encountered difficulties during its growth. Diversification of resources remains one of the greatest challenges faced by Saudi Arabia's economy. The government has made a concerted effort to diversify the economic resources; however, Saudi Arabia remains an oil-based economic country that is controlled and managed by the government in most of its major activities. Oil price has a strong effect on Saudi Arabia's economy: when the price of oil increases, Saudi Arabia's gross domestic product (GDP) also increases, and vice versa (Ramady 2010).

### *1.1.3 Quinquennial Development Plan*

The Quinquennial Development Plan (QDP) was adapted by the Saudi Arabian government in 1970. The goal of this was to encourage the economy to assist the under-financed sectors. Since the implementation of the sixth QDP (from 1996 to 2000), more attention had been given to the private sector as having a major role to play in important public services and industrialisation. The Saudi Arabian Telecommunication Company (STC) was one of the first companies to obtain benefits from this plan. This became a privately owned company in April 1998, and is now one of the most profitable companies in the Saudi Arabian market (Ministry of Economy and Planning 2011).

The seventh development plan (2000 to 2005) was an integrated privatisation strategy, launched by the Saudi Arabian government (Ministry of Economy and Planning 2011). Since then, privatisation has increasingly occurred in the sectors of electricity, communications, mineral resources, air transport and insurance. The main purpose of this strategy is to involve the private sector in economic development through selling shares of ownership, establishing operate manage contracts, leasing assets, and establishing build-

operate-transfer (BOT) contracts. This participation of the private sector seeks to reduce the burden on the government of financing these sectors. Moreover, it has opened a huge share of market opportunities that has allowed individuals, with varying levels of income, to participate in selling and buying shares. With this privatisation strategy, the Saudi Arabian government has sought to improve and develop its capital market. The following sections present an overview of the most important achievements of the Saudi Arabian stock market.

### *1.1.4 Stock Market and Economic Diversification*

Since its early beginning in the 1930s, Saudi Arabia's stock market has undergone different stages of development. In the mid-1930s, Saudi Arabia's official stock market began when the first joint stock company—the Arab Automobile Company—issued shares (Tadawul n.d.(a)). The stock market remained informal until the early 1980s, when the Saudi Arabian government formed a regulated market for trading, together with the required systems to run the market. In 1984, SAMA was given responsibility for regulating and monitoring market activities.

However, the beginning of the twenty-first century witnessed the newest trend of Saudi Arabia's stock market development. In October 2001, the Saudi Arabian capital market (Tadawul) was introduced by SAMA as a new service for trading and arranging shares in Saudi Arabia. SAMA introduced the Capital Market Authority (CMA) in July 2003 under the Capital Market Law (CML). From July 2003, CMA became the responsible agency for regulating and monitoring capital market activities. This new system provides a continuous, order-driven market, with continuously updated price, volume and company information. Since 2003, the securities market in Saudi Arabia has undergone tremendous developments and changes that have allowed it to become a main potential source of funds for most of Saudi Arabia's existing firms.

Since Saudi Arabia is the world's largest petroleum producer (Energy Information Administration 2009), oil is an integral part of the country's economic system. However, in parallel with its capital market improvement, Saudi Arabia's economy has diversified. Saudi Arabia now produces and exports different types of industrial goods globally. Despite the potential threat of the 2008 global financial crisis (GFC), Saudi Arabia has

achieved strong growth, aided by high oil revenues and rapid expansion of the non-oil private sector (Enders & Williams 2008). As reported by Thiruvengadam (2010) for Dow Jones Newswires, the International Monetary Fund's (IMF) expectation was that Saudi Arabia's economy would grow by 3.7 per cent in 2010—a sharp increase from 0.6 per cent in 2009, but still below the 4.2 per cent growth seen in 2008. This growth has been noted by influential international ranking systems. For example, Saudi Arabia was ranked thirteenth out of 183 countries by the report *Doing Business 2010: Reforming for Difficult Times* (Doing Business 2009). Moreover, the private sector in Saudi Arabia is playing an increasingly important role in Saudi Arabian economic improvement. In the 1980s, the private sector accounted for less than 10 per cent of the country's GDP, whereas this expanded to 47 per cent in 2008. Figure 1.1 shows the growth in Saudi Arabia's economy, with support from non-oil sectors. This indicates the importance of non-oil sectors in supporting Saudi Arabia's economy. Non-oil sectors include both private and public sectors.

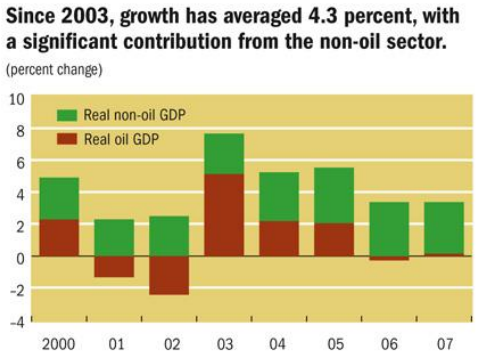



Figure 1.1 Saudi Arabia Oil and Non-Oil Growth

Source: IMF (2008, p. 56).

Despite the parallel improvements of the capital market and economy in Saudi Arabia, the collapse of the Saudi Arabian stock market at the end of 2006 and the 2008 GFC focused more attention on the way that firms finance their assets. The empirical evidence gained from the choice each firm makes in its capital structure (leverage ratio) can be used to gauge financial performance in emerging scenarios. In such a scenario, more detailed and exhaustive studies are necessary to form valid conclusions regarding the best capital structure for a company (Rajan & Zingales 1995; Harris & Raviv 1991). Furthermore, some researchers have voiced opinions regarding the influence of organisational characteristics

on the corporate leverage level, thus offering further support for the present research (Fan, Titman & Twite 2012; Hall, Hutchinson & Michaelas 2004; De Jong, Kabir & Nguyen 2008). In order to understand the enhanced financial performance of business organisations in emerging markets, this study proposes adopting a debt–total assets ratio as the most appropriate parameter.

The Saudi Arabian stock market operates similarly to those in other countries where debt interest is paid, although company reporting is undertaken according to Saudi Arabian regulations and standards. These regulations and standards disallow debt interest. Hence, firms operating in Saudi Arabia prefer to use equity (internal and external) to avoid the possibility of engaging in illegal transactions. This situation creates the expectation that a firm's leverage will be extremely low. As the equity approach is more favourable for compliance than using debt in Saudi Arabian firms' capital structure, there is a trade-off in financial planning. To investigate this phenomenon, this study proposes empirically investigating the effect of financial leverage on a firm's performance when operating in Saudi Arabia.

## 1.2 Research Problem

Since the development of the Saudi Arabian stock market in 2003, corporations have been able to substitute equity for debt more freely. However, new banks have entered the financial market, giving corporations more opportunities to borrow funds. Both fund resources (loan and equity) have experienced their own crises. At the end of 2006, the Saudi Arabian stock market collapsed, losing approximately 65 per cent of its value, and lowering confidence in the stock market as a source of funding. The 2008 GFC also lowered businesses' trust in bank loans as a source of funds. There is much debate about the best combination of funds to improve a firm's financial performance by reducing the combined risk associated with funding sources.

To examine these issues, this study's research questions are:

> How do Saudi Arabia's economic environment and current regulations under financial crises affect Saudi Arabian firms' financial structure and financial performance? In addition, how can Saudi Arabia's unique tax regulations (*zakat*) be used to improve firms' performance in the Saudi Arabian context?

## 1.3 Research Objectives and Importance

The main aim of this study was to investigate the effect of the debt and equity mix, as measured by financial leverage, on a firm's financial performance. This research focused on profitability, specifically in the Saudi Arabian capital market. This study sought to extend understandings in the literature about how financial leverage operates in a no-interest based financial system. The importance of the study derives from the importance of the current period of Saudi Arabia's economy and capital market. This study was undertaken as a result of the remarkable development of the Saudi Arabian stock market and banking system. Moreover, the importance of this study arose from considering three important elements—debt, equity and *zakat* (Islamic tax)—that affect firms' profitability in Saudi Arabia's unique environment. The results of studying the relationship between these elements in the current economic environment of Saudi Arabia can be used as a basis for future studies related to *zakat* and its relationship with other capital structure elements and firms' performance.

Specifically, the aims of the study were:

1. To calculate firms' capital structure mix indicators. This calculation included the debt and equity percentage used in the capital structure and debt ratio to total assets (leverage);
2. To calculate the financial performance of Saudi Arabian firms by using profitability indicator measurements—namely, net profit margins (NPM), gross profit margins (GPM), return on assets (ROA) and return on equity (ROE);
3. To empirically examine the relationship between debt levels and financial performance (profitability), including determining whether:
    a. Higher financial performance levels are related to lower leverage levels;
    b. Lower leverage levels lead to higher profit margins;
    c. Lower leverage levels lead to higher GPM;
    d. Lower leverage levels lead to higher ROA; and
    e. Lower leverage levels lead to higher ROE;
4. To find the degree to which *zakat* is influenced by capital structure and the degree to which *zakat* affects financial performance; and
5. To formulate a conclusion about the best balance between debt and equity that can be seen to improve corporate profit performance.

## 1.4 Contribution to Knowledge

Since 2003, Saudi Arabia's firms have been able to vary their fund resources between debt and equity. However, the risks involved with both of these resources, as highlighted by the 2006 Saudi Arabian stock market collapse and the 2008 GFC, make it difficult for corporations to confidently decide on the best mix of capital structure (debt and equity).

The outcomes of this study will help firms choose the most suitable capital mix in order to improve their financial performance in the presence of low-stream tax applications. This study will provide a new theoretical view on the traditional capital structure theories—most notably, the trade-off and pecking order theories—that are most frequently studied in Western models that have tax-shield benefits.

## 1.5 Motivation and Significance of the Study

Saudi Arabia as an emerging market is as attractive for researchers as it is for investors, as this market has the potential for rapid economic growth that is higher than the growth seen in developed markets. Although many studies have investigated the direct relationship between leverage level and performance, most of these studies have been conducted in the developed market. The emerging market—particularly the Middle East market—still requires further study. Moreover, firms in Saudi Arabia are operating in a unique environment where interest on debt is prohibited. The tax required by the Saudi government from Saudi firms is low compared to taxes in Western countries. The Saudi Arabian Department of Zakat and Income Tax (DZIT) requires Saudi firms to provide 2.5 per cent of their revenue as tax. Previous studies about the relationship between capital structure and financial performance have been built mainly on the tax shield and trade-off between the costs and benefits of using debt in a capital structure. All these above factors motivated the researcher to conduct this study to form the basis of future studies about the effect of no-interest debt and low tax on firms' capital structure choice, and its subsequent effect on their financial performance.

Hence, the primary significance of the study lies in its focus on measuring financial performance by using financial statements about capital structures. In particular, it focuses on the debt to total assets structure for publicly trading firms listed on the exchanges in

Saudi Arabia. Saudi Arabia is studied because of its particular capital market environment, taking into account the low tax application. This study was developed to examine three relationships involved in influencing financial performance in the Saudi Arabian economic environment: leverage, *zakat* and financial performance. To the researcher's knowledge, this is the first study to use this methodology to examine the relationship between capital structure and financial performance in Saudi Arabia.

## 1.6 Structure of the Thesis

The structure of this thesis is presented in Figure 1.2. Chapter 2 discusses the theoretical literature of capital structure and financial performance. It explains the background of capital structure theories that are concerned with the optimal combination of debt and equity in the financing structure, and its effect on the financial performance of a firm. It also explains the literature and empirical studies related to capital structure and financial performance. The literature used as financial indicators and the backgrounds of financial analysis theories are also presented in this chapter.

Chapter 3 highlights the economic conditions and financial system in Saudi Arabia, and how these relay Islamic regulations and teaching. This chapter has two main focuses: Saudi Arabia's economic conditions and its financial system. *Zakat*, the compulsory Islamic tax, is detailed in this chapter. This includes its definition and a discussion of the *zakat* base and *zakat* calculation, as explained by the Saudi Arabian DZIT.

Chapter 4 presents the research design, hypotheses and methodology employed to address the research questions for this study. This chapter is divided into six sections. The first section discusses the hypothesis development for this study. The second section gives information about the sampling and data collection processes. The third section discusses the measurement methods for the variables, and their underlying rationales. Detailed information about the statistical approach and analytical methods is discussed in sections four and five. The last section introduces the research model and developed framework of this study.

Chapter 5 presents the data analysis and discussion. The results are presented systematically in six sections. The first section discusses the screening, cleaning and

transformation of data. The second section provides details about the variables by using descriptive analysis. Hypothesis testing is presented in sections three, four and five. Finally, section six provides the results discussion.

Chapter 6 presents the conclusions and recommendations of the thesis. Recommendations based on the findings of this study are made with respect to (a) the need for further research, and (b) how the results of this study can be applied in practice to assist Saudi Arabian firms to improve their financial performance. Finally, the overall conclusions are presented.

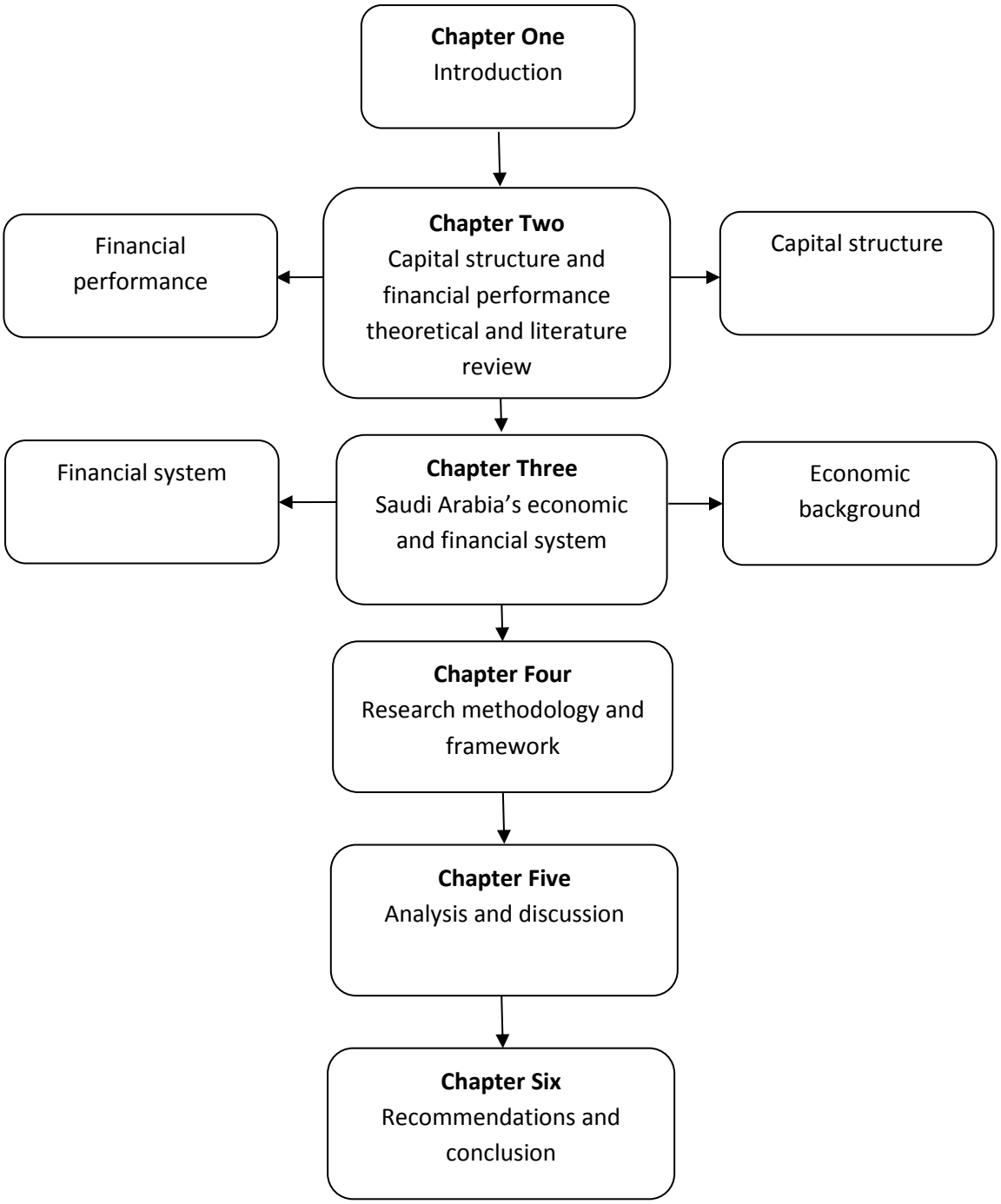



Figure 1.2 Thesis Structure

# Chapter 2: Literature Review

## 2.1 Introduction

Determining the capital structure mix that will improve a firm's value is a contentious topic in financial literature. The literature shows that what might be suitable for one firm might not be suitable for firms in other industries or regions. Thus, studying the effect of the capital structure mix in a specific environment helps determine the mix that will improve firms' performance in that environment. A study of Bhatti and Nguyen (2012) has proven that there is a dependence structure among financial markets. Any extreme events of one market will affect the other. Accordingly, the Saudi Arabia debt market and stock market are not isolated from other market events. The GFC has affected in particular the Saudi Arabia debt market. Attention has become more focused on the equity market rather than the debt market. However, the Saudi Arabia stock market, as stated earlier, has experienced its own crises. This chapter reviews the literature related to capital structure theories, focusing on the characteristics affecting the choices between debt and equity in capital structure performance, and the effect of this choice on firms' financial performance.

This chapter is divided into seven sections. Section 2.2 introduces theories related to capital structure and financial performance. Section 2.3 introduces a literature review of debt–equity choices. Section 2.4 introduces a literature review related to the factors that influence firms' financial performance. Section 2.5 focuses on studies relating to the effect of privatisation and IPO on firms' financial performance. Section 2.6 focuses on literature related to assessing firms' performance. Section 2.7 concludes the chapter.

## 2.2 Theories Underlying Capital Structure and Firms' Performance

Modigliani and Miller's (1958) study gave a substantial boost to the development of a theoretical framework that has since been used by most financial studies (Abor 2005). Modigliani and Miller (1958) concluded that capital structure is irrelevant to determining a firm's value (Ebaid 2009). Modigliani and Miller's proposition is built on the assumption of a perfect market where there is no tax and bankruptcy disasters. As a response to this statement, the trade-off theory and pecking order theory were introduced. These theories were developed in opposition to the unrealistic assumption of Modigliani and Miller's

proposition of perfect capital structure. These theories were developed to explain the rules of debt and equity in firms' capital structure performance in the real capital structure market founded on tax and bankruptcy disasters.

In addition to the theories that explained choices of capital structure, other theories have focused on ethics and the way managers use capital structure. The main purpose of a manager is to maximise the value of the firm. However, issues arise when this central purpose conflicts with the goals of other involved parties, such as shareholders and stakeholders. This leads to the question of who should be given more attention when seeking to maximise the value of a firm: internal parties (such as employees) or external parties (such as society). The following section introduces the theories that outline capital structure choices and the responsibilities of managers towards the internal and external beneficiaries of a firm.

### *2.2.1 Modigliani and Miller's Propositions*

Modigliani and Miller (1958) concluded that capital structure is irrelevant to determining a firm's value (Ebaid 2009). This is known as 'MM Proposition I'. They believed that a firm's value is not related to its mix of debt and equity. They categorically stated that, 'The average cost of capital to any firm is completely independent of its capital structure and is equal to the capitalization rate of a pure equity stream of its class' (Modigliani & Miller 1958, pp. 268–269). They believed that the value of a firm is determined by its real assets, and not by the amount of debt and equity available as part of its capital structure. This was built on the assumption of a perfect capital market in which there are no taxes, no bankruptcy costs, and disclosure of all information. They originally focused on the advantages of debt finance through the effects of corporate tax.

Five years later after MM Proposition I, Modigliani and Miller (1963) modified their conclusion about the relationship between a firm's value and its mix of capital structure. They believed that a tax shield can be generated by using debt. Using more debt will reduce the tax that needs to be paid. Hence, they suggested that the optimal capital structure for a firm is one that totally uses debt with no equity. This is known as 'MM Proposition II'.

As aforementioned, Modigliani and Miller's propositions were built on the assumption of a perfect capital market in which there are no taxes, no bankruptcy costs, and disclosure of all information. Moreover, they originally focused on the advantages of debt finance through the effects of corporate tax. As these two propositions are unreasonable in the real world, more theories developed in response to these two propositions—the details of which are outlined below.

### *2.2.2 Pecking Order Theory (Information Asymmetry Theory)*

Donaldson (1961) founded the pecking order theory when he conducted an interview survey of 25 large United States (US) firms, and concluded that management strongly prefers to use internal funds when available, and prefers not to use external sources of funds unless internal sources are unavailable. Later, Myers (1984) and Myers and Majluf (1984) provided a theoretical justification of Donaldson's (1961) results. They argued that information is the base that managers and investors depend upon when making a decision regarding issuing equity or borrowing money. Managers will hesitate to issue equity if they feel that it is undervalued by the market. However, investors realise that managers will hesitate to issue new equity when it is underpriced. Thus, both managers and investors react according to their available information. Based on this argument, if managers tend to issue undervalued equity (low priced equity), the wealth will be transferred to the investors against the shareholders' benefits and wealth. In this situation, internal funds and debt will be preferred to equity. Myers (1984) referred to this as the 'pecking order theory' of financing. This states that firms prefer to finance new investment first internally with retained earnings, second with debt, and last by issuing new equity.

Shyam-Sunder and Myers (1999) conducted a study to test the pecking order theory against the trade-off theory. They found that the pecking order theory is a more suitable descriptor of a firm's financial behaviour than the trade-off theory. They examined the pattern of debt financing over time and concluded that under the pecking order theory, a regression of net debt financing of the firm's deficit was observed to yield a slope coefficient close to one. They found that this hypothesis was sustained with 157 US firms that were examined for 19 years (from 1971 to 1989). However, Chirinko and Singha (2000) argued that if, contrary to the pecking order theory, firms follow a policy of using debt and equity in fixed proportions, then Shyam-Sunder and Myers's (1999) regression

will identify this ratio. As a result, finding a pecking order coefficient close to one will not disprove the trade-off theory. Hence, Shyam-Sunder and Myers's (1999) regression cannot be used to evaluate the pecking order theory or trade-off theory. They concluded that there should be alternative tests to identify the determinants of capital structure and distinguish among competing hypotheses.

In brief, this theory suggests that firms consider all the financing methods available and choose the least expensive option. This offers a framework that states that when financing new projects, firms first prefer to use internal equity, second prefer to use debt, and last prefer to use external equity. The pecking order theory predicts that high growth firms, typically with large financing needs, will end up with high debt ratios due to their managers' unwillingness to issue equity. However, Barclay, Smith and Morellec (2006) found that firms with consistently high growth use less debt in their capital structures. According to this explanation of the pecking order theory, it is expected that firms with high liquidity tend to use less debt because they are willing to use internal funds when these are available.

### *2.2.3 Shareholder Theory*

According to Danielson, Heck and Shaffer (2008), the shareholder or stockholder theory dates back to Berle and Means (1932) and Friedman (1962). However, Friedman (1962) is considered the father of the shareholder theory. His argument stated that the primary responsibility of firm managers is to maximise shareholder wealth (profit) by any legal means (Danielson, Heck & Shaffer 2008).

As discussed by O'Sullivan (2000), supporters of the shareholder theory argue that even though shareholders rely on others for the effective operation of the company, shareholders are those in whose interests companies should operate. Shareholders' wealth should be maximised because shareholders are the principals. It is argued that when corporations seek to maximise shareholders' wealth, the performance of the entire economy also improves. It is further stated that the earnings retained after interest and tax are the rewards for shareholders' behaviour—that is, for waiting and taking risks.

It is commonly accepted in financial economics and almost all other economic fields that shareholders are appropriately unrestricted for the residual profits of the corporate entity

because they are the residual risk takers. It is further argued that the equity or ordinary shareholders have no guarantee or contractual agreement for returns and they alone act economically and invest in firms. Therefore, as the residual profit takers, shareholders are concerned about allotting their funds to different options, as their aim is to profit as much as possible, yet they carry the risk that the corporation will make losses or profits (O'Sullivan 2000).

### *2.2.4 Trade-off Theory (Tax-based Theory)*

The trade-off theory has become the most acceptable theory to explain optimal capital structure in the real world. It was developed as a response to the original theory of Modigliani and Miller, and has been explained by different scholars, including Scott (1976) and Copeland and Weston (1988). The trade-off theory dates back to 1973, when Kraus and Litzenberger (1973) developed their model of optimal financial leverage. As reported by Scott (1976) and Kim (1978), the trade-off theory concludes that an optimal capital structure derives from balancing the benefits of tax that has come from using debt, against the costs associated with debt, such as bankruptcy and financial distress, and agency costs. The first form of the static trade-off theory of capital structure suggested that the trade-off between the tax benefits of debt and the costs of financial distress expect to yield the optimal level of debt to maximise the value of the firm (Myers 1984).

According to this theory, in order to achieve a suitable capital structure, firms must balance capital structure component costs successfully. This can be achieved by creating a balance between the tax savings that arise from debt, thereby decreasing agency costs, bankruptcy threat and financial distress (Ayen & Oruas 2008). The benefits of maximising a firm's value, as suggested by the trade-off theory, can be traded for the cost of issuing debt. In other words, the benefits of the trade-off theory are traded against their costs to maximise a firm's value. Saudi Arabia's tax system maintains its own identity. There is no income tax for citizens; instead, there is a fixed net worth payment called '*zakat'* (charity). Individuals and firms must pay 2.5 per cent of their annual income as *zakat*, and there is no penalty for late payment (Al-Sakran 2001). Thus, the tax system in Saudi Arabia has its own effects that may lead to a conclusion about the trade-off theory that is different from the conclusion reached for Western tax systems.

In short, the trade-off theory suggests that an optimal capital structure exists. Therefore, a firm can predict its optimal capital structure by balancing the benefits and costs associated with issuing debt. In a market where tax is expected to be very low, the cost of issuing more debt will exceed the tax benefits associated with this. Hence, in such a scenario, an optimal capital structure will have low debt and more equity.

### *2.2.5 Agency Theory*

As defined by Jensen and Meckling (1976, p. 308), the agency theory is 'one in which one or more persons (the principal/s) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent'. Agency theory is related to agency problems caused by organisational cash flows between managers and shareholders, or by benefit conflicts (Ayen & Oruas 2008). This theory suggests that there are agency costs associated with the process of diminishing agency problems (Chambers & Lacey 1999). According to Berger and Bonaccorsi (2006), capital structure decisions must be taken to reduce agency costs by decreasing the costs of equity capital with high leverage levels, thus increasing the firm's market value. They found that a one per cent decrease in equity capital ratio (equity/assets) creates a 16 per cent increase in profit efficiency. However, this study was undertaken in the US banking sector, which might have different outcomes to other non-financial sectors.

The agency theory refers to the relationship issues that exist when there is a defined relationship between the principal and the agent. An agency relationship is said to exist when a principal delegates decisions, authority or work to the agent. The problems of agency occur when the actions or intentions of the agent and the principal are dissimilar. The fundamental assumption of agency theory is that agents act rationally, are risk adverse and are self-interested. There are two problems that can occur in an agency relationship. First is the insufficient monitoring by the principal of the agent regarding whether the agent has behaved in the way instructed. Second is the distribution of risk when both of the agent and principal have different perspectives towards risk.

Firms with large shareholders might be more able to reduce overall agency costs than firms with small shareholders. This is because larger shareholders have greater resources and incentives to monitor the managers of the firm (Zerni, Kallunki & Nillsson 2010). The

relationship between the shareholders (principals) and the top management of the company (such as the board of directors [agents]) is a typical example of the agency relationship. The agency relationship emphasises how to manage the relationship effectively. First, agency theory illustrates that through information systems, the self-interest of agents can be monitored. Therefore, the formal systems applied within the firm—such as managerial reporting, budgeting systems and other sources of information (such as management surveillance and observation)—are examples of the controls of management's monitoring. In addition, agency theory explains that all or most of the controls systems (as discussed above) better define the scope or outline of agents' authority and precisely align these with organisational objectives (Leong 2005).

### *2.2.6 Cash Flow and Free Cash Flow Theory*

The free cash flow (FCF) theory considers the internal source of a firm's funds. However, FCF has costs associated with the way firms' managers deal with FCF. The focus of the FCF theory is how to balance cash flow and the costs of FCF. Scott (1981) stated that if a firm has enough cash flow to pay for their expenses, particularly debt, it will be able to survive. He argued that firms' managers will be able to use the firm's history of cash flows to predict the firm's health and future performance. He linked this with the ability of current cash flows to predict future financing status.

Jensen (1986) introduced the FCF theory and its relationship with agency costs. He clarified the effect of cash flow and FCF on firms' performance. He argued that even if cash flow has a positive effect on corporate performance, FCF might have a negative effect on corporate performance. In the case of FCF, a firm's manager might waste it or and invest it in negative net present value (NPV) projects.

The role of debt in reducing the costs of FCF was first explained by Harris and Raviv (1990). Debt can reduce the agency costs of FCF because debt financing ensures that management is restricted to making efficient investment decisions. Furthermore, debt prevents managers from pursuing individual objectives, as this would increase the firm's default. As a result, according to this theory, high leverage would have a positive relationship with profitability. However, other studies have shown a negative relationship between debt and FCF. For example, Hart and Moore (1995) argued that long-term debt

controls the ability of a firm's management to finance future investments. They stated that firms with high debt will find it hard to raise capital because new security holders will not want to have lower priority than existing creditors. Firms with low debt will attract new security holders because security holders will be the first priority to the firm. Hart and Moore (1995) believed that there is an optimal debt–equity ratio and mix of senior and junior debts if management undertakes unprofitable and profitable investments.

From the empirical studies discussed above, cash flow and FCF can be used as determinants of the way firms use debt and equity in their capital structure mix. In addition, FCF can affect a firm's performance. However, the effects of cash flow and FCF on firms' performance are still unclear, similar to the effects of capital structure mix on firms' performance and profitability.

### *2.2.7 Stakeholder Theory*

The shareholder theory and stakeholder theory are two of the most contentious theories in business and finance. As previously mentioned, shareholder theory stated that the primary responsibility of firm managers is to maximise shareholder wealth. The stakeholder theory was originally introduced by Freeman (1984) in his book *Strategic Management*. It begins with the assumption that values are a necessary part of business (Freeman, Wicks & Parmar 2004). Freeman stated that, when managers make decisions, they must consider the benefits of stakeholders (Jensen 2002) and not only the shareholders. Regardless of the controversy between shareholder theory and stakeholder theory, both focus on maximising a firm's value in order to maximise value to the beneficiaries.

The contract theory argues that sufficient importance should be placed on the interests of all stakeholders (holders of bargaining power). However, the stakeholder theory expands this view more broadly. The stakeholder theory states that the prosperity and survival of a company are maintained by the attitudes of society. Therefore, a company must not ignore its social and communal responsibilities towards society, and must perform its operations in a way that must either benefit society or at least avoid disadvantaging society. It is further expressed that, due to the decisive power of society, a corporation cannot survive without abiding by its responsibilities to society, and even if it does, unpopularity might lead it to its failure (Wei 2003).

### *2.2.8 Dual-investor Theory*

The dual-investor theory was introduced as a solution to the contradiction between the shareholder and stakeholder theories. The dual-investor theory developed with the assumption that there are two types of investors in every business project: the stockowners, who provide the business's specific capital; and the entire society, who provide 'opportunity capital', as Schlossberger (1994) defined. Therefore, there is a complementary relationship between both parties to enhance company value. The shareholder theory and stakeholder theory both consider society. However, external society (the stakeholder) is more important than the owners of a company when providing capital to a company. Without society, business cannot perform and capital cannot move.

### *2.2.9 Stewardship Theory*

Stewardship theory is an alternative to agency theory. It provides another explanation of agency cost and suggests that management is personally motivated by willingness to achieve, gain satisfaction through successfully performing challenging work, and implement responsibility and authority to benefit the firm (McClelland 1961; Herberg, Mausner & Snyderman 1959). Hence, there is no need for financial incentives to drive management's interest towards shareholders' interests and towards the firm's benefits. Donaldson and Davis (1991) found evidence to conclude that the shareholders' return, measured by ROE, is not related to the chief executive officer's (CEO) financial incentives or to incumbency of the roles of the board chair and CEO. However, they found that shareholder interests can be maximised by sharing the roles among all parties—shareholders, CEO and board chair. Despite these studies that examine stewardship theory, Davis, Schoorman and Donaldson's (1997) study is considered the base of the stewardship theory as a counter strategy to the agency theory.

### *2.2.10 Market Timing Theory*

The market timing theory is one of the most recent theories discussing capital structure. It suggests that managers, depending on their definition of firm value, tend to issue equity when they feel that the market overvalues their company (Boudry, Kallberg & Liu 2010). Baker and Wurgler (2002) examined the effect of market timing on capital structure and

found that low leverage firms are those that raise funds when their market valuations are high, while high leverage firms are those that raise funds when their market valuations are low. Thus, firms with low leverage are expected to be of high value. However, although issuing equity is often a result of good financial performance, it is not necessarily the reason for better financial performance, as this theory suggests. Rather, firms may use debt until the market overvalues their firm, then will issue equity to obtain benefits from the firm's rising share price. This theory contrasts with theories such as the pecking order and trade-off theories.

Recent Studies of Mansor and Bhatti (2011) and of Mansor, Bhatti and Khan (2012) have showed that the reaction of Islamic mutual funds' performance relative to their conventional peers and to their benchmarks either in bullish or bearish markets is similar. During bullish times, they both have positive return, but during bearish markets they have negative returns. However, the study of Mansor and Bhatti (2011) has proven that the return performance of the Islamic mutual funds is slightly better than the return performance of the conventional mutual funds during the bullish market. These findings support the idea of market timing theory from the perspective of financial firms.

## 2.3 Literature Review of the Determinants of the Choice Between Debt and Equity

It is logical to begin with a summary of how capital structure theories relate to the effect of capital structure on a firm's performance. Table 2.1 summarises the most famous theories' statements about capital structure and financial performance since Modigliani and Miller's (1958) propositions. Modigliani and Miller (1958) concluded that there is no relationship between a firm's value and its choice of debt or equity. The trade-off theory introduces the effect of assets on a firm's decision of choosing debt or equity to finance its operations. It suggests that a firm uses debt if it has a high amount of tangible assets (high liquidation value) and is able to choose equity if a significant portion of the firm's assets are intangible (Harris & Raviv 1991). Further, the trade-off theory recognises the advantages offered by tax liabilities, despite the significant threat of bankruptcy. It suggests that firms maintain optimal debt–equity ratios (Graham & Harvey 2001).

The pecking order theory predicts that high growth firms, typically with large financing needs, will end up with high debt ratios due to their managers' unwillingness to issue equity. More specifically, it states that firms prefer to finance new investments first internally with retained earnings, second with debt and last with an issue of new equity. Market timing theory states that the value of a firm is the major factor considered when issuing equity or using debt. When the market overvalues the firm, managers tend to issue more equity to obtain the benefits of selling, and vice versa. The shareholder and stakeholder theories discuss the roles of managers as maximising the value of a firm, and considering who should obtain the benefits of a firm's value and services. If a manager seeks to maximise shareholders' benefits, this might act against the benefits of stakeholders. However, considering stakeholders' benefits might affect the firm's value. Finally, the dual-investor theory arose to solve the conflict between the shareholder and stakeholder arguments. It states that there is a complementary relationship between all parties to enhance company value. Without society (the stakeholder), the firm (the shareholder) cannot exist.

As reported by Hart and Moore (1995) the issuance of debt by public companies arises for different reasons. For example, firms will issue debt to attain the benefits of a tax shield, as Modigliani and Miller (1963) and Miller (1977) stated. Other firms might issue debt as an analysing device to reflect a financially healthy condition to the market (Leland & Pyle 1977; Ross 1977). Some other firms use debt in the attempt to raise funds without diluting the value of equity, as Myers and Majluf (1984) argued.

Table 2.1 Summary of Theories Underlying Capital Structure and Firm Performance

| Theory Name | Theory Developers | Theory Statements |
|---|---|---|
| **MM propositions** | Modigliani and Miller (1958) | Capital structure is irrelevant to determining a firm's value. The value of a firm is determined by its real assets, not by the amount of debt and equity available as part of its capital structure. |
| **Pecking order theory** | Donaldson (1961) | Managers tend to finance new projects by first using internally available funds, with external funds being their last choice. |

| | | |
|---|---|---|
| **Shareholder theory** | Friedman (1962) | The primary responsibility of firm managers is to attain shareholder wealth (profit) by any legal means. |
| **Trade-off theory** | Kraus and Litzenberger (1973) | There is an optimal capital structure that derives from balancing the benefits of tax from using debt against the costs associated with debt, such as bankruptcy or financial distress. |
| **Agency theory** | Jensen and Meckling (1976) | Capital structure decisions must be taken to reduce agency costs by decreasing the costs of equity capital with high leverage levels, thus increasing the firm's market value. Hence, leverage is the solution to any conflict that might arise. |
| **Cash flow theory** | Scott (1981) | If the firm has enough cash flow to pay its expenses, especially debt, it will be able survive. |
| **Stakeholder theory** | Freeman (1984) | Stakeholders are the drivers of a firm's success. |
| **FCF theory** | Jensen (1986) | FCF might have a negative effect on corporate performance. A firm's manager might waste FCF or and invest it in negative NPV projects. |
| **Dual-investor theory** | Schlossberger (1994) | All parties (stakeholders and stockholders) are important to ensure a firm's survival and success. |
| **Stewardship theory** | Davis, Schoorman and Donaldson (1997) | Management is personally motivated by willingness to achieve, gain satisfaction through successfully performing challenging work, and implement responsibility and authority to benefit the firm. |
| **Market timing theory** | Baker and Wurgler (2002) | Managers, depending on their definition of firm value, tend to issue equity when they feel that the market overvalues their company. |

Many studies have examined capital structure theories. However, these have failed to reach a single conclusion that can be generalised for all types of firms in all circumstances. Myers (2001) argued that there is no complete theory of the debt–equity choice, and no reason to expect a complete theory of debt–equity choice. Moreover, Brealey and Myers (1991, p. 883), in their book *Principles of Corporate Finance*, listed capital structure as one of the 'ten unresolved problems in finance'. Harris and Raviv (1991) suggested that the reason for this unsolved problem is that these studies were undertaken during different periods, using different measures of leverage and explanatory variables. Different methodologies have resulted in different conclusions and different explanations.

Different environments might also account for the inconsistencies in these results (Al-Ajmi, Abo Hussain & Al-Saleh 2009). These authors stated that, due to this complexity, the results from one environment cannot necessarily be generalised to other circumstances in other contexts. Supporting this assumption, a study by Booth et al. (2001) found that companies in developed markets typically have more long-term debt and higher long-term debt–total debt ratios than companies in emerging markets. Regardless of the level of short-term debt that companies in emerging markets have in their capital structure mix, according to this finding; these companies do not prefer debt as a main resource of their funds.

The choice between debt and equity might differ from one firm to another based on each firm's particular circumstances. Companies can choose different fund sources. As Mazhar and Nasr (2010) stated, there are three primary sources of finance for companies:

1. Cash surplus from operating activities (earnings);
2. New equity funding; and
3. Borrowing from bank and non-bank sources (debt).

Martin and Scott (1974) stated that when making debt–equity decisions, firms tend to consider the seven general financial condition areas of leverage. These conditions are liquidity, profitability, dividends, market price, firm size, sales growth and sales variability. Another issue that firms consider when making their financial choices is the cost and benefits that can be generated from each financing method (Titman & Wessels 1988).

Baxter and Cragg (1970) conducted a study about corporate choice among the long-term financing instruments of common stock, convertible bonds, bonds and preferred stock (Figure 2.1). They believed that each firm can have its own optimal financial structure. However, this structure cannot be exactly identified. They stated that for long-term financial decisions, some circumstances can affect the choices of particular instruments. Their main two findings were:

1. The choice of the source of finance used is not purely random; the study's variable probability models fitted the data significantly more closely than did their constant probability models;
2. The dependence on the probability of a corporation making a particular decision about the independent variables did not accord closely with what might be expected.

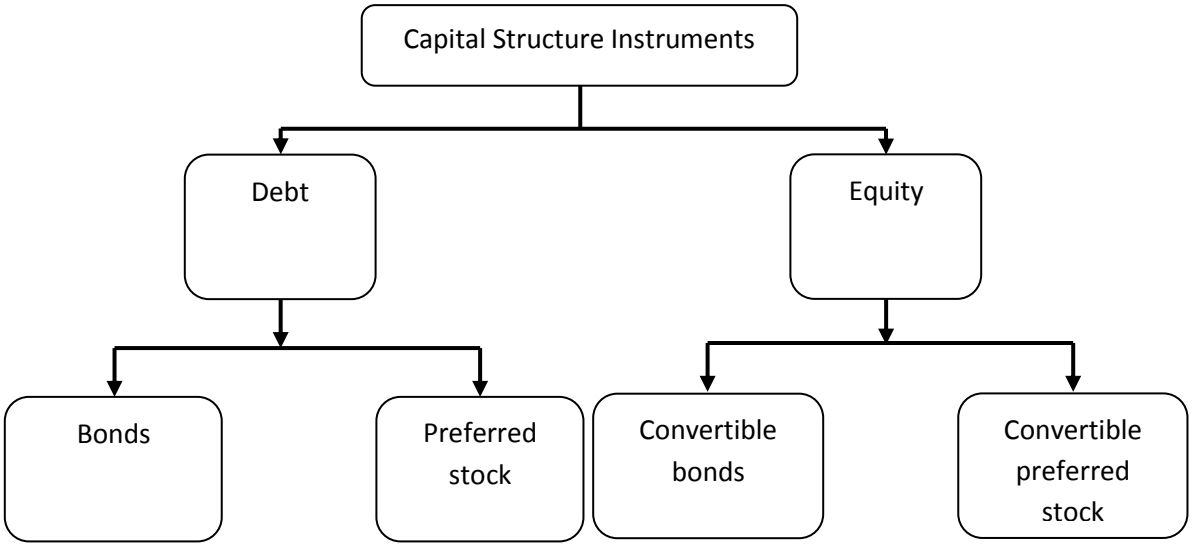



Figure 2.1 Capital Structure Instruments
Source: Baxter and Cragg (1970).

Martin and Scott (1974) found that high payout, low profitability and a high proportion of fixed assets all tend to indicate a debt issue. The payout effect is consistent with the notion that companies attempt to minimise transaction costs in their joint financing and dividend policy decisions. Alternatively, a high payout may indicate low risk. The profitability

variable may be proxy for the timing effect if profitable firms tend to be those whose share prices have increased the most.

Taub (1975) studied the factors affecting a firm's choice in the debt–equity ratio. He examined explicitly the relationship between the overall debt–equity ratio of a firm and its choice of new financing objectives. He argued that firms issue new securities to adjust their current debt–equity ratio to a new debt–equity ratio. He presented the current debt–equity ratio as D and the targeted debt–equity ratio as D*. When D* > D, the firm will issue new debt, and when D*< D, the firm will issue new equity. The variables he included in the study were the difference between the expected future returns on a firm's capital and the pure rate of interest, the uncertainty of the future earnings of the firm, the size of the firm, the tax rate and the firm's period of solvency. The debt–equity ratio was used as the dependent variable in his study. The results showed that there was a positive relationship in the differences between the firm's returns, long-term rate of interest and size of the debt–equity ratio. There was a negative relationship between the uncertainty of the firm's earnings and the debt–equity ratio. Tax rates were not significantly related to the targeted debt–equity ratio (D*).

An asymmetric information model developed by Ross (1977) stated that more profitable firms may face lower asymmetry costs when borrowing, thus are able to borrow more. However, other studies' findings detect a negative relationship between profitability and debt leverage (e.g. Titman & Wessels 1988; Rajan & Zingales 1995; Baker & Wurgler 2002; Fama & French 2002). In agreement with the pecking order theory, a study conducted by Faulkender and Petersen (2006) assumed that profitable firms are unwilling to use debt unless their internal funds are exhausted due to asymmetric information costs, thus lower leverage is expected.

Marsh (1982) conducted an empirical study of security issues by United Kingdom (UK) companies between 1959 and 1974. His study focused on how companies select between financing instruments at a given point in time. His study demonstrated that companies are heavily influenced by market conditions and the history of security prices when choosing between debt and equity. Moreover, it provided evidence that if companies have a target level of debt, they are more likely to be able to make choices between debt and equity at a given point in time. That is, if a company exceeds its debt target, it will issue equity;

however, if it is below its debt target, it will issue debt securities. Marsh's (1982) study provided evidence of the influence of company size, bankruptcy risk and asset composition on target debt levels. However, the study excluded preferred, convertible and multiple issues. His reason for excluding these was that they share some of the characteristics of both debt and equity, which might have led to incorrect results being produced in his analysis.

A study by Billingsley, Lamyd and Thompson (1988) extended Marsh's (1982) descriptive model of the choice between issuing debt and equity. This study included the decision to issue convertible bonds[1] of US industrial firms. The study showed that the balance sheets of companies who issued convertible bonds are more similar to those of debt issuers than those of equity issuers. Conversely, the risk/return complexion of convertible issuers is more similar to that of equity issuers. Hence, companies who already issue debt prefer to issue semi-debt (convertible bonds) because they are more comfortable with debt than with equity. This might raise another issue about the influence of a company's culture on its choice of finance instruments.

Lee and Gentry (1996) found that companies that offer equity securities have a smaller percentage of their cash outflows going to dividends, and they considered this a sign of a financially weak company. They believed that companies that have more value-creating investment opportunities are generally more profitable and financially healthier, and thus these investments generate more future net cash flows that can sustain the obligations of higher debt levels. Hence, profitable firms are more likely to issue more debt than equity, and will subsequently generate higher leverage.

Hovakimian, Opler and Titman (2001, p. 2) tested the hypothesis that 'firms tend to move toward a target debt ratio when they either raise new capital or retire or repurchase existing capital'. Most of their ideas about capital structure choice come from the trade-off theory, which suggests that there is a trade-off between the costs and benefits of debt and equity financing. There were two main results of their study. First, they suggested that with past profits being an important predictor of observed debt ratios, firms often make finance

[1] A convertible bond is a type of bond that can be converted by the holder into shares of common stock in the issuing company, or to cash of equal value after a period of usually 10 years. It can be issued with lower prices than the original price of bonds. Hence, it can be considered here as a type of equity.

and repurchase decisions that offset these earnings-driven changes in their capital structures. When firms tend to raise or retire amounts of new capital, the static trade-off models drive their choices about the target capital structures suggested by the model more than offsetting the effects of accumulated profits and losses. Second, they proposed that stock prices play an important role in determining a firm's financing choice. This result is consistent with the market timing theory, which states that managers tend to issue shares when they consider their stock price to be high.

The static trade-off theory, as introduced in the third section of this chapter, states that when a company tends to maximise its values, it will expand the use of debt in its capital structure. This is because the interest expense is tax deductible. In response to this theory, many studies have highlighted the role of tax on a firm's choices of debt and equity. For example, MacKie-Mason (1990) focused on the decisions of issuing debt versus issuing equity, in relation to tax. His paper provided clear evidence of the significant effects of tax on financing decisions. In particular, his study clarified the relationship between tax shields and the motivation to use debt. He found a positive relationship between debt issuances and tax rates. He indicated that previous studies examining tax benefits have suggested that firms with low expected marginal tax rates on their interest deductions are less likely to finance new investments with debt. He added that tax shields should be considered only to the extent that they affect the marginal tax rate on interest deductions. He believed that even though deductions and credits lower the average tax rate, they only lower the 'marginal' rate if they cause the firm to have no taxable income and thus face a zero marginal rate on interest.

Al-Sakran (2001) suggested that a firm's financial decisions are affected by its profitability, and that issuing debt means that firms have an investment opportunity that exceeds their internal funds. He added that debt usage may be a signal to the public about a firm's current situation, and that the firm expects future earnings from the new investment. However, using debt in a firm's capital structure might also be a sign of impending financial problems that could lead to poor financial performance and potential bankruptcy. The public (equity resources) usually will not invest in an unprofitable firm.

A recent study by Charalambakis and Garrett (2010) showed that firms with high average tax rates prefer to issue debt to equity, and firms with a high probability of financial distress

are less likely to issue debt. In their study, they focused on debt–equity choices instead of debt ratios. They argued that corporate tax status and the probability of financial distress are naturally associated with debt ratios and that there is a mechanical association between profitability and debt ratios. They stated that this association might limit the ability to understand how firm-specific factors affect corporate financing decisions. However, in this study, the debt ratio was used to examine its relationship with firms' profitability indicators.

Dewa and Ibrahim (2010) conducted a study about the factors that can affect and influence a firm to issue private placement of equity (PPE)[2] in Malaysian firms. Their research objective was to test the relationships between earning performance, asymmetric information, stock price run-up, agency cost and firm size with the choice to raise equity privately. They found that small firms that suffer asymmetric information and negative earnings performance tend to choose equity private placement as a tool to raise their capital. Their study considered pecking order theory, which states that firms tend to avoid using external funds whenever internal funds are available. As stated by Titman and Wessels (1988), according to this theory, when financing new projects, firms prefer to use internal equity first, debt second and external equity last. Thus, there are two types of equity here: internal and external.

Graham (2000) detailed the non-tax factors that can affect the debt policy of firms. He explained six factors that can influence a firm's decision regarding debt choice. These factors were:

1. **Expected costs of financial distress:** In this section, Graham (2000) referred to the trade-off theory, which implies that firms use less debt when the expected costs of financial distress are high;
2. **Investment opportunities:** Graham (2000) believed that debt can be costly to firms with excellent investment opportunities. He referred to Myers's (1977) argument, which stated that shareholders sometimes ignore positive NPV investments if project benefits accrue to a firm's existing long-term debt (bondholders);

[2] PPE relates to securities issued by firms and sold without an initial public offering to a number of chosen private investors.

3. **Cash flows and liquidity:** Graham (2000) stated that cash flows and liquidity can affect the cost of borrowing. Regarding cash flow, he referred to Myers's (1993) notes that possibly the most pervasive factor in empirical capital structure is the contradictory relationship between debt usage and profitability. Regarding liquidity, the most basic notion is that illiquid firms face high *ex-ante* borrowing costs. He referred to Myers and Rajan (1998), who stated that, in certain circumstances, liquid firms have more difficulty credibly committing to a specific course of action, in which case their cost of external finance is larger;
4. **Managerial entrenchment and private benefits:** Graham (2000) stated that, with respect to agency theory, corporate managers can choose conventional debt policies to the benefit of their personal utility functions, rather than maximise shareholder value. He referred to Stulz's (1990) argument, which stated that managers can control corporate resources to pursue their private objectives. They will try to avoid paying excess cash flow as interest payments. Jung, Kim and Stulz (1996) found support for the conclusion that managers lead some firms to issue equity, even though they should issue debt. Berger, Ofek and Yermack (1997) found that managers tend to use debt conservatively. In particular, as explained by Graham (2000), managers who are sure about the security of their positions tend to use less leverage; however, when they experience any threat to their job security, they will use high leverage;
5. **Product market and industry effects:** For these factors, Graham (2000) reported three different product and industry effects:
    a. **Industry concentration**[3]**:** Phillips (1995), as reported by Graham (2000), linked product market characteristics to debt usage. Phillips's (1995) study is an important study regarding firms' capital structure and leverage choices. Four industries were investigated in this study: fibreglass, tractor trailer, polyethylene and gypsum. Phillips (1995) found that the output was negatively associated with the average industry debt ratio for the fibreglass, tractor trailer and polyethylene industries. In these industries, it was found that firms that increased their financial leverage either lost market share or failed to gain market share when smaller competitors departed the industry. Moreover, the operating margins increased and sales decreased for the recapitalising firms in these three industries. However, the gypsum industry results showed that

[3] Graham (2000) used sales and assets indices to gauge industry concentration.

industry output was positively associated with debt ratio. These results showed that increasing debt might control a firm's ability to generate new investment opportunities. When anticipating future operations and output, firms can change the debt level in their capital structure;

b. **Product uniqueness:** Graham (2000) referred to Titman's (1984) argument that firms producing unique products should use debt carefully. If the firm of a unique product liquidates, it will reflect relatively large costs on its customers because of the unique servicing requirements of this product. It will also affect its suppliers and employees because they have product-specific skills and capital. By using debt, the chance of liquidation is high. Therefore, according to Graham (2000), such firms should avoid debt to keep the probability of liquidation low;

c. **Cash flow volatility**[4]**:** If firms operate in an industry that is characterised by volatile or cyclical cash flows, they will use debt conservatively (Graham 2000). This type of firm is associated with high risk of losing cash; thus, using debt may increase the risk of bankruptcy. Hence, these types of firms are expected to have lower leverage than other firms with stable cash flows;

6. **Other factors that affect debt policy:** Graham (2000, p. 1911) highlighted four other factors that affect firms' debt policy. These factors include financial flexibility, informational asymmetry, size and asset collateral. Regarding financial flexibility, Graham argued that using debt can help firms preserve financial flexibility, resist economic bumps and retain cash for future acquisitions. Informational asymmetry also can affect firms' debt policy. Information asymmetry was discussed in Section 2.2.3. The size of a firm also affects its debt and capital structure choices. Large firms are able to locate more debt resources with lower prices. According to Graham (2000), large firms are more diverse and their size allows them to survive unexpected economic problems and overcome financial distress. Thus, large firms are expected to have more debt than smaller firms. Finally, asset collateral is another issue that can affect firms' capital structure choices. Logically, firms with asset collateral can borrow more easily and cheaply than smaller firms.

[4] Graham (2000) measured industry cash flow volatility with CYCLICAL: the average coefficient of variation (operating income in the numerator, assets in the denominator) for each two-digit Standard Industrial Classification (SIC) code. The SIC code system was developed in 1937 by the US government to classify industries with a four-digit code. However, it is being replaced by a six-digit North American Industry Classification System (NAICS), which was released in 1997 (see Bhojraj, Lee & Oler 2003).

By studying the above factors, Graham (2000, p. 1901) concluded that:

> The typical firm could double tax benefits by issuing debt until the marginal tax benefit begins to decline. I infer how aggressively a firm uses debt by observing the shape of its tax benefit function. Paradoxically, large, liquid, profitable firms with low expected distress costs use debt conservatively. Product market factors, growth options, low asset collateral, and planning for future expenditures lead to conservative debt usage. Conservative debt policy is persistent.

These studies reveal the effects of firms' characteristics—such as assets structure, size and profitability—on the choice of debt–equity instruments. Firms with high profit and strong financial positions are expected to issue more debt than equity. Market circumstances and tax issues influence choices of financial instruments. With the benefits of a tax shield, firms prefer to use debt rather than issue more equity. However, this tax shield might be diminished by the high rate of interest for debt. Moreover, when the market overvalues the firm share price, managers may tend to issue more equity than debt. Moreover, as the pecking order theory suggests, firms with high liquidity will depend more on their internal funding and less on debt. Hence, firms with high liquidity seem to have lower leverage.

## 2.4 Literature Review of Factors Influencing Firms' Financial Performance

As discussed in previous sections, capital structure choice is one of the factors that financial studies and theories have found to influence firms' performance. However, Zeitun (2006) examined the determinants of corporate performance and the probability of default of Jordanian publicly listed companies. The results of this study showed that a firm's capital structure is negatively and significantly related to corporate performance, but positively and significantly related to its failure. However, measured capital structure was measured using total debt–total capital ratio, instead of debt–equity ratio. This was because the sample included some firms that had negative equity during 1989 to 2003 because of falling equity values caused by the Gulf Crisis.

Financial statements, which introduce firms' financial performance, can be influenced by many factors in addition to the effect of the capital structure mix. This relationship is depicted in Figure 2.2. Some of the factors that influence the outcomes of financial

statements are quantifiable, while others are not. Some are external to the firm, while others are internal. There is also overlap between these factors (Boswell 1973). A firm's performance might be influenced by economic conditions and government policies, which are external factors, and by the firm's policies and managerial financial decisions, which are internal factors. Many studies have examined the factors that influence financial performance from different perspectives. This section introduces the literature discussing factors that might influence a firm's performance, including capital structure.

The market timing theory and stakeholder theory suggest that external market conditions can drive firms' performance. Other theories, such as the shareholder and agency theories, focus on internal factors, manager behaviour and shareholder interest, for example, as the main factors that drive firms' performance. Another school of thought considers internal factors and external factors. Hansen and Wernerfelt (1989) considered managerial behaviour (as an internal factor) with society paradigm (as an external factor), together with their fit with the environment, as the major determinants of a firm's success and profitability. Hansen and Wernerfelt (1989) used three models of a firm's performance. Their study was the first to assess the relative importance of external and internal factors. They used three examples to emphasise and integrate these factors. The first example was from an economic perspective, the second example was from an organisational perspective, and the third example was an integration of the other two. The results highlighted the importance of external factors (economic) and internal factors (organisational behaviour) in explaining firms' performance.

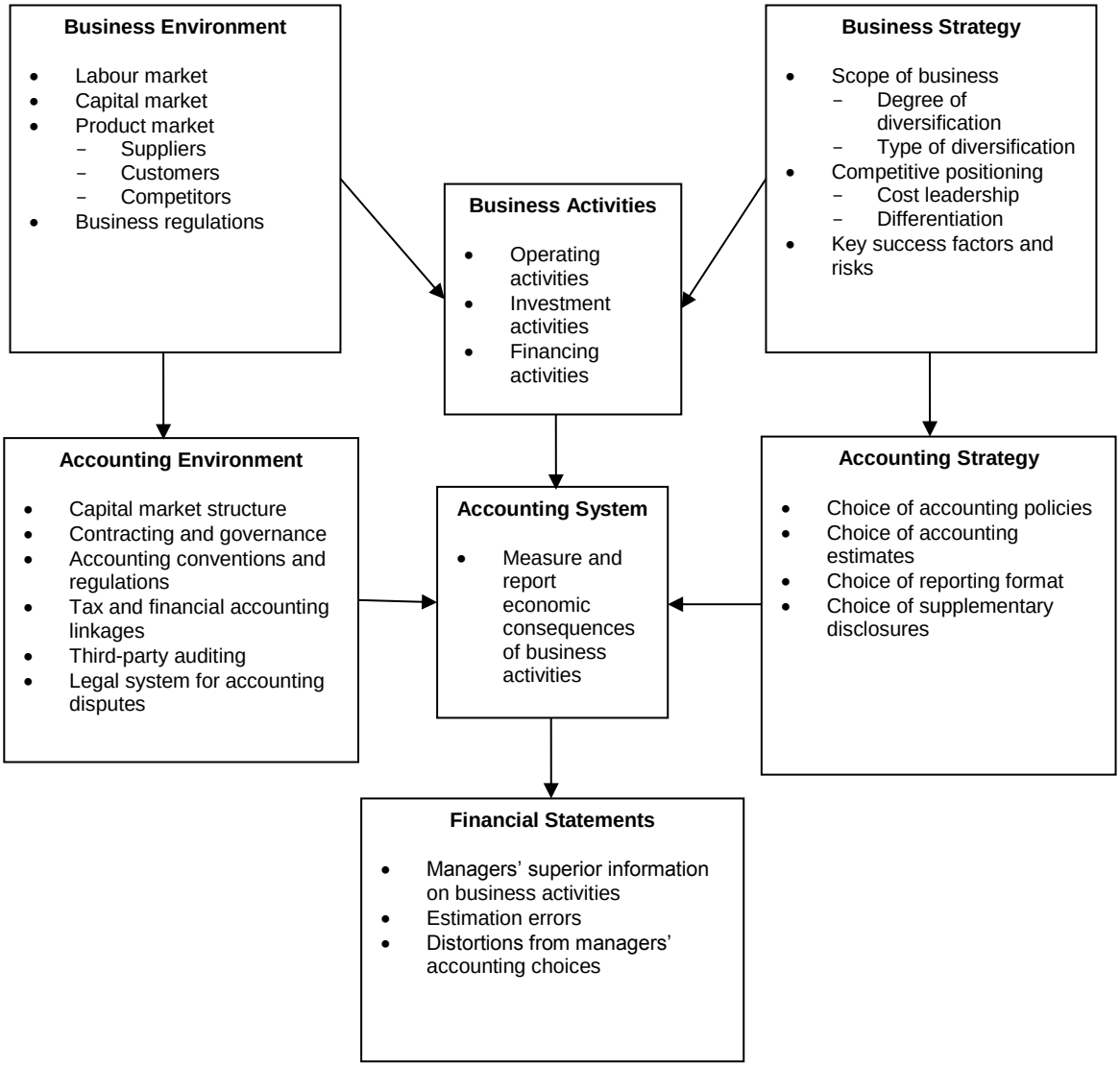



Figure 2.2 The Integrated Factors that Affect Firms' Performance

Source: Palepu, Healy and Bernard (2000, pp. 1–4).

### *2.4.1 Capital Structure and Financial Performance*

Modigliani and Miller (1958) believed that the value of a firm is determined by its real assets and not by the amount of debt and equity available as part of its capital structure. Many studies have been undertaken to examine the determinants of capital structure and the choice between equity and debt financial instruments. However, the question remains whether the choice between debt and equity has any effect on a firm's performance. Studies of the determinants of capital structure mix have provided some evidence that

could be used as an indicator of the relationship between capital structure mix and firm performance. This section will highlight studies that have examined the effect of debt and equity choice on the financial performance and profitability of a company.

Since Modigliani and Miller's (1958) landmark paper, the cost of capital, corporate finance, the theory of investment, and the theory of capital structure and its effect on firm value and financial performance have remained confusing issues (Ebaid 2009). Some theories consider the roles of managers to maximise a firm's value and subsequently shareholders' benefits. This is central to a firm's effectiveness (Chakravarthy 1986). The importance of shareholders emerges from the degree to which they form the capital structure of the firm issuing the shares. However, debt holders can also influence a firm's value, depending on debt benefits. In this study, capital structure refers to the way that firms finance their activities by using a mix of debt and equity.

The trade-off theory suggests that there is an optimal capital mix that can help maximise a firm's market value by considering both the costs of bankruptcy and the tax-shield advantage of debt capital (Adeyem & Oboh 2011). This theory predicts a positive relationship between a firm's choice of capital structure and its market value. According to Miller (1977), by using debt, tax savings appear large and certain while the bankruptcy cost appears negligible, thus implying that many firms are more highly leveraged than they actually are. Myers (1984) argued that if this theory was valid, then tax indicators should provide an important hint about the optimum capital structure decision that should increase the value of the firm.

According to Adeyem and Oboh (2011), the static-order hypothesis also suggests that more profitable firms carry more debt in order to be able to get tax deduction over their profit. However, Myers (1984), Titman and Wessels (1988) and Fama and French (2002) criticised this suggestion. For example, Myers (1984) suggested that managers will issue equity if they notice that the company price is increased in the equity market, which in this case will increase equity over debt. The trade-off theory suggests that larger and more mature firms, which are expected to have a high equity price, use more debt than equity in their capital structure.

Reducing agency costs is one of the issues associated with high leverage levels. Jensen and Meckling (1976) and Jensen (1986) argued that high leverage can help a firm's performance by reducing conflicts among shareholders and managers concerning FCF. Jensen (1986) stated that firms with high FCF and low growth opportunities are expected to have high debt levels. He further argued that firm managers tend to use internal funds (FCF) to avoid shareholder control. However, shareholders tend to avoid this by reducing cash flow by raising debt.

Since Jensen and Meckling (1976) and Jensen (1986) argued that capital structure influences firm performance, several researchers have conducted studies to examine the relationship between financial leverage and firm performance. In India, a study by Majumdar and Chhibber (1999) found a negative relationship between capital structure (debt level) and firm performance. Likewise, Chiang, Chang and Hui (2002) found a negative relationship between high leverage (high gearing) and firm performance, such as profit margin, in the Hong Kong property and construction sectors. Abor (2005) found a positive relationship between short-term debt and total-term debt and firm profitability in Ghana; however, he also found that long-term debt was negatively related to firm profitability. Korteweg (2004) found a negative relationship between leverage and returns. He tested MM Proposition II, which states that firms can benefit from tax shields when using debt because using more debt will reduce the tax that needs to be paid. In their study about the relationship between capital structure and firm performance, Bistrova, Lace and Peleckiene (2011) found evidence that supports the pecking order theory. Their study showed a negative relationship between the level of debt and capital profitability. Hence, firms should avoid using external funds if they can use internal funds.

There have been a few studies examining the relationship between leverage levels and the financial performance of firms in the Middle East, particularly in Saudi Arabia. The studies that have been undertaken offer mixed results about the relationship between leverage levels and financial indicators. For example, Abdullah and Elsiddiq (2002) concluded that the total debt ratio is negatively related to profitability, liquidity and growth opportunity in Saudi Arabian firms. AL-Sakran (2001) found a negative relationship between the total debt ratio and growth opportunities, as well as profit margin and ROA.

Al-Dohaiman (2008) conducted a study about the determinants of capital structure of Saudi Arabian listed and unlisted companies. The main objective of this study was to extend prior research by investigating both listed and unlisted companies in Saudi Arabia, where many cultural and institutional features can affect financing decisions in a different manner to those in developed countries. The results showed that companies in Saudi Arabia generally have substantially lower levels of debt and lower agency cost levels. He argued that this finding was related to the low tax regime and other environmental characteristics. He found that the unlisted firms had more short-term debt and less long-term debt than the listed firms, as has been found in other countries.

Some studies have considered debt and equity as tools to reduce FCF problems (Harris & Raviv 1991; Jensen 1986). Firms' managers can use FCF to finance projects with negative NPV and to expand a firm beyond its optimal size (Jensen 1986). Using higher debt levels can reduce the ability of managers to use FCF. Managers of Saudi Arabian firms have more power than do shareholders. This leads to the assumption that equities are the first and best choice for Saudi Arabia's firms, with debt considered the last choice.

Ebaid (2009) concluded that leverage levels have a negligible effect on firm performance. Zeitun and Tian (2007) concluded that a firm's capital structure has a significantly negative effect on performance measures. However, they also found that a firm's short-term debt to total assets level has a significantly positive effect on the market performance measure (Tobin's q)[5]. Moreover, in his study of the relationship between debt maturity and specific characteristics of firms, Abdullah (2005) found no statistically significant evidence for the relationship between debt and profitability. However, he found that total debt is negatively and significantly related to liquidity and asset structure. By examining these studies, it can be concluded that a negative relationship exists between the level of leverage and financial performance of firms in Saudi Arabia.

Leverage has significant information content that can be used to explain stock returns, which can be used to explain a firm's performance. Artikis and Nifora's (2012) study found evidence of the effects of capital structure (leverage) on stock return. They found that

[5] Tobin's q is a performance measurement developed by Tobin (1969). It is the ratio between the market value and replacement value of the same physical asset. $\text{Tobin's q} = \frac{\text{Total market value of firm}}{\text{Total asset value}}$

leverage and value risk factors have a negative and statistically significant relationship with equity returns. Thus, in order to obtain high ROE, leverage needs to be decreased. Using more equity in the capital structure mix can increase the potential equity return, which has a positive effect on firms' profitability and performance. This finding aligned with other studies' findings, such as those by Arditti (1967); Fama and French (1992, 1996, 1999, 2002); Dimitrov and Jain (2008); George and Hwang (2010); Penman, Richardson and Tuna (2007) and Garlappi and Yan (2011). Together, these findings offer an indication of the effect of leverage levels on firm performance.

### *2.4.2 Firm Size and Age*

Glancey (1998) used an econometric methodology to measure growth and profitability in small manufacturing firms. The factors examined included:

1. Firm size:
    a. Quantitative definition (such as assets and turnover);
    b. Qualitative definition (decision-making processes);
2. Firm age; and
3. Firm location.

The main argument here was that the conditions applied to larger firms could also be applied to smaller firms. In smaller firms, the owner is often also the manager, while, in larger firms, managers might not be the owners. In larger firms, the manager is often an employee of the owner, of which there might be more than one. Hence, the motivation of each manager towards firm performance might be different, which will result in different decisions that might reap different profits (Glancey 1998). However, their motivations should be towards improving the firm's value, which should result in maximising the firm's value, regardless of the firm's size. Thus, there must be other factors in smaller and larger firms that lead one firm to have more success than another. Capital structure is one of these factors, and can be examined by comparing companies' performance (especially financial performance).

As introduced in Section 2.3, larger firms obtain benefits from their size and diversification because they can borrow with lower costs and survive economic disasters with more resilience than smaller firms. Consequently, this should enable them to perform better than

smaller firms and thus generate more profit. Their diversification and low borrowing cost benefits are expected to support the profitability assumption.

The size of a firm has the potential to influence the firm's financial performance in terms of the choice of capital structure mix. As larger firms have an advantageous position in capital markets to raise external funds, they are less dependent on internal funds. Moreover, the probability of bankruptcy is lower in larger firms; therefore, they are more likely to pay dividends (Osman & Mohammed 2010). This implies an inverse relationship between the size of the firm and its dependence on internal financing. Hence, larger firms are expected to pay more dividends.

Kholdy and Sohrabian (2001) examined the pecking order hypothesis and FCF theory in small, medium and large firms. Their conclusion showed that smaller firms suffer from financial restrictions. Furthermore, the cash flow of these firms did not show any significant effect on investment. They concluded that the pecking order theory and FCF theory do not have any effect on medium firms' investment.

Despite what was aforementioned about the abilities of larger firms to survive financially, some other studies have concluded that investing in smaller firms is better, due to the lower risk usually associated with these types of firms in terms of economic disaster. Wang (2002) stated that the reason that Taiwan was less affected by the financial crisis that occurred in Asia, Russia and Latin America during 1997 to 1998 was that Taiwan had a good economy with a well-managed financial system, high saving rate of householders and few foreign debts. Most importantly, the vitality and flexibility of small and medium firms helped these firms resist the economic crisis. However, while small firms are expected to be more profitable than large firms in shorter periods, large firms are likely to be more profitable in longer periods.

Despite the complications experienced by large companies in terms of hierarchy and multi-disciplines, they have greater opportunities to attain market competitiveness and productivity. Thus, their opportunity to survive and generate profit is greater than that of smaller firms. They also have greater opportunity to diversify their sources of funding, with their potential dependence on more debt than equity due to the lower risk of debt compared to the total assets of the company.

When studying the relationship between firm growth, age and size, Evans (1987) found that age is an important determinant of a firm's success. Older firms are expected to have more historical information than younger ones and are thus expected to be more likely to survive than growing firms. In other words, older firms will be able to use their experience to avoid unexpected economic problems.

Muller and Yun (1998) reported that previous studies have found that some firms earn above-average returns on capital almost for an indefinite period. To test the validation of this finding, they conducted a study to determine whether young firms have returns on investment that are greater than their cost of capital, and whether mature firms have returns on investment that are less than their cost of capital. They found that younger firms have return on investment larger than their capital cost, while mature firms have return on investment less than their capital cost.

Vos and Forlong (1996) studied the advantage of agency theory on firms as firms move from being unlisted small businesses, to being in their first stage of initial public offering (IPO), to being mature listed businesses. They built their study on the assumption that using debt will reduce the agency cost of using equity. At the first stage, before the IPO, they found that the problem of the agency cost of equity was negligible. Hence, there was a negative agency advantage of debt at this stage. During the IPO, the role of debt in reducing agency cost was overlapped by the IPO. The IPO at this stage performed the same role as debt in reducing agency cost, and, because of this, debt lost its agency advantage. At the mature stage, more debt was used, and, consequently, the agency cost advantage was high.

Bulan and Yan (2009) conducted a study to examine the central prediction of pecking order theory, taking into account the two different lifecycle stages of firms. These two lifecycles were growth, which they defined to be the first years of a firm since its IPO, and maturity. They argued that mature firms are older, more stable and more highly profitable, with fewer growth opportunities and good credit histories. Due to these characteristics, mature firms are able to borrow more easily and at a lower cost. Therefore, older firms are expected to use debt before considering equity when they need to finance their projects. Hence, it is expected here that older firms are more leveraged than younger firms. That is, firms with higher adverse selection costs are more likely to follow the pecking order theory.

Warusawitharana's (2011) study documented firms' average profitability changes systematically with age. According to this study, in firms' early years, profitability increases. 'Early years' is defined in this study as being the first five years of operation. Between five and 10 years, the firm's profitability stabilises. After 10 years, the profit starts to decline slowly. The results also showed that younger firms realise profitability increases more frequently, and that age has a more pronounced effect on the decisions of younger firms. Eljelly (2004) found that the cash conversion cycle (CCC)[6] was more important to conclude the relationship between liquidity and profitability at the industry level. He also found that size has a significant effect on profitability at the industry level. This study is significant because it was conducted in Saudi Arabia's emerging market.

Thus, the age and lifecycle of firms have an important influence on capital structure decisions and choices of debt and equity. They also drive the behaviour of firms in terms of generating or losing profit. Older firms are expected to have more debt than equity and are expected to introduce lower portions of profit.

### *2.4.3 Industrial Organisation Economics*

From the evidence of previous studies, it appears that industrial organisation economics affect firms' performance. For example, Schoeffler, Buzzell and Heany (1974) developed a model called the 'profit impact of market strategy' (PIMS) model. Their study included data from more than 1,000 firms. They examined the relationship between firms' performance, position in the market and industry structure. They selected relative market share, product quality and investment intensity to assess the position of the firms. They used growth rate as a measure of industry structure. They concluded that the structural characteristics of the firms analysed were very significant in explaining company performance. Hatten, Schendel and Cooper (1978) studied the possibility of applying one strategy to a group of firms in the same industry. Their study showed that the strategic group concept is important to explain the performance of firms within an industry. This can explain the differences in profitability from one industry sector to another. Firms in one field or sector

[6] The CCC measures how long a firm will be low in cash when using this to increase investment in resources in order to expand customer sales. That is, it measures how many days it takes to convert resources into cash. It represents the numbers of days that a material remains on an inventory as outstanding, the number of days it remains as sales outstanding, and then the numbers of days it remains as payable outstanding.

might be more profitable than firms in other fields or sectors. However, this does not change the fact that the choice of capital structure might have its own influence on firms' financial performance.

### *2.4.4 Diversification*

Previous studies have shown that firms who are specialised have a healthier performance than those that choose to diversify. Lang and Stulz (1994) studied the relationship between Tobin's q and firm diversification. They found that there was a negative relationship between Tobin's q and firm diversification. Firms that chose to diversify were poorer performers than specialised firms. Berger and Ofek (1995) and Lamont and Polk (2002) also found that diversification reduces firms' value. However, Villalonga (2004) found no indication that diversification destroys firm value.

Graham, Lemmon and Wolf (2002) concluded that the reason for the negative relationship between diversification and firm performance is the discount that occurs before acquisition. Thus, the negative relationship derives from an effect before the diversification, and not because of the diversification itself. This can be generalised for those firms who decide to diversify their segments by emerging or acquisition. A recent study by Guo and Cao (2012) stated that diversification decisions usually occur in response to two interacting effects: the agency problem and economies of scale. They found that the diversification premium becomes smaller if a firm engages in more than three industries.

Capia and Kedia (2002) found evidence to conclude that diversification is a value-enhancing strategy for those firms that pursue it. According to them, a firm's choice to diversify is usually in response to exogenous changes in the firm's environment that also affect firm value. Accordingly, firms that choose to diversify have a higher value than exiting firms in their industry and a lower value than other firms in the industry that remain focused. However, choosing to exit the current undervalued industry to move into an industry with higher value may affect the firm's value negatively, at least in the period following diversification.

### *2.4.5 Liquidity and Firm Value*

Liquidity and cash flows can affect the cost of borrowing (Graham 2000). Firms might be rich in assets, while being poor in cash. A firm that is poor in cash may lose opportunities to undertake profitable projects. They will be forced to borrow in order to finance new projects or meet financial obligations. The cost of borrowing might be high due to the asset structure, which may be evaluated as high risk by financial institutions. This is because insufficient liquidity might result in firms being unable to pay debts or other financial obligations, which may result in bankruptcy. According to Gryglewicz (2011), when a firm is unable to pay its obligations, it is illiquid. Furthermore, aggressive liquidity management is associated with higher corporate value, despite differences in structural characteristics or in the financial system of a firm (Wang 2002). Liquidity management is important for all firms in all situations. As argued by Eljelly (2004), liquidity management is important when firms are in a good situation, but is most important during troubled times.

In his study, Eljelly (2004) found that there was a significant negative relationship between a firm's profitability and its liquidity level.[7] When firms have more assets than liabilities, this might be a sign that they are losing investment opportunities that could return in profits for the company. Having fewer current assets is risky; however, in the long term, it is profitable.

Thus, retaining more cash leads to less profit due to missing profitability investment opportunities. Illiquid firms are risky, yet profitable. However, this cannot be the case in all situations, as other factors can affect these propositions. The size and age of the firm affects the effect of liquidity on profitability. Small firms with high liquid assets might be more profitable than larger firms in the short term. Conversely, larger firms with illiquid assets might be more profitable than smaller firms in the long term.

### *2.4.6 Macroeconomic Effects*

Macroeconomic effects influence firms' performance and profitability. This is because firms are not isolated from their environment and can be affected directly or indirectly by

[7] The liquidity level was measured by the current ratio, which indicated the ability of a firm to meet its current obligations. It is the ratio of current assets to current liabilities.

changes in their surrounding environmental conditions. For example, changes in interest rates, exchange rates, money supply and GDP can affect firms' performance to varying degrees. However, this effect is mutual, as was demonstrated in Chapter 2.

Monetary policy is one of the macroeconomic factors that can affect firms' performance. Monetary policy affects the cost of debt and the availability of money and credit. These are firms' external sources of funds. Small firms and firms with liquidity and less cash flow are likely to be affected more greatly by monetary policy (Gaiotti & Generale 2002). Predictable and unpredictable inflation is one of the products of monetary policy. Inflation affects firms' performance and profitability due to its effects on society's spending ability and its effects on banks' and financial sectors' ability to allocate and manage fund resources effectively. There is evidence from previous literature indicating that there is a significant negative relationship between inflation and banking sector development and equity market activity (Boyd, Levine & Smith 2001). Therefore, the effect of inflation on firms' financial performance is strongly expected.

Banks' credit and lending policies are other macroeconomic factors that can affect firms' profitability and performance. The banking sector in Saudi Arabia plays an important role in corporate finance. Turner, Coutts and Bowden (1992) concluded that banks' credit policy and money supply significantly influence corporate performance and failure. Regarding interest rates, Cuthbertson and Hudson (1996), in their theoretical analysis of obligatory liquidation in UK companies, concluded that an increase in the nominal interest rate and income gearing caused a rise in the liquidation rate. The credit channel theory suggests that the core effect of monetary policy on interest rates is more vital because of its effects on external finance, which reduce the ability of a firm to access external funds. That is, when banks increase their interest rates, this is directly reflected in firms' net income. As clarified in Chapters 1 and 2, the banking system in Saudi Arabia is different to Western countries because it contains both Islamic banks and commercial banks. As a consequence, Islamic banks have a different credit policy to commercial banks. This could have potential effects on Saudi Arabian firms' performance and profitability.

Stock market growth and development also influence the way firms finance their activities. Eklund (2010) found that Scandinavian firms depend on earning retention more than firms in other developed economies do. He argued that this high dependence on retention is a

sign of the Scandinavian capital market's inefficiencies. An inefficient capital market will allow information asymmetries or managerial discretion to occur. That is, with an inefficient capital market, managers and shareholders will depend on the information they have to direct firms' investment and fund choices.

## 2.5 Studies Relating to the Effect of Privatisation and IPO on Firms' Performance

Megginson, Nash and Van (1994) concluded that privatisation has a positive effect on previously state-owned firms' performance. These companies were initially created as non-profit organisations. They are supported by the government and they provide services with lower prices, thus generating lower profit. Conversely, private companies that become public companies experience mixed results. Some of those companies experience improved profitability, while other experience decreased profitability.

Alanazi, Liu and Forster (2011) analysed the effect of IPOs on Saudi Arabian firms' profitability by using accounting measures, such as ROA and return on sale (ROS). They examined three types of firms that underwent the IPO process in Saudi Arabia:

1. State-owned enterprises (SOEs);
2. Private joint stock firms; and
3. Private limited liability (usually family-owned) firms.

Their findings supported their assumptions, which stated that issuing equity (by making a firm public) enhances the profitability of the firm. One of their findings was that as SOEs and private joint stock firms underwent IPO, their profitability improved. Hence, lowering leverage level by increasing equity issuing improves the profitability of firms. However, they found that when private firms underwent IPO, their profit decreased during the first year. They assumed that the reason for this is that private companies might suffer from a principal–agent conflict between the original owners and the new shareholders. Another issue might be that a company makes false claims about their profitability before going public. In order to become a public organisation, companies need to satisfy certain profitability conditions. To meet these conditions, a company might make false declarations about their profit that might not reflect the actual value and productivity of the company.

Regarding firms that have privatised, some studies have found insignificant increases in profit, while the majority have found significant increases in profitability. Cabeza and Gomez (2007) failed to find significant improvements in privatised firms' profitability and operating efficiency in the short term. However, they found significant improvements in profitability and efficiency in the long term. This finding supports the assumption that one finding in a particular environment might not be generalisable to another environment. Other studies that have found a significant improvement in profitability include those by Megginson, Nash and Van (1994); Wattanakul (2002); and Gupta (2001).

Al-Barrak (2005) conducted a study to identify empirically the motivations for Saudi Arabian firms to become public. Some of the objectives of the study were to investigate the effects of IPOs on the performance of companies, and to investigate the relationship between an increase in the number of IPOs and economic performance. The results of this study showed that companies in Saudi Arabia were motivated to become public in order to increase profit and thereby enable expansion and growth, to be more competitive, and to separate the company from that of its previous owners. In his case study, Al-Barrak (2005) found there was a decline in firm performance after the IPO.

There have been similar studies conducted in different countries. For example, in the US market, Degeorge and Zeckhauser (1993); Jain and Kini (1994); and Mikkelson, Partch and Shah (1997) found a decline in firms' profitability and operating performance after the IPO. Jain and Kini (1994) found a significant decline in operating performance after the IPO. Pagano, Panetta and Zingaes (1998) and Kim, Kitsabunnarat and Nofsinger (2004) found similar results of profit decline after IPO in the Italian market and Thai market, respectively. However, Holthausen and David (1996) argued that the accounting performance of leveraged buyout (LBO) firms is usually better than their industries at the time of the IPO and at least for the following four years, although there is some evidence of a decline in performance.

Brealey and Myers (1991) found that becoming a public company can be a good growth strategy. However, Pagano, Panetta and Zingaes (1998) found that the equity capital raised upon listing was not used by firms to finance subsequent investment and growth. They also found that becoming public reduced bank credit and was associated with a reduced leverage level.

One of the concerns when companies become public is the cost of doing so (Pagano, Panetta & Zingaes 1998). This cost appears when the price of the IPO is higher than the closing price on the first trading day. That is, the adverse selection cost appears when the IPO is underpriced, as demonstrated by:

Underpricing = (first day closing price – offer price) ÷ offer price x 100%

Underpricing demonstrates that investors are willing to pay a higher price than that initially offered for the shares of the companies. However, underpricing can be overcome by profitable public firms if the increase in profit is used to finance growth and expenditure.

Companies that undergo an IPO have to declare the strategies of their internal operations and capital uses. This results in the loss of confidentiality and reveals companies' strategies to their competitors. This disclosure might directly affect company profitability by revealing company research and development (R&D) strategies, which might subsequently negatively affect their competitive advantage. Yosha (1995) concluded that firms with sensitive R&D information are discouraged from becoming public if this will cause confidentiality losses that will be more significant than the IPO benefits.

Overvaluation of firms may cause the value of a firm to reduce after becoming public. Some studies about the motivation of the IPO have indicated that a firm may become public when it recognises that other companies in their industry are overvalued (Degeorge & Zeckhauser 1993; Cai & Wei 1997; Mikkelson, Partch & Shah 1997; Pagano, Panetta & Zingaes 1998).

The current study sought to examine the effect of capital structure (equity and debt) of Saudi Arabian public listed companies on profitability, without considering firms' situations before going public. This was undertaken to attain concentrated evidence, with no bias, of the effect of the capital structure of public companies on their operational performance in Saudi Arabia, with consideration of the free debt market. However, more research could be undertaken by considering the previous status of companies before going public, as well as the type of sectors of these companies.

## 2.6 Performance Analysis

It is important to consider the most useful tool to measure firms' performance. Qualitative methods build on the decision-making process, while quantitative methods include such things as turnover, ROA, ROS, net profits and other financial and accounting measurements. A qualitative method depends on explaining a decision process or manager's behaviour that is expected to have driven the firm's quantitative performance. It emphasises relationships rather than numbers (Reid 1993). A quantitative method is based on the results of the qualitative process. Therefore, measuring the results will enable assessment of the decision making. However, depending on the results of the decisions that have been taken, a new decision can be made to improve the existing results and attain the desired results in the future. Hence, qualitative and quantitative methods can both be used to assess the performance of firms; however, when measuring firms' financial performance, quantitative tools preferred first.

A firm's net profit (bottom line) is the outcome of a set of integrated performances, such as operation performance, financial performance, sales performance and production performance. Consequently, performance assessment tools differ depending on the goals of their outcomes and the outcomes for which they will be used. Financial performance is the concern of all parties, from managers and employees to shareholders and stakeholders. There is debate about the comparative usefulness of qualitative and quantitative performance measures; however, there is agreement about the usefulness of quantitative measures of performance (Ridgway 1956).

There is contentious debate about which financial measures best reflect the value and profitability of a company. However, financial performance metrics vary depending on the target and type of activity. In general, they are divided into two main categories: market-based measurements and accounting-based measurements. Market-based indicators seek to predict future situations and are mostly driven by factors that cannot be controlled by the firm's managers.

Margolis and Walsh (2001) found that, in 95 studies, financial performance was measured in 70 different ways. They found that there were 49 accounting performance measures (such as ROE and ROA) and 12 market performance measures (such as earning per

share [EPS] and price–earnings ratio [P/E]) used in those studies. Five studies tended to use a mix of accounting and market measures, and four other measures were of outcome performance. The majority of accounting measures and marketing measures have focused on measuring return, rather than focusing on risk. An example of an accounting risk measure is the debt–equity ratio. This measures the risk of becoming bankrupt. Most risk measures are linked to market measures because most risks derive from the market. Some of these measures may include beta, standard deviation of total return and residual error. In this study, more attention is given to accounting-based measurements because these demonstrate a firm's current situation, and are mostly driven by factors that can be controlled by the firm.

Generally, the main objective of establishing a new firm is to generate profits from its resources. Specifically, profit maximisation, maximising profit on assets and maximising shareholders' benefits are the core financial demonstrations of a firm's effectiveness (Chakravarthy 1986). This main objective can face many challenges during the lifecycle of the firm. In the first stage, the objective of the manager is to assist the firm to survive among competitors. Although efficiency and survival are closely interrelated, if a company is not using its resources efficiently, it will experience financial trouble, and its financial health will be affected by this (Anthony 1960). However, operational performance is as important as financial performance. Operational performance is central to financial performance. According to Hofer and Sandberg (1987), operational performance measures—which might include growth in sales and market share—provide a broad definition of performance because they focus on the factors that eventually lead to financial performance. Therefore, there are three dimensions of management performance that can be integrated to give an accurate view of a firm's performance and help the firm make reasonable decisions for future improvement. These three dimensions were introduced by Kanghwa (2010) and include operational efficiency, market efficiency and financial efficiency. Firms grow sustainably by managing these three dimensions of performance. One of Kanghwa's (2010) findings was that firm-specific financial risk is more influenced by such variables as quality, speed and flexibility than by cost-related variables.

When making future decisions or predictions, managers usually depend on the accounting information they have, as far as of the total information available to them about the market.

This includes financial information and material and non-public information that is only available to corporate decision makers (Collier, Mcgowan & Muhammad 2010). These authors (2010, p. 26) identified insider decision makers as 'insiders de facto'. These are individuals who have access to non-public information, such as commercial loan officers, investment bankers, attorneys and auditors.

Basheikh's (2002) study investigated aspects of financial reporting and bank lending decisions in Saudi Arabia. His study discussed the types of financial ratio covenants that are usually included in private lending agreements in Saudi Arabia. According to the results of this study, the financial ratio covenants that are usually used in loan contracts are current ratios, leverage/gearing ratios and liquidity ratios. The financial covenants assist banks by giving them quick indications of the financial position of the client.

The development of the stock and capital market might affect the choice of a suitable performance measure. With a lack of development, a stock and capital market analyst may find it difficult to use some performance measurements, such as P/E and ROS. This is because the variables that are needed for this measurement may not be able to be found or may not be accurate.

Palepu, Healy and Bernard (2000) stated that there are two ways to analyse financial performance. First is the financial ratio, which assesses how various line items in a firm's financial statements relate to one another and how they reflect the financial health of the firm. Second is cash flow analysis, which allows managers to examine a firm's liquidity and how the firm is managing its operation, investment and financing cash flows. This relationship between financial tools is illustrated in Figure 2.3.

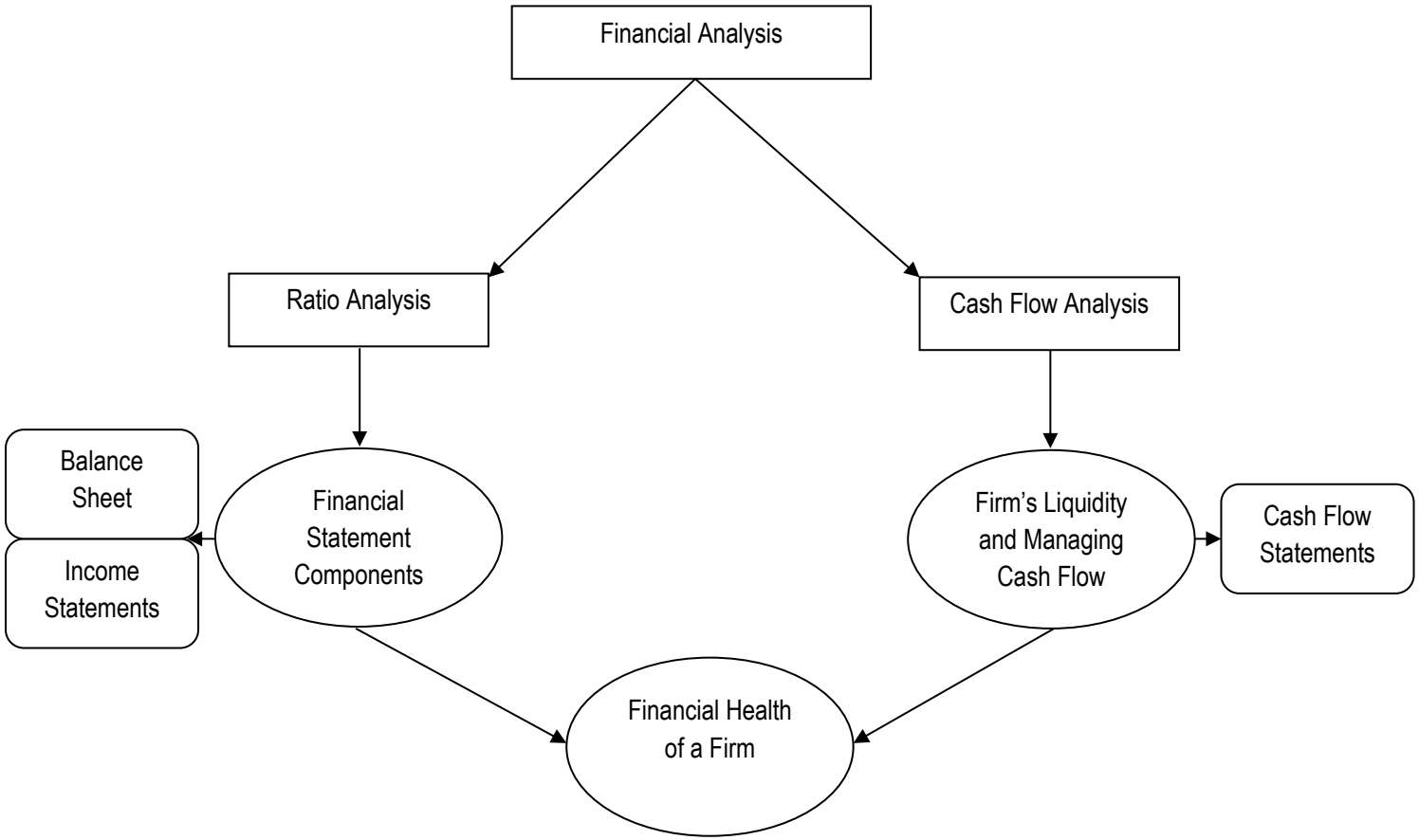



Figure 2.3 Financial Analysis Tools

Source: developed by the researcher

### *2.6.1 Ratio Analysis*

The relationship between financial statement items can be assessed by using financial ratios. Financial ratios are a tool that can be used to conduct a quantitative financial analysis by a firm's managers. They help to measure the achievement of objectives, serve as a financial control and help plan for the firm's future objectives. Ratios can also be used by investors to evaluate the situation of a company and analyse security. They can help investors choose the right time and right company in which to invest their money. Moreover, ratios can be used to create a picture of a firm relative to its closest competitors in the same industry (Bird & McHugh 1977). This use of ratios can give a better idea of firm performance than comparing ratios with other industries.

The theory of financial ratio dates back to the 1960s. Graham and Dodd's (1962) book, *Security Analysis,* is considered the first book in the field of corporate reporting and financial analysis. They wrote this book in the attempt to redevelop firms' income statements and balance sheets in order to make them more meaningful. The book also explained new techniques of financial statement analysis. Another book, *Practical Financial Statement Analysis*, written by Foulke (1961), also related to practical financial statement analysis. According to Horrigan (1968), Foulke's work was an important effort in the development of ratio analysis. His work was a foundation approach that became essential for ratio analysis worldwide.

The ratio of current assets of firms to their current liabilities, as a liquidity ratio, was one of the first ratios used during the 1960s. According to Foulke (1961), a current ratio of 2.5 was considered a reasonable margin of protection. Since then, firms' finances have been a development issue. There has been development in the field of analytical tools, including cash resources, profit planning and capital structure. These developments have given the financial managers of firms the tools to predict cash flows and plan the earnings of the firm much more accurately.

There are different types of ratios that can be used to evaluate firms' financial and operational performance. These ratios can be classified into four main categories: solvency ratios, liquidity ratios, profitability ratios and efficiency ratios. However, Kimmel, Weygandt and Kieso (2000) divided ratios into three categories: solvency ratios, liquidity

ratios and profitability ratios. They considered efficiency and operating ratios as part of these three ratios. For example, asset turnover ratio was added to profitability ratios. Ratios can also be classified according to the activity they measure (such as market ratios and accounting ratios). The current study uses the four categories that include market and accounting measurers and cover the activities that most companies undertake.

Solvency ratios (also called ‘gearing’ or ‘leverage’ ratios) measure the ability of a firm to survive over a long period. That is, solvency ratios measure the risk that a firm may face. These measures are important for long-term creditors and stockholders who are interested in a company’s long-term solvency (Kimmel, Weygandt & Kieso 2000). Liquidity ratios (also called ‘working capital’ ratios) measure the ability of a firm to pay its short-term obligations when due. Profitability ratios are important ratios that receive attention from both investors and managers. These ratios assess the income and profit generated by a firm during a given period. Efficiency or operational ratios are used to assess how well a firm is using its internal resources. That is, efficiency ratios assess how efficiently a manager is using the firm’s assets to maximise its value. Some examples of financial ratios that can be used to assess a firm’s financial performance are listed in the following sections.

A. Solvency ratios
    1. Debt–total assets ratio = total liabilities ÷ total assets
    2. Cash debt coverage ratio = cash provided by operation ÷ average total liabilities
    3. Times interest earned ratio = net income + internet expenses + tax expenses ÷ interest expenses
    4. Capital expenditure ratio = cash provided by operation ÷ capital expenditure
    5. Interest coverage ratio = earnings before interest and taxes ÷ interest expense
    6. Long-term debt to net working capital = long-term debt ÷ current assets – current liabilities.

B. Liquidity ratios
    1. Working capital ratio (current ratio) = current assets ÷ current liabilities
        a. Working capital = current assets – current liabilities
    2. Quick ratio (acid-test ratio) = cash + marketable securities + accounts receivable ÷ current liabilities

3. Cash ratio = cash and cash equivalents[8] ÷ current liabilities.

C. Profitability ratios
   1. ROA = net income ÷ average total assets
   2. ROE = net income ÷ equity
   3. NPM ratio or ROS = net income ÷ net sales
   4. GPM = gross profit ÷ net sales
   5. Earnings per share = net income – preferred stock dividends ÷ average common share outstanding
   6. Price earnings ratio = stock price per share ÷ earnings per share
   7. Return on common stockholders' equity = net income – preferred stock dividends ÷ average common stockholders' equity
   8. Return on investment = net profit ÷ investment.

D. Operating and efficiency ratios
   1. Inventory turnover ratio = cost of goods sold (COGS) ÷ average inventory
   2. Fixed assets turnover ratio = sales ÷ fixed assets
   3. Cash turnover ratio = cost of sales ÷ cash or sale revenue ÷ cash
   4. Net working capital turnover = net sales ÷ average working capital
   5. Creditors turnover ratio = net credit purchases ÷ average payable (creditors + bill payable)
   6. Debtors turnover ratio = net credit sales ÷ average receivables (debtors + bill receivable)
   7. Equity turnover ratio = net sales ÷ average total equity.

Wall and Dunning (1928); Tamari (1966); Shashua and Goldschmidt (1974) argued that using financial ratios on a single variable basis produces inadequate results. Thus, in order to produce practical analysis results, the interrelation between the different ratios should be considered. Each part of a financial statement has its own ratio that, with other ratios, gives a complete picture of the financial health of the company.

ROA and ROE, as accounting-based measures, are the most commonly used performance measurements. Subramaniam (2000) examined which factors affect the

[8] Cash equivalents are a company's assets that can be converted into cash immediately.

choice between these two measures of performance. The results showed that size, capital, ownership structure and growth opportunities play important roles in the choice of performance measure. When firms are smaller and have higher leverage, lower growth opportunities, and lower stock ownership by management, they are more likely to choose the ROE performance measure as opposed to the ROA performance measure. However, ROA is considered the most useful measure of operational efficiency. This was found by Reese and Cool (1978) and Long and Ravenscraft (1984), among others. There are other measures categorised as market performance measures, including price per share to earnings per share (P/E) and market value of equity to book value of equity (MBVR). Another commonly used measure is Tobin's q, which uses both market value and accounting value together.

Collier, Mcgowan and Muhammad (2010) depended on the DuPont system of financial analysis in their evaluation of banks' financial performance. The DuPont system is also known as the 'ROE' model. It divides performance into three components that determine ROE. These components are NPM, total asset turnover and the equity multiplier. The profit margin allows financial analysts to evaluate the income statement and components of the income statement. Total asset turnover allows financial analysts to evaluate the left side of the balance sheet, which is composed of the asset accounts. The equity multiplier allows financial analysts to evaluate the right side of the balance sheet, which is composed of liabilities and equity owners.

Even if the product that banks provide is lending services (Collier, Mcgowan & Muhammad 2010), the DuPont model can be used in banks and financial sectors, as in other market sectors. Ebaid (2009) used three measurements of financial performance: ROE, ROA and GPM. Abor (2007) used GPM and ROA to measure financial performance for small and medium firms. Preedanan (2005) used ROE as an accounting indicator for financial performance. He used price–book ratio as a market-based measurement. Sanda, Garba and Mikailu (2008) considered ROE and ROA among acceptable measurements of financial performance. Price earnings and stock return were used as market-based measurements. Abor (2005) used ROE as a measurement of profitability. In his research of the effects of debt policy on the performance of small and medium enterprises (SMEs), Abor (2007) used Tobin's q to measure the performance of listed SMEs because of data availability. Without information about a firm's market value and replacement cost, Tobin's

q cannot be used. Many studies have used this measure, including Morck, Shleifer and Vishny (1988); McConnell and Servaes (1990); and Zhou (2001).

### *2.6.2 Cash Flow Analysis*

As aforementioned, cash flow analysis examines a firm's liquidity and how a firm is managing its operation, investment and financing cash flows. Cash flow analysis can provide managers with in-depth information about a firm's operation, investment and financial policies (Palepu, Healy & Bernard 2000). It also provides support to the information obtained from a firm's income statements and balance sheet. In addition, cash flow analysis can help maintain sufficient cash for future payments. It can indicate either a problem with current cash flow or opportunities for future investments.

Reporting the causes of changes in cash flow is useful for investors, creditors and other interested parties who want to know the situation and movements of cash—the most liquid resource of a company (Kimmel, Weygandt & Kieso 2000). Due to this liquidity, mismanaging cash causes problems regarding payment obligations (such as salary and outstanding debt).

Saudi Arabian companies are required to provide the Ministry of Commerce with financial statements, including a statement of cash flows. Under Royal Decree M12, dated 19 November 1991, the Saudi Organization for Certified Public Accountants (SOCPA) was established. This professional organisation operates under the supervision of the Ministry of Commerce to promote the accounting and auditing profession, and all matters that might lead to the development of the profession and upgrading its status (SOCPA 1991). According to the SOCPA (1991), every company must prepare a cash flow statement for each period for which financial statements are provided. The cash flow statement must explain any changes in cash and cash equivalents and show all aspects of operating, investing and financing cash flows, and their net effect on cash and cash equivalents during the financial period.

## 2.7 Conclusion

Given that most of the research about capital structure sought to determine the factors affecting choices of capital structure, the need for studies about the effects of capital structure choices on a firm's financial performance are important. Saudi Arabia is an important area to undertake economic studies in general, and Islamic finance studies in particular. To learn more about Islamic banking and economic knowledge, more studies and theory developments are required in this region.

For practitioners and academic researchers, capital structure is an important topic in corporate finance. In order to explain the varying roles of debt and equity in the performing capital structure of a firm, a number of theories have been developed. An optimal capital structure can be defined as a mix of debt and equity that leads to the minimum cost of capital and lowers the risk of bankruptcy. The first theory about capital structure was introduced by Modigliani and Miller in 1958. This theory was built on the assumption of a perfect capital market. This assumption became the starting point of several theories that have been developed since.

The trade-off and pecking order theories came to be the most discussed capital structure theories following Modigliani and Miller's propositions. The market timing theory is one of the more recent theories considered when discussing capital structure. It suggests that managers, depending on their definition of firm value, tend to issue equity when they feel that the market overvalues their company (Boudry, Kallberg & Liu 2010). Thus, the choice of issuing equity or using debt in capital structure is directed by market reactions towards a firm's share price. Other theories related to firms' value and performance issues were also introduced. These theories include the agency, shareholder, stakeholder and dual-investor theories. Generally, these theories explain the role of a firm's manager in driving the firm's activities to benefit different parties and improve the firm's value. This can affect the way a manager controls the firm's capital structure resources to attain these benefits. Regarding this study, these theories were selected because they are closely related to each other and affect both financial performance and capital structure decisions. When discussing firms' performance, it is important to understand financial instruments and their applications in studies related to financial performance and capital structure.

# Chapter 3: Saudi Arabia's Economic and Financial System

## 3.1 Introduction

This thesis was developed to examine the effect of capital structure choices (debt and equity) on firms' financial performance within the Saudi Arabian economic system, with consideration of the low tax regime (*zakat*). Therefore, the motivation of this chapter is to provide an introductory background, based on the available information and data, about the development and behaviour of the Saudi Arabian economy and financial legal system. Saudi Arabia's economic environment has unique resources and operations. Oil is the government's main income resource, tax (*zakat*) generally does not exceed 2.5 per cent of income, and the market is based on interest-free debt. These last two factors are the major characteristics of the Islamic financial system. This chapter will clarify these issues in order to assist understanding of the analysis, results and discussion sections of this study. This chapter also introduces the calculation of *zakat*, which will assist understandings of the effect of *zakat* on capital structure mix and firms' financial performance.

This chapter is divided into five sections. Section 3.2 discusses Saudi Arabia's economic development. Section 3.3 introduces the financial and investment legal system in Saudi Arabia. Section 3.4 focuses on *zakat*. Section 3.5 concludes the chapter.

## 3.2 Economic Development

As reported in Chapter 1, the development of Saudi Arabia's contemporary economy began in the 1950s by establishing SAMA and the Ministry of Finance and National Economy. The policies and regulations developed at that time created the basis of the continuous economic and financial regulation development of Saudi Arabia's economy. It was the basis of the contemporary Saudi Arabian economy.

Saudi Arabia has adapted the QDP system since 1970 to steer the economy towards supporting the under-financed sectors. Since the sixth QDP (1996 to 2000), private sectors became the focus of economic development because of their major role in supporting important public services and industrialisation. The STC was one of the first companies to

attain benefits from this plan. It entered the private sector in April 1998, and is now one of the most profitable companies in Saudi Arabia's market.

Saudi Arabia's economic development has supported the growth of the Saudi Arabian stock market, which has become, in a short period, one of the largest stock markets in the region (of the Gulf and Arab countries). Moreover, the new law and regulations of the stock market, which were implemented in 2003, as reported earlier, have introduced major enhancements to the institutional investing system. Tadawul, as the official website of the Saudi Arabian stock market, makes stock information much more accessible to the public. This links with the efficiency of the electronic investing system in the Saudi securities' market, which has increased the efficiency of the market. Investors have become able to access Saudi public firms' accounting information online, which helps them make informed investment decisions. As a result, it has become easier for firms to raise funds from issuing securities, rather than depending on debt.

In 1999, the Supreme Economic Council (SEC) was established to support economic planning and development. This helps involve Saudi Arabia's key decision makers in the planning and implementation process (Ramady 2010). Some of the SEC's members include the Minister of Water and Electricity, the Minister of Trade and Industry, the Minister of Petroleum and Mineral Resources, the Minister of Finance, the Minister of Economy and Planning, the Minister of Labor and Social Affairs, and the Governor of SAMA. The involvement of these members ensures representation of the most vital sectors in the country related to the economy, and thus encourages decisions that stimulate economic improvement in numerous fields and expresses the views of all concerned parties.

One of the SEC's objectives is to enhance privatisation and encourage society to participate in economic modelling. The SEC (2012) reported:

> Privatization can be [an] effective means to expand the participation of Saudi citizens in the ownership of productive assets in public enterprises and projects, by using the method of public subscription in the privatization, which is considered the most important privatization method to develop the domestic capital market. Policies necessary to achieve this objective:

1. Encourage participation of a large number of citizens to participate in various types of activities transferred to the private sector by using the privatization method of subscription whenever possible.
2. Adoption of clear and transparent procedures to implement all privatization activities.
3. Utilizing all media types to promote the objectives of privatization and the benefits of private sector participation for the national economy and the welfare of society.

Most of the SEC's objectives have been achieved since its establishment in 1999. The capital market has undergone tremendous development, despite the local financial crisis in 2006 and the GFC in 2008. Society has become more able to participate in the economy through business or by participating in buying and selling shares in the capital market.

### *3.2.1 Saudi Arabia's Economic Challenges*

Saudi Arabia's economy has undergone continual development and renewal during the last three decades, which has increased its ability to deal with changes and developments and survive global economic fluctuations. However, it has experienced difficulties during its development. One of the greatest challenges remains the diversification of resources. Reducing the economy's dependency on oil as the main source of income remains a key government priority (Ramady 2010). Despite this, Saudi Arabia is still an oil-based economy that is controlled and managed by the government in most of its major activities. Oil price movement has a strong effect on Saudi Arabia's economy. Figure 3.1 shows the movement of oil prices and its relationship with total Saudi Arabian GDP. It shows that when the oil price increases, the Saudi Arabian GDP also increases, and vice versa.

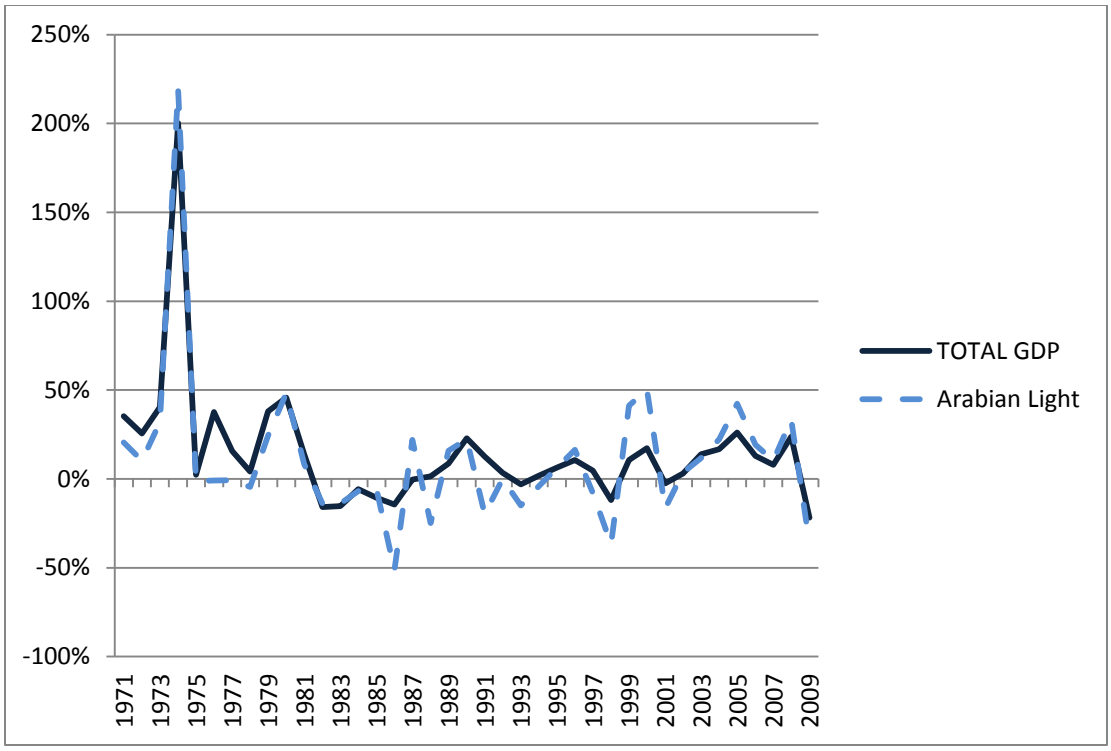



Figure 3.1 Oil Price and GDP Changes

Source: Modified by the researcher from Table 3.1.

Depending on oil as the main resource of the economy has caused a significant burden on the state. For example, in 1981, after being the largest oil producer in the world, Saudi Arabia experienced a significant decrease in the number of barrels produced per day (bpd), which reflected government spending and the economy. Production dropped from approximately 10 million bpd to approximately three million bpd. This was due to a decline in demand for oil. As is clear from Table 3.1, this decrease in oil price was most problematic in 1986, when all Saudi Arabian public sectors suffered from the decline. Oil prices and GDP for both public and private sectors were negative during 1986. After 1986, oil price changes notably affected public sectors' GDP. It is believed that this was because oil revenue is the main source of revenue for the government, and any changes in its price directly affect the public sectors that are supported by the government.

In 1992, due to a decline in the real oil price (of Arabian Light), public GDP declined by approximately 12 per cent, while the private sector experienced a growth of approximately 5.6 per cent. The same happened in 1998, with negative changes in public GDP and positive changes in private GDP due to an oil price decrease. In total, due to this decrease

in oil price, GDP growth slowed by 11.9 per cent in 1998, while it grew by 4.6 per cent in 1997 and 10.6 per cent in 1996. In December 2008 and January 2009, the world economy's decline was accelerated in every sector in Saudi Arabia due to a major decline in oil price. However, the non-oil sector retained its position, with an increase of seven per cent at the end of 2009.

Table 3.1 GDP Change by Sector at Current Price

(See Appendix 1 for real numbers)

| NOMINAL AND REAL OIL PRICES Changes (%) | | | | | CHANGES OF GDP BY SECTORS AT CURRENT PRICES (%) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **YEAR** | NOMINAL OIL PRICE | | REAL OIL PRICE* | | Year | TOTAL GDP | Oil Sector | Non-oil Sector | | |
| | Arabian Light[9] | North Sea (Brent) | Arabian Light | North Sea (Brent) | | | | Total | (a) Private | (b) Govt |
| **1971** | 26.9% | 43.9% | 20.5% | 36.6% | 1971 | 35.2% | 63.9% | 10.1% | 10.3% | 9.9% |
| **1972** | 15.2% | 12.5% | 10.2% | 7.6% | 1972 | 25.5% | 31.8% | 17.4% | 20.1% | 13.0% |
| **1973** | 42.1% | 17.7% | 31.9% | 9.3% | 1973 | 40.3% | 48.0% | 29.0% | 34.3% | 20.1% |
| **1974** | 261.5% | 204.2% | 219.1% | 168.6% | 1974 | 200.3% | 280.3% | 66.2% | 90.0% | 21.5% |
| **1975** | 9.8% | -11.1% | -1.3% | -20.0% | 1975 | 2.4% | -17.0% | 76.8% | 90.7% | 36.1% |
| **1976** | 7.4% | 14.3% | -1.0% | 5.4% | 1976 | 37.6% | 31.6% | 48.3% | 50.3% | 40.1% |
| **1977** | 7.7% | 8.9% | -0.7% | 0.3% | 1977 | 15.6% | 6.3% | 30.5% | 28.0% | 41.3% |
| **1978** | 2.4% | -0.3% | -4.6% | -7.2% | 1978 | 4.2% | -11.0% | 24.0% | 21.7% | 33.3% |
| **1979** | 35.9% | 125.2% | 24.3% | 106.0% | 1979 | 38.0% | 56.0% | 21.3% | 20.6% | 23.7% |
| **1980** | 66.1% | 18.0% | 48.3% | 5.3% | 1980 | 45.7% | 67.8% | 19.3% | 17.6% | 25.5% |
| **1981** | 19.4% | -3.2% | 8.3% | -12.2% | 1981 | 13.9% | 11.5% | 17.9% | 16.5% | 22.7% |
| **1982** | -7.3% | -8.9% | -13.9% | -15.4% | 1982 | -15.9% | -33.1% | 11.5% | 9.7% | 17.2% |
| **1983** | -9.4% | -10.7% | -13.8% | -15.1% | 1983 | -15.2% | -36.0% | 4.6% | 3.6% | 7.4% |
| **1984** | -2.5% | -3.5% | -6.8% | -7.8% | 1984 | -5.7% | -13.8% | -1.0% | -2.8% | 4.3% |
| **1985** | -1.9% | -5.1% | -5.8% | -8.9% | 1985 | -10.6% | -25.7% | -2.8% | -5.9% | 5.3% |

[9] Arabian light is the major crude oil exported by Saudi Arabia, accounting for approximately half of the country's oil output (Mahdi 2011). Its price is generally higher than that of heavy crude oil.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **1986** | -50.1% | -46.9% | -51.3% | -48.2% | 1986 | -14.4% | -30.4% | -8.2% | -11.4% | -0.5% |
| **1987** | 25.5% | 26.5% | 21.9% | 22.9% | 1987 | -0.4% | 8.4% | -3.0% | -4.1% | -0.7% |
| **1988** | -22.2% | -18.4% | -24.8% | -21.1% | 1988 | 1.5% | -2.6% | 2.9% | 1.6% | 5.4% |
| **1989** | 21.0% | 21.7% | 15.9% | 16.6% | 1989 | 8.7% | 28.6% | 2.5% | 2.5% | 2.6% |
| **1990** | 28.4% | 31.7% | 22.3% | 25.4% | 1990 | 22.8% | 60.9% | 7.9% | 4.9% | 13.8% |
| **1991** | -16.3% | -16.7% | -19.8% | -20.1% | 1991 | 12.7% | 13.2% | 12.4% | 6.5% | 23.1% |
| **1992** | 2.9% | -3.3% | -0.04% | -6.1% | 1992 | 3.4% | 11.3% | -1.2% | 5.6% | -12.1% |
| **1993** | -12.6% | -12.1% | -14.9% | -14.4% | 1993 | -3.1% | -14.9% | 4.7% | 4.2% | 5.5% |
| **1994** | -1.8% | -7.1% | -4.1% | -9.1% | 1994 | 1.9% | -0.3% | 3.1% | 3.7% | 2.0% |
| **1995** | 8.7% | 7.7% | 6.1% | 5.0% | 1995 | 6.3% | 10.8% | 4.0% | 2.5% | 6.7% |
| **1996** | 19.0% | 21.7% | 16.3% | 19.0% | 1996 | 10.6% | 20.6% | 5.1% | 5.4% | 4.3% |
| **1997** | -6.0% | -7.9% | -7.9% | -9.7% | 1997 | 4.6% | 0.8% | 7.1% | 4.7% | 11.5% |
| **1998** | -34.8% | -33.3% | -36.7% | -35.3% | 1998 | -11.9% | -33.0% | 0.9% | 1.8% | -0.8% |
| **1999** | 43.0% | 40.9% | 41.2% | 39.1% | 1999 | 10.7% | 30.2% | 2.9% | 3.9% | 1.1% |
| **2000** | 53.6% | 58.8% | 50.2% | 55.2% | 2000 | 17.4% | 45.3% | 3.3% | 3.8% | 2.3% |
| **2001** | -14% | -14% | -16% | -16% | 2001 | -3% | -12% | 4% | 4% | 4% |
| **2002** | 5% | 2% | 4% | 1% | 2002 | 3% | 3% | 3% | 4% | 1% |
| **2003** | 14% | 15% | 12% | 13% | 2003 | 14% | 25% | 7% | 5% | 11% |
| **2004** | 25% | 33% | 22% | 30% | 2004 | 17% | 28% | 9% | 7% | 10% |
| **2005** | 45% | 42% | 42% | 39% | 2005 | 26% | 46% | 10% | 8% | 13% |
| **2006** | 22% | 20% | 19% | 17% | 2006 | 13% | 17% | 9% | 8% | 11% |
| **2007** | 13% | 11% | 10% | 9% | 2007 | 8% | 9% | 6% | 8% | 3% |
| **2008** | 38% | 34% | 33% | 29% | 2008 | 24% | 37% | 7% | 9% | 5% |
| **2009** | -35% | -37% | -36% | -38% | 2009 | -22% | -39% | 5% | 3% | 8% |

Source: Modified and calculated by the researcher based on information presented in SAMA annual report 47 (SAMA 2011).

From 1971 to 2009, Saudi Arabia's economic experience can be divided into four main stages. The first stage was from 1971 to 1979. During this period, the oil sector[10] was the main resource of the economy. Any movement in the oil price was matched by the same movement in the total GDP. During this period, the effect of private GDP on total GDP was very weak. However, their movements were almost the same, which may indicate that they were both affected by the oil price. Figure 3.2 summarises this first stage.

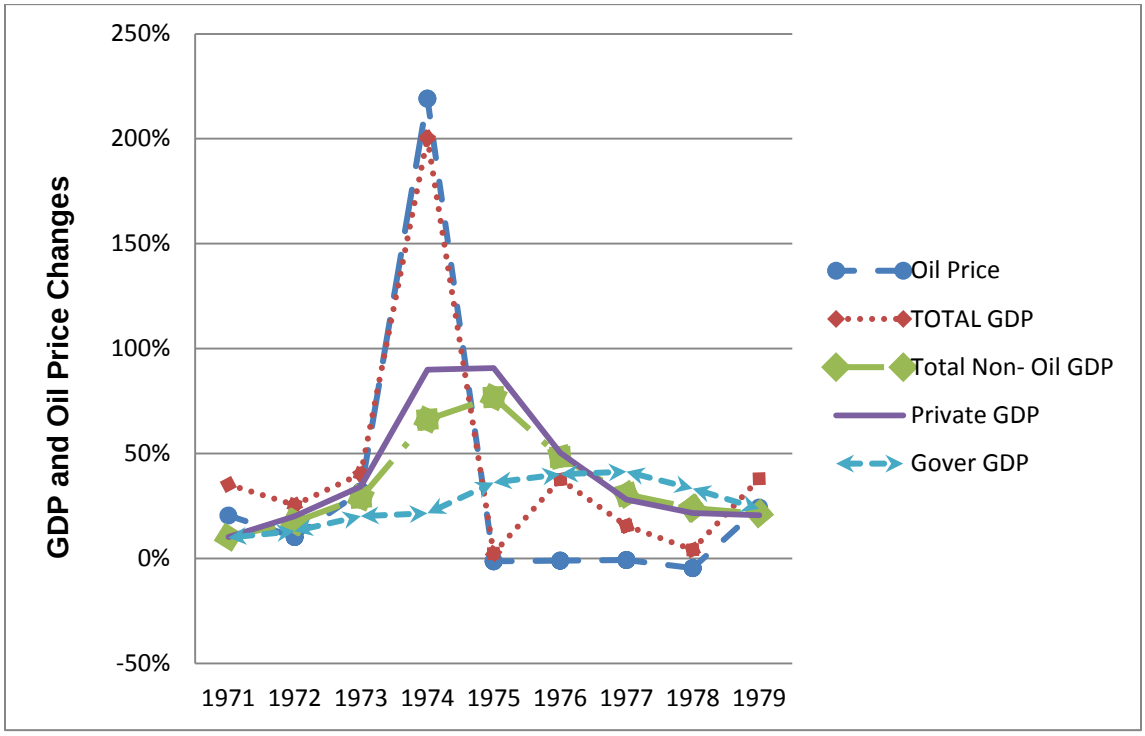



Figure 3.2 GDP Movement: First Stage

Source: developed by the researcher

The second stage was from 1980 to 1989. This was one of the worst economic periods that Saudi Arabia has experienced. The oil boom in 1973 was the basis of the huge decline experienced at this time. Figure 3.3 show how dramatically the Saudi Arabian economy was affected by the drop of oil price in 1998. This drop affected the public sector as much as it affected the private and oil sectors. The decline of these sectors led to the dominance of the oil sector over the other sectors during this period.

[10] The 'oil sector' refers to petroleum and its derivatives. Before discovering oil, the Saudi Arabian economy mostly depended on pilgrimages to Makkah (the holy city for all Muslims). After discovering oil in 1938, Saudi Arabia became a major oil exporter.

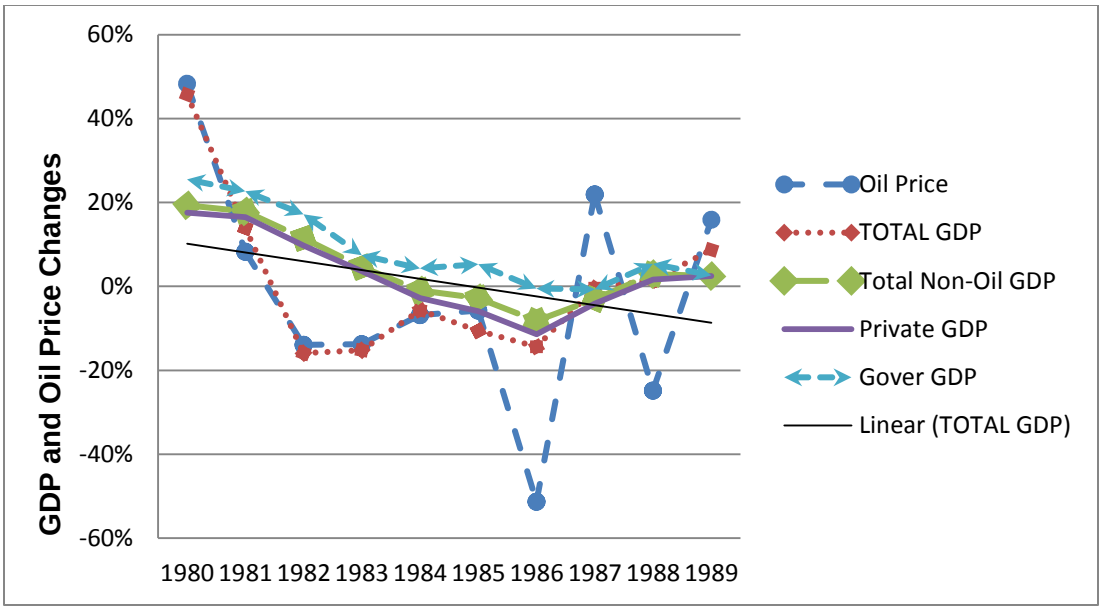



Figure 3.3 GDP Movement: Second Stage

Source: developed by the researcher

The third critical stage of Saudi Arabia's economic development was from 1990 to 1999. At the beginning of this period, the Gulf countries were involved in a political conflict, which had a negative effect on the economy. The Gulf War of 1990 to 1991 caused the oil price to drop. The drop in 1991 continued to affect Saudi Arabia in 1992, as can be seen in Figure 3.4. GDP and total non-oil GDP decline passed the negative line. Another major oil crash occurred in 1997, which was followed by an oil boom in 1999. During this period, private GDP changes were stable. Its changes remained above the negative line during this decade. More information about this period can be found in the book entitled *Saudi Arabia Enters the Twenty-first Century: The Political, Foreign Policy, Economic and Energy Dimension*, by Cordesman (2003, pp. 473–487).

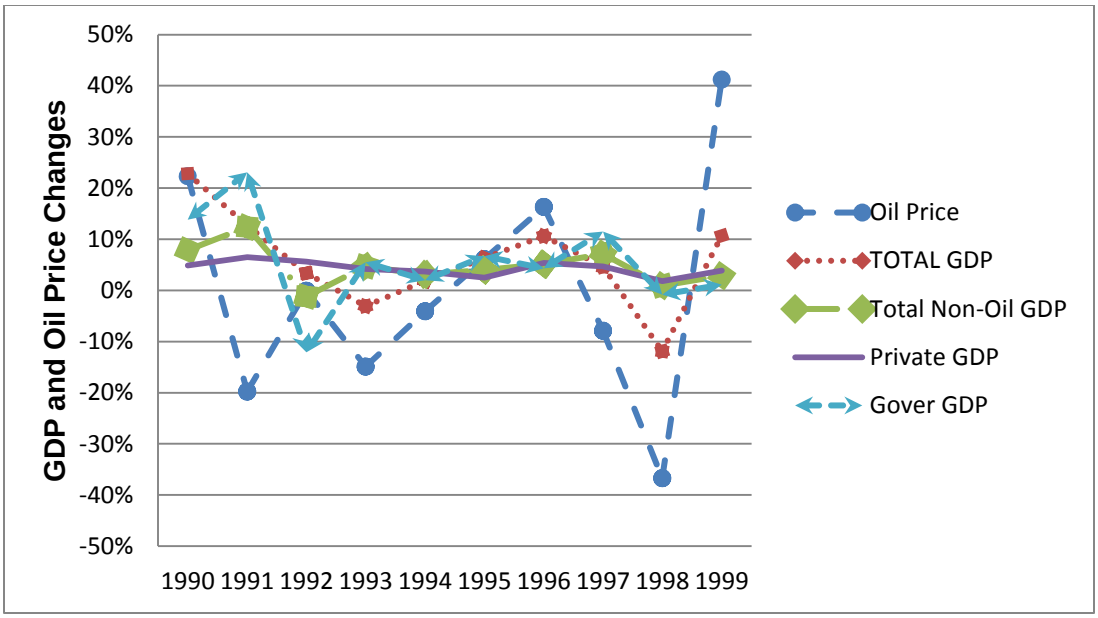



Figure 3.4 GDP Movement: Third Stage

Source: developed by the researcher

The fourth stage was the correction stage, which witnessed great privatisation. This period began with the seventh development plan, which had a strong privatisation strategy. Although this period had some economic crashes, both globally and locally, it witnessed notable improvement in Saudi Arabia's economy. Figure 3.5 shows the positive changes in the economic indicator (GDP) for most of the years during this period. Saudi Arabia entered this period with major political, social and economic transitions. In January 2000, the government announced the establishment of a Supreme Council for Petroleum and Minerals Affairs in order to accelerate the private sector's involvement in the country's energy sector (Cordesman 2003, p. 28). During this period, there was strong development in Saudi Arabia's stock market. Strict regulations were implemented and more companies joined the market. Private sectors showed stable growth, which supported the oil and government sectors.

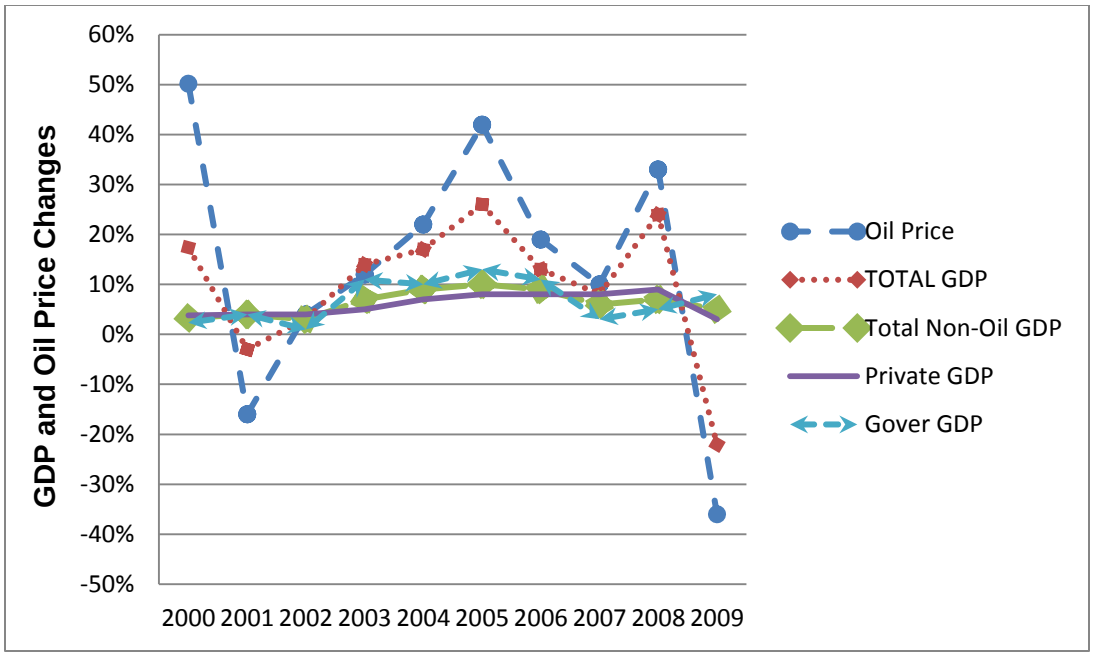



Figure 3.5 GDP Movement: Fourth Stage

Source: developed by the researcher

### *3.2.2* Capital Market Development

Some benefits of an efficient capital market were summarised by Ramady (2010). First, an efficient capital market helps recycle capital surplus, which mostly comes from private sectors. Second, it encourages authorities to establish new and stricter risk management instruments, which helps ensure a secure investment environment for companies and investors. Third, a strong capital market, especially a stock market, helps produce other useful functions for the entire economy. The stock market can be used as a signal to managers regarding investment, can be a good source of finance, and can be a catalyst for corporate governance. Efficient stock markets, as reported by Ramady (2010), collect private funds and allocate them for corporate investment. This helps give firms access to cheaper capital than traditional bank finance, and reduces financial risk. Thus, an efficient capital market can help improve firms' financial performance by providing cheaper fund resources than debt does. It also encourages managers to maximise their firms' profit, which subsequently maximises shareholders' value.

Public joint stock companies in Saudi Arabia are new to public investors. Prior to the 1990s, the only major investors in joint stock companies were the government and a few

wealthy citizens, who were sometimes the owners of the companies. As reported in the first shapter, Saudi Arabia's official stock market began in the mid-1930s when the first joint stock company—the Arab Automobile Company—issued shares. However, the stock market remained informal until the early 1980s, when the Saudi Arabian government formed a regulated market for trading, together with the required systems to operate the market. In 1984, SAMA was given the responsibility of regulating and monitoring market activities.

After establishing SAMA in 1984, commercial banks started acting as brokers. The relatively high proportion of shares held by the government and the concentration of ownership in the few hands of private investors kept a low percentage of stocks in circulation. The lack of brokerage houses and an independent credit rating agency also constrained intermediation of information, which in turn forced investors to act based on rumours, rather than real information. The existence of such agencies is considered a key element in attracting national savings for investment in productive projects, which then creates the potential to establish more joint stock companies (Bakheet 1999). Since 2003, the regulations have been further improved. SAMA upheld the responsibility of managing the market until the CMA was established in July 2003 under the CML. From July 2003, CMA became the responsible agency for regulating and monitoring capital market activities.

Table 3.2 highlights the most important stages in Saudi Arabia's stock market. The year 2006 was turbulent and will be long remembered among Saudi Arabian investors. It had peaks of 20,966 points and lows of 7,500 points. However, this collapse was a correction point for the Saudi Arabian stock market that led to more regulations and transparency, which created a more realistic investor outlook.

During the period from the 1930s to 1970s, the total number of joint stock companies had increased to only 14. This rise was mainly concentrated in the cement and electricity sectors. According to Al-Muharrami (2009), in the early 1970s, several foreign banks entered the Saudi Arabian market, attracted by the opportunities caused by the boom in the economy that had resulted from the increased oil revenues. By the mid-1970s, there were approximately 10 foreign banks working in Saudi Arabia. This encouraged the Saudi Arabian authorities to introduce a policy encouraging foreign banks to be converted into

publicly traded companies, with the participation of Saudi Arabian nationals. In order to fulfil this policy, the government established some agencies in the late 1970s, such as the Retirement Pensions Agency and the General Organization for Social Insurance, which helped found several companies by supplying start-up capital. These agencies were established after the government decided to be more active in improving and developing the primary stock market. Moreover, the Public Investment Fund started investing more of its capital in the formation of new joint companies.

Table 3.2 Stages of Growth of Saudi Arabian Stock Market

| Stages | Years | Features of the Stage |
|---|---|---|
| **First stage** | 1930s–1980s | The Saudi Arabian stock market started with few companies and banks. However, during this period, transactions were limited and occurred directly between the buyer and seller. |
| **Second stage** | 1984–1994 | The Saudi Arabian stock market became officially operated and regulated by SAMA. The number of joint stock market companies increased. In 1990, the first application was made of an integrated electronic system for trading, clearing and settlement, known as the electronic securities information system (ESIS). During this period, the stock market experienced difficulties because of the 1990 war. |
| **Third stage** | 1995–1997 (first ascending wave) | In early May 1995, the stock market began its first clear ascending wave. Starting with 1,140 points in 1995, it reached 2,001 points on 27 October 1997. |
| **Fourth stage** | 1997–1999 (first correction wave) | This began with the first crest of the wave, with 2,001 points, and ended at 1,313 points on 2 March 1999. Asian crises, oil price decreases and increases of the interest rate on the Saudi riyal were some of the main reasons for this decline. |
| **Fifth stage** | 1999–2002 | This began at the bottom of the fourth period, with 1,313 points, and ended on 19 May 2002 with 2,942 points. |
| **Sixth stage** | May 2002–November 2002 (second correction wave) | This began at the top of the fifth stage with 2,942 points, and ended with 2,354 points on 24 November 2002. It continued for six months, during which time the index lost almost 588 points. |
| **Seventh stage** | November 2002–February 2006 | This began at the bottom of the sixth stage, with 2,354 points, and ended with 20,966 points on 25 February 2006. It lasted for three years and three months, during which time the index gained 18,612 points. |
| **Eighth stage** | 26 February 2006–2010 | On 26 February 2006, the stock market experienced its largest drop after its highest point of 20,966 points on 25 February 2006. However, this year led the stock |

| | |
|---|---|
| | market away from its unrealistic activities towards more realistic ones. |

Source: developed by the researcher based on literature explained above.

The late 1970s witnessed tremendous growth of the primary market, with a public offering of 19 new companies. This included a number of publicly held joint-venture banks that were owned by the public and major foreign institutions. These banks included Samba (which was known as Citibank), the Saudi British Bank (which was known as the British Bank of the Middle East), the Saudi Holandi Bank (which was known as ABN-Amro) and the Saudi Faranci Bank (which was known as Banque Indosuez).

According to Basheikh (2002), in the early 1980s, the numbers of transactions and marketability of securities in Saudi Arabia's primary market increased. This was due to an increase in oil prices, which subsequently helped the government to finance many long-term development projects that were managed by joint stock companies. During this period, in 1984, the Saudi Arabian government decided to privatise 30 per cent of the Saudi Arabia Basic Industrial Corporation (SABIC), which was valued at approximately eight million US dollars (Al-Dohaiman 2008). Hence, the basic development in the primary stock market was strongly supported by the government.

Despite the development of the Saudi Arabian stock market from the 1930s to early 1980s, it remained informally organised until 1984. The official stock market began after Royal Decree 1320/8 was approved in 1983. According to Al-Abdulqader, Hannah and Power (2007), a combined ministerial committee—including the Minister of Finance, the Minister of Commerce and the Governor of SAMA—was formed to regulate and develop the Saudi stock market. The committee's main responsibility was to protect investors and companies by enforcing effective share market rules. Other objectives of the committee included encouraging investment in the domestic economy in order to contribute to economic growth and to provide Saudi companies with a source of finance through issuing securities.

In 1984, the ministerial committee established and introduced new rules and regulations in order to secure the market. Some of these regulations included establishing a share trading system through commercial banks, creating a supervisory body for all securities trading, establishing a share control department under the authority of SAMA, and

establishing a Saudi Share Registration Company (SSARC). Moreover, SAMA established a share trading system to control and supervise the stock market. Commercial banks were intermediaries in the purchase or sale of shares on behalf of their clients, with a maximum of one per cent commission from each transaction.

As reported by Al-Abdulqader, Hannah and Power (2007), the ESIS was introduced in the second half of 1990. This development enabled buyers and sellers to enter any connected Saudi Arabian bank branch to monitor the price of a company and place an order that could be executed within seconds if it was within the market price range.

October 2001 witnessed the newest trend in Saudi Arabia's stock market development. A new service was introduced by SAMA to trade and arrange shares in Saudi Arabia: the Saudi Arabian capital market. This new system provided a continuous, order-driven market, with continuously updated price, volume and company information. This facilitated an efficient and short trading cycle (Tadawul n.d.(b)).

### *3.2.3 Privatisation*

As reported in the previous section, the government has recently been depending on the private sector for the diversification and development of economic resources. According to Ramady (2010, p. 16), the Saudi Arabian government has recognised that it must build new social, civil and political infrastructure, in addition to the country's physical infrastructure. This will help encourage Saudi citizens participate in creating and benefiting from a new economy. The political reforms aim to give greater freedom to the government to take appropriate decisions to improve the economy, without needing to refer to the king or prime minister. They also aim to involve the government directly in the development of the private sector through direct grant facilities and support for the private sector. The social reforms seek to increase community awareness about the capital market in general, and about the rights and duties of all parties who contribute to the economic process. The new technological infrastructure is designed to facilitate operations related to the sale and purchase of securities, and to ease the completion of business transactions for business parties in Saudi Arabia. The private sector will be the leader in achieving these reforms and will shape policies to encourage the public to participate in developing the national economy. One of the most important steps of implementing the privatisation programme

was establishing the SEC in 1999. There have since been numerous developments in the capital market, particularly in the stock market, and many strict policies and regulations have been developed to ensure a safe investment environment for the public and for firms.

To reduce the hazards of relying only on oil and government support of key economic sectors, since 1990, the government of Saudi Arabia has taken several important actions and administrative developments to diversify economic resources. The role of the private sector in diversifications is considered key to development growth enhancement (Ramady 2010). According to a report by the Ministry of Economy and Planning (2009), economic developments have included creating new economic sectors and restructuring others, and promoting the pace of privatisation. The government has also adopted several regulations that aim to control various aspects of economic activities, improve their efficiency, provide more incentives and guarantees to foreign investors, and simplify and speed up the administrative procedures relating to their activities.

The privatisation strategy began with the seventh development plan in 2000. By 2002, the government launched an integrated strategy for privatisation, through which the objectives, policies and priorities of the public projects nominated for privatisation were specified (Ministry of Economy and Planning 2011). Since then, privatisation has caused changes in the sectors of electricity, communications, mineral resources, air transport and insurance. As introduced in the first chapter, the main purpose of this strategy is to involve the private sector in economic development, through sale of shares of ownership, operate–manage contracts, leasing assets and BOT contracts. The participation of the private sector will reduce the burden on the government to finance these sectors. Moreover, this opens a huge share of market opportunities that allows individuals with varying incomes to participate in selling and buying shares. Through the privatisation strategy, the Saudi Arabian government is seeking to improve and develop its capital market. The following sections present an overview of the most important achievements of the Saudi Arabian stock market.

### *3.2.4 Market Size*

Currently, there are 156 companies listed in the stock market, comprising 15 sectors. Table 3.3 shows how the numbers of companies have grown each year and decade since

1954. As shown in the table, there were six periods (decades) before the current period (the 2010s). There was one type of company that shaped each of these periods (see Appendices 2 and 3 for more information). For example, during the 1950s, most of the companies established were in the building, cement and construction sectors. During that period, the country had just begun infrastructure material development. During the 1960s, new companies had started to develop, with multi-investment, retail, agriculture and food being the distinctive sectors in this period, in addition to the building and construction sectors.

As is clear from Figure 3.6, the largest increase of listed companies was in 2007. Listed companies increased from 86 in 2006 to 111 in 2007. This was because more companies in the insurance sector were allowed to join the market. Moreover, as from 2008, the number of sectors increased from eight to 15, to include the sectors of:

1. Banks;
2. Petrochemical industries;
3. Cement;
4. Retail;
5. Energy and utilities;
6. Agriculture and food industries;
7. Telecommunication and information technology (IT);
8. Insurance;
9. Multi-investment;
10. Industrial investment;
11. Building and construction;
12. Real estate development;
13. Transport;
14. Media and publishing; and
15. Hotel and tourism (see Appendices 2 and 3).

After the 1970s, companies began to expand further and include sectors such as industrial investment, banks and financial services, agriculture and food industries, real estate development, petrochemical industries, transport, and hotels and tourism. These grew in addition to the companies added to the sectors during the 1950s and 1960s. The 1970s was the real beginning of growth in Saudi Arabia because of companies attracted by the

opportunities created by the boom in the economy that resulted from the increased oil revenues during that period. Furthermore, the 1970s witnessed the birth of the QDP, which helped steer the economy towards supporting the under-financed sectors.

Table 3.3 Establishing Date of All Companies Listed on Saudi Arabian Stock Market as at 5 August 2012

| 1950s | | 1960s | | 1970s | | 1980s | | 1990s | | 2000s | | 2010–5/8/2012 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Year** | Number of companies | Year | Number of companies | Year | Number of companies | Year | Number of companies | Year | Number of companies | Year | Number of companies | Year | Number of companies |
| **1954** | 1 | 1961 | 2 | 1972 | 1 | 1980 | 3 | 1990 | 7 | 2000 | 2 | 2010 | 5 |
| **1955** | 3 | 1962 | 1 | 1973 | 1 | 1981 | 5 | 1991 | 5 | 2002 | 1 | 2011 | 1 |
| **1957** | 1 | 1965 | 1 | 1974 | 1 | 1982 | 1 | 1992 | 6 | 2004 | 2 | 2012 | 2 |
| **1959** | 1 | 1966 | 1 | 1975 | 1 | 1983 | 3 | 1993 | 3 | 2005 | 4 | Total | 8 |
| **Total** | 6 | 1968 | 2 | 1976 | 10 | 1984 | 1 | 1994 | 4 | 2006 | 6 | | |
| | | Total | 7 | 1977 | 4 | 1985 | 2 | 1996 | 2 | 2007 | 18 | | |
| | | | | 1978 | 4 | 1986 | 3 | 1997 | 1 | 2008 | 10 | | |
| | | | | 1979 | 5 | 1987 | 1 | 1998 | 2 | 2009 | 6 | | |
| | | | | Total | 27 | 1988 | 6 | 1999 | 1 | Total | 49 | | |
| | | | | | | 1989 | 3 | Total | 31 | | | | |
| | | | | | | Total | 28 | | | | | | |
| **Total** | | | | | | **156** | | | | | | | |

Source: Developed by the researcher from companies' information listed on the Saudi Arabian stock market.

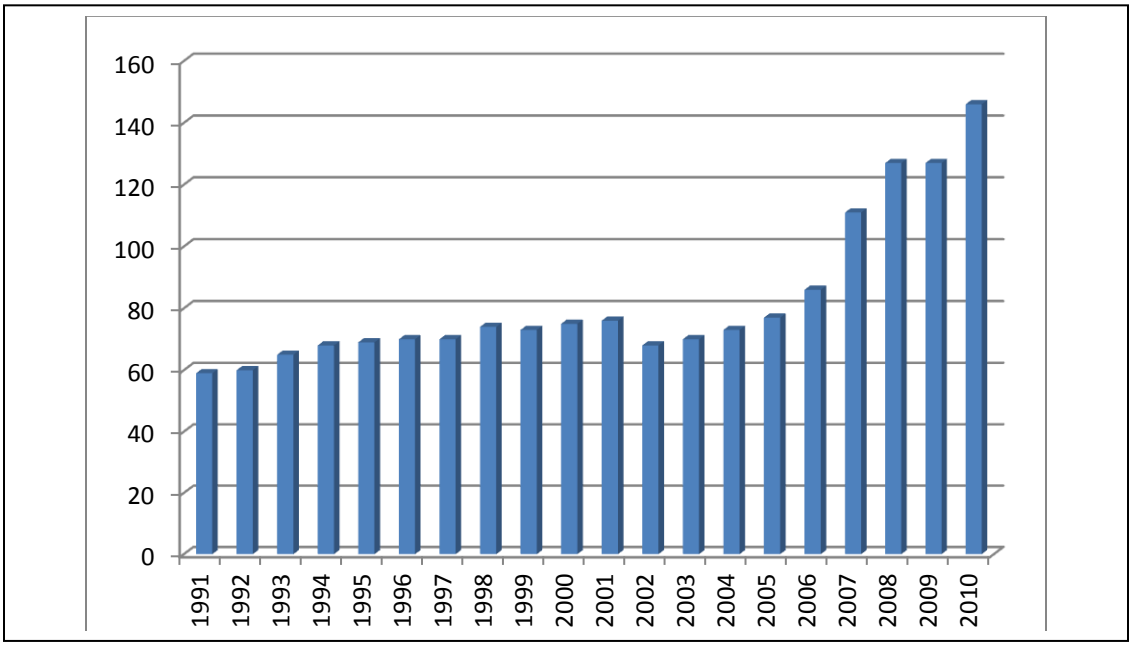



Figure 3.6 Total Listed Domestic Companies

Source: Developed by the researcher from table 3.5.

Saudi Arabia's stock market is the largest stock market in the Gulf region and the Arab world. Its capitalisation was US$339,499.12 million (approximately 1,273,274.333 million riyals) on 26 September 2010. It captures approximately 36 per cent of the most effective Arab market capitalisation as shown in table 3.4. This makes it one of the most effective capital markets in the Arab countries.

Table 3.4 Arab Market Capitalisation as at 26 September 2010

| Market | Market Capitalisation(US$ Millions) | Per Cent |
|---|---|---|
| **Abu Dhabi** | 69,645.06 | 7 |
| **Amman** | 29,594.52 | 3 |
| **Bahrain** | 16,644.15 | 2 |
| **Beirut** | 17,777.72 | 2 |
| **Doha** | 111,116.38 | 12 |
| **Dubai** | 56,664.83 | 6 |
| **Egypt** | 79,126.97 | 8 |
| **Kuwait** | 117,054.90 | 13 |
| **Muscat** | 19,481.07 | 2 |
| **Palestine** | 3,474.47 | 0 |

| | | |
|---|---|---|
| **Saudi** | 339,499.12 | 36 |
| **Tunis** | 12,658.66 | 1 |
| **Total** | 935,977.75 | 100 |

Source: Arab Monetary Fund (n.d.). Modified by the researcher.

Domestically, the stock market has experienced a huge increase in the number of companies, the value of traded stock and the market capitalisation. As reported in Table 3.3, the 1990s witnessed mass growth in numbers of companies in Saudi Arabia. Table 3.5 shows the continuous growth of the stock market in numbers of companies and market capitalisation from 1991 to 2010. The listed companies increased from only 59 companies in 1991, with market capitalisation of US$48,200 million, to 149 joint stock companies listed in the stock market in 2010, with total market capitalisation of US$353,414 million. This accounted for 37 per cent of GDP in 1991 and 81 per cent of GDP in 2010. Regarding the stock traded value for these listed companies, this was US$2,274 million in 1991, which accounted for two per cent of GDP, and US$203,204 in 2010, which accounted for 47 per cent of GDP.

Table 3.5 Listed Domestic Companies and Market Capitalisation 1991–2010

| Years | Total Listed Domestic Companies | Market Capitalisation of Listed Companies (US$ Millions) | Market Capitalisation of Listed Companies (% of GDP) | Total Value of Stocks Traded ($US Millions) | Total Value of Stocks Traded (% of GDP) |
|---|---|---|---|---|---|
| **1991** | 59 | $48,200.00 | 36.70 | $2,274.00 | 1.7 |
| **1992** | 60 | $55,000.00 | 40.35 | $3,653.00 | 2.7 |
| **1993** | 65 | $52,800.00 | 39.95 | $4,629.00 | 3.5 |
| **1994** | 68 | $38,700.00 | 28.81 | $6,632.00 | 4.9 |
| **1995** | 69 | $40,907.00 | 28.72 | $6,194.00 | 4.3 |
| **1996** | 70 | $45,861.00 | 29.07 | $6,773.00 | 4.3 |
| **1997** | 70 | $59,386.00 | 35.99 | $16,549.00 | 10.0 |
| **1998** | 74 | $42,563.00 | 29.20 | $13,713.00 | 9.4 |
| **1999** | 73 | $60,439.68 | 37.55 | $14,815.68 | 9.2 |
| **2000** | 75 | $67,171.41 | 35.65 | $17,313.23 | 9.2 |
| **2001** | 76 | $73,199.39 | 40.00 | $22,224.25 | 12.1 |
| **2002** | 68 | $74,855.37 | 39.70 | $35,673.52 | 18.9 |
| **2003** | 70 | $157,302.25 | 73.31 | $159,058.44 | 74.1 |
| **2004** | 73 | $306,247.54 | 122.33 | $472,998.72 | 188.9 |
| **2005** | 77 | $646,103.57 | 204.74 | $1,103,502.46 | 349.7 |

| | | | | | |
|---|---|---|---|---|---|
| **2006** | 86 | $326,869.22 | 91.65 | $1,403,026.66 | 393.4 |
| **2007** | 111 | $515,110.77 | 133.83 | $679,837.03 | 176.6 |
| **2008** | 127 | $246,337.05 | 51.72 | $524,716.76 | 110.2 |
| **2009** | 127 | $318,765.04 | 85.54 | $336,976.95 | 90.4 |
| **2010** | 146 | $353,414.06 | 81.31 | $203,203.55 | 46.7 |

Source: World Bank (n.d.) report. Summarised and modified by the researcher.

Rajan and Zingales (1995) suggested that a good measure to determine the importance of the stock market is the ratio of stock market capitalisation to GDP. As shown in Figure 3.7, the total value of stocks traded was at US$524,716.76 million in 2008, US$336,976.95 million in 2009 and US$203,203.55 million in 2010. The greatest stock value traded was in 2006, reaching US$1,403,026.66 million, followed by a major decline of more than 50 per cent in 2007. The total market capitalisation at the end of 2008 reached US$246.54 billion—a decrease of 52.50 per cent from the previous year. In 2009, the total market capitalisation was US$318.80 billion—an increase of 29.31 per cent from the previous year. It was US$353.44 billion at the end of 2010—an increase of 10.86 per cent from the end of 2009.

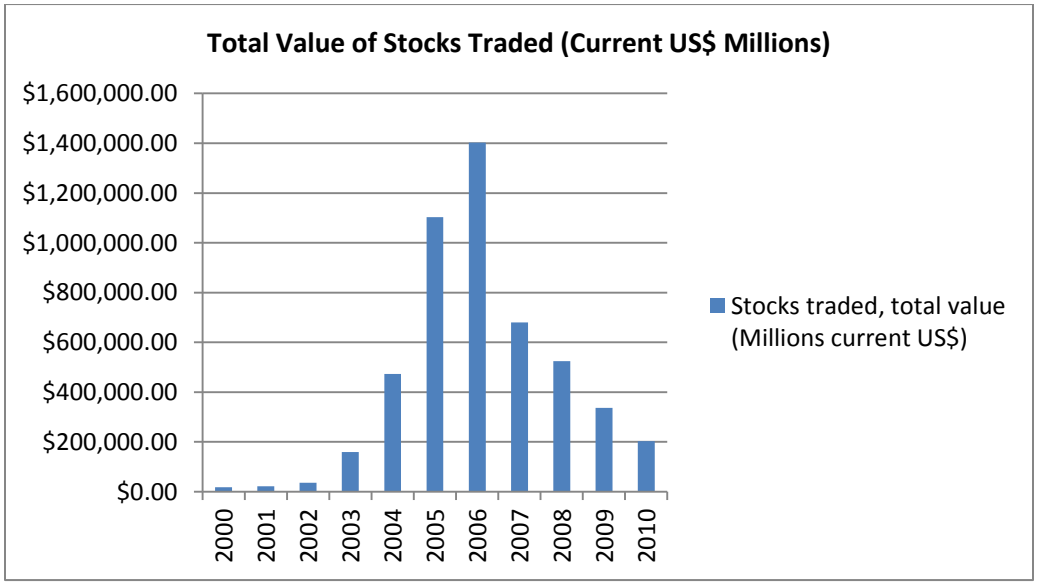



Figure 3.7 Market Capitalisations and Stock Traded Value

Source: Developed by researcher from table 3.5.

Not all the companies listed in the stock market were public when first established. Some of these companies began as limited liability companies, family-owned companies or

government-owned companies. Alanazi, Liu and Forster (2011) identified three types of firms that underwent the IPO process in Saudi Arabia: SOEs, private joint stock firms and private limited liability (usually family-owned) firms. It is also important to mention that most companies that underwent IPO began in 2003. According to Ramady (2010), Saudi Arabian law recognises nine different forms of organisation structures. Three involve limited liability structures, while the others do not. Firms that are owned entirely by Saudi Arabian citizens can be either limited partnerships or joint stock companies. More than one such company can enter joint-venture agreements or form cooperative societies.

The companies' regulation and law was first introduced by Royal Decree M/6 on 20 July 1965. It recognised eight different types of companies:

1. Collective name partnerships (*Sharikat Altadamun*);
2. Limited partnerships (*Sharikat Al-tawsiya Al-basita*);
3. Joint ventures (*Sharikat Al- mahasa*);
4. Joint stock companies (*Al-sharikat Al-musahama*);
5. Share commandment companies (*Sharikat Al-tawsiya Bi'l Ashum*);
6. Limited liability companies (*Al-sharika Dhat Mas'uliyya Al-mahdudah*);
7. Variable capital companies (*Al-sharika Dhat Ras Al-mal Al-qabil Lilziadah*); and
8. Cooperative companies (*Al-sharika Ta'awuniyya*).

This study's focus is the public joint stock company. In general, a joint stock company should have no fewer than five shareholders who are liable for the debts of the company to the extent of their capital contribution. To be incorporated, a joint stock company should obtain approval from the Minister of Commerce or by the issuance of a Royal Decree. According to the Saudi Arabian General Investment Authority (SAGIA n.d.), share capital of a joint stock company must not be less than 2,000,000 riyals, and must not be less than 10,000,000 riyals if the company is public. Moreover, it must be divided into shares of equal value with a par value of 50 riyals or more. At least 50 per cent of the capital is required to be paid upon incorporation.

### *3.2.5 Debt Market*

Before launching *sukuk*[11] as an element of the Islamic capital market, the shares market was considered the only possible Islamic financial resource to finance long-term projects. This is because according to Islamic law (*shariah*), debt cannot be sold and should not generate any return (Hasan & Lewis 2007, p. 194). It hard to imagine a society free of debt, and it is not logical to sell a currency from the same category and same purchasing power at a greater value. This why it is necessary to differentiate between selling currency with a different type and different purchasing power (exchanges) and selling currency with the same type and same purchasing power. This is how *riba*[12] (interest) works in the case of debt. Interest is like the price of money of the same type and same purchasing power. In order to solve this problem, most conventional banks have begun opening Islamic investment windows, more Islamic banks have been developed, and specialised government development financing institutions and leasing have been introduced, especially by the Saudi Arabian government (Khan & Bhatti 2008a).

#### *3.2.5.1 The Role of Conventional Banks*

Commercial banks in Saudi Arabia, under the regulations of SAMA, must follow Islamic teachings in their operations. According to Al-Sayari (2006), Saudi Arabian banks offer a range of financial services, including investment management, mutual funds and brokerage. Regarding *shariah*, all Saudi Arabian banks provide a variety of Islamic products, such as *murabaha* (the activity of buying then selling a commodity to obtain cash), *musharakah* (a partnership or equity participation) and *mudarabah* (a profit sharing agreement). All these instruments are discussed in detail in the following sections.

[11] '*Sukuk'* is the plural of '*Sakk'*—an Islamic financial certificate as a bond alternative. It differs from bonds in that *sukuk* holders participate directly in the possession of the asset or group of assets that issued the basis of the instrument. There is no interest in *sukuk*; instead, the *sukuk* holder receives the proceeds of real economic transactions in the form of participation in the lease of assets that were issued on the basis of the instruments. Bond is a debt due to the exporting authority, including interest payments, which is prohibited by Islamic law.

[12] Among all Islamic scholars and schools of thought in various Islamic sectors, there is a complete unanimity that the term '*riba*' stands for all types and forms of interest (e.g. Ahmed, Iqbal & Khan 1983; Abbasi, Hollman & Murrey 1989; Iqbal 1999; Iqbal & Khan 2005). Hence, this term is used in this study as being equivalent to the word 'interest'. Generally, '*riba'* in the Arabic language means 'increase' or 'growing'. It refers to any conditional increment in a loan or exchange contract of certain item, and it does not matter whether this is money or other goods.

According to Khan and Bhatti (2008b), Islamic banks offer equity-based facilities to their customers in order to comply with *shariah*. *Mudarabah* (a joint venture) and *musharakah* (equity participation) are two of the most well-known equity-based facilities provided by Islamic banks to their clients. However, due to the lack of proper risk management, most banks in Saudi Arabia rely on short-term facilities, rather than equity-based facilities (Al-Ajmi, Abo Hussain & Al-Saleh 2009). Operational difficulties, lack of a regulatory framework, and competition with conventional banks are some of the reasons for the lack of equity-based facilities in Islamic banks (Khan & Bhatti 2008b).

According to a report by the IMF (2006), the Al-Rajhi Banking and Investment Corporation offers only *shariah*-compliant products. It is the world's largest bank in the Islamic banking sector. In other banks, non-interest-bearing deposits are separated from other deposits and operated through *shariah*-compliant investments. In addition, a number of banks offer windows of *shariah*-compliant products through dedicated branches or divisions. All banks base portfolio decisions on the advice of internal *shariah* advisory boards.

*3.2.5.2 Specialised Lending Institutions in Saudi Arabia*

Financial systems in Saudi Arabia include, in addition to banks, different types of specialised government financing institutions; leasing, investment and insurance companies; and a few money changers. These institutions provide long-term loans to vital sectors of the economy, such as industry, agriculture and real estate, as well as for professional and social needs. The aim of establishing these specialised institutions was to encourage sector growth and diversification of the economy. These specialised institutions include the Agricultural Bank, the Industrial Development Fund, the Public Investment Fund, the Saudi Credit Bank, the Real Estate Development Fund and the Credit Fund for Contractors. The loans these institutions provide are interest free. This is built on the concept of *Al Gard Alhasan* (welfare or a benevolent loan). This is a loan that is returned at the end of an agreed period without any profit or interest. The purpose of these types of loans is to promote growth and encourage development in the country.

*3.2.5.3 Bonds and Sukuk Market*

The debt market in Saudi Arabia is still new—particularly the *sukuk* and bonds market. In June 1988, government development bonds (GDBs) were first offered to domestic banks and some special government agencies in Saudi Arabia. Since then, the Saudi Arabian government has begun to offer GDBs to the primary market, with authorities endeavouring to develop a secondary market for GDB trading. According to Al-Jarf (2004), for this purpose, SAMA and primary dealers have jointly established procedures governing the market makers' role.

Before 2003, the government debt market underwent evolutionary changes in terms of issuance procedure, pricing, maturity spectrum and settlement (Al-Sayari 2003). Since 2003, the responsibility for managing the market changed from SAMA to the CMA. From July 2003, the CMA became the responsible agency for regulating and monitoring capital market activities. Under the supervision of the CMA, Tadawul started to introduce new services and products in 2006. In June 2009, Tadawul launched a new *sukuk* and bonds market. According to Hanware (2009), this new market provides many services, including listing, order submission, trade execution, clearing and settlement, and price information dissemination.

As reported by Al-Dohaiman (2008), although the requirements of issuing corporate bonds have been formulated since 1965 under Articles 116 to 119 of Saudi Arabia's Companies Act, the corporate bond market has a short history. According to an IMF (2006) country report, the first corporate bond was issued in 2003 by Saudi ORIX Leasing Company, with the amount of 45 million riyals. SABIC was the first company in Saudi Arabia to issue long-term *sukuk*, in 2006. By mid-2005, SABIC (2007) decided to make issuance 100 per cent *shariah* compliant, and thus the SABIC *sukuk* was born and a launch was set for July 2006. SABIC's *sukuk* is an important step in the development of *sukuk* as a practical *shariah*-compliant financial instrument. The Saudi Binladin Group, a major contractor, was the first company to issue short-term *sukuk*. On 17 April 2011, SBG announced that it had repaid its maturing short-term 700 million riyals *sukuk* on its maturity date of 12 April 2011 (Mcnamara 2011). The *sukuk* established through Tadawul was originally issued in July 2010.

Some features and benefits of the debt market have emerged, with *ijarah sukuk* and other *sukuk* backed by a mixed asset pool (Ayub 2008). Although this is a very new market, the *sukuk* and bonds market will help investors diversify their investments and will provide financial protection for their portfolios with lower risk tools to ensure a safe and periodic return for the investor. As reported by Ayub (2008), *sukuk* is an alternative source of funding for wealthy people (such as sovereigns) and large firms. This is because of the high funds and long period it usually takes to mature.

After the 2008 stock market crisis, investing in stock became less attractive. Investors started to search for new and safer channels in which to invest. *Sukuk* and bonds are a safer channel for investors in Saudi Arabia. *Sukuk* and bonds are considered important channels for governments, companies and institutions to provide the necessary liquidity to finance projects at a relatively low cost, as reported by Tadawul (n.d.(c)). However, investors usually need instruments that are safe and provide income within a relatively short time. Bonds include floating rate notes with maturity at five and seven years, and GDBs with maturity at two, three, five, seven and 10 years. These have a long-term maturity period. Treasury bills—one type of bonds—range from one week to one month in maturity, and are thus considered a good investment choice for those who prefer short-term returns.

In summary, the Saudi bond market—particularly the corporate bond market—is relatively new to the primary market. Making this market compatible with Islamic law is the market's main challenge. *Sukuk* is the perfect solution. This began to emerge in 2006 and will be the basis for further issuance. Creating a secondary market of bonds will facilitate the process of buying and selling *sukuk* and bonds.

### *3.2.6 Mutual Funds*

Saudi Arabia has the largest mutual funds industry in the Arab world (Ramady 2010). The National Commercial Bank was the first financial institution to introduce mutual funds to the Saudi market. This occurred in 1979, when it introduced its open-ended *Al Ahli* short-term dollar fund. Mutual funds allow investors who have less experience in investing directly in the stock market to access professional and diversified portfolios, such as those of equities and bonds. Mutual funds in the Saudi Arabia financial market seem to be one of

the few sectors that correctly align with market direction, adding stability to market prices in times of volatility, despite its smaller net monthly investments (Ramady 2010, p. 171).

As reported by Ramady (2010, p. 149), during the boom in the Saudi Arabian stock market, individuals started to invest directly in the stock market. However, in 2006, during the Saudi Arabian stock market crisis, individuals began to invest through mutual funds. In addition, mutual funds are considered a channel of company fund resources.

## 3.3 Saudi Financial System

The financial and investment legal system in the Saudi Arabian economic market is firmly rooted in Islamic law and regulations. It is based on the central tenets of *shariah*. According to *shariah*, any economic activities must be built on ethical and moral fundamentals and accepted socially. As stated by Iqbal and Khan (2005), under Islamic law, investors are free to invest as long as 'all the conditions agreed upon by the Muslims are upheld, except a condition which allows what is prohibited or prohibits what is lawful'. Islamic finance is the core interest of Muslim investors who wish to expand their portfolios. Hence, the development of Islamic finance and market in the Islamic world has emerged. In addition, as stated by Wilson (1997), the implications of company capital gearing or leverage for *riba* (interest) has become an interesting issue, as have investment-specific issues, such as the treatment of capital gains in Islam and the evaluation of the conduct of market participants. Importantly, Muslims consider deception or *gharar* illegal under *shariah*. This led to the requirement that investment dealings are undertaken transparently.

According to Sulaiman (2003), Islamic accounting is built based on two prominent issues: *riba* and *zakat*. In Islamic accounting, *riba* influences the capital structure and disclosure practices of firms. *Zakat* influences the measurement (valuation) aspect of accounting. As reported by Samad (2004), according to *shariah*, Islamic financial institutions must be based strictly on four basic principles:

1. All transactions must be *riba* free (interest free);
2. Speculation in transactions involving *gharar* (deception or uncertainty) must be avoided;
3. *Zakat* is the compulsory Islamic tax; and

4. Production or consumption of goods and services should avoid any haram transactions (transactions that are illegal from the Islamic point of view).

### *3.3.1 Islamic Development Banking*

The fundamental principle of Islamic banks is that they are prohibited to have *riba*. According to Islamic teachings, there can be no interest charged on any transaction or service because interest is considered usury and is condemned by the Holy Qur'an. The Qur'an states:

> Those who devour usury will not stand except as stands one whom the devil by his touch has driven to madness. That is because they say: Trade is like usury: but Allah has permitted trade and forbidden usury … Allah will deprive usury of all blessing, but will give increase for deeds of charity, for He loves not any ungrateful sinner … of your demand for usury, if you are indeed believers. If you do it not, take notice of war from Allah and His messenger, but if you repent you shall have your capital sums; deal not unjustly, and you shall not be dealt with unjustly. And if the debtor is in difficulty, grant him time till it is easy for him to repay. But if you remit it by way of charity, that is best for you if you only knew (2:275-280).

Islamic finance and banking has become popular and increased significantly throughout the world. According to McGee and Bose (2009), by 2008, there were more than 300 Islamic financial institutions operating in more than 75 countries, with one trillion US dollars in assets. One of these Islamic financial institutions is Islamic Development Banking (IDB). IDB provides infrastructure for Islamic finance to meet the needs of Muslims. It was developed as a part of the Declaration of Intent issued by the Conference of Finance Ministers of Muslim, which was held in Jeddah, Saudi Arabia, in 1973. According to a current IDB (2011) report, IDB is an international financial institution that was established to promote the economic development and social progress of its member countries and Muslim communities, both individually and jointly, in accordance with the principles of *shariah*.

IDB was established by the Organization of Islamic Cooperation (OIC) approximately one year after the 1973 Conference of Finance Ministers of Muslim Countries. It formally

opened on 20 October 1975. It is mainly an inter-governmental bank that aims to provide funds for development projects and to provide free financial services and profit-sharing financial assistance to member countries. Its operations are interest free and explicitly based on *shariah* principles (Ariff 1988).

### *3.3.2 Benefit Versus Liability in Shariah*

According to conventional financial theories, interest is the benefit received from giving a loan. According to Islamic law, this interest is prohibited. This raises the question of how people attain benefit from giving a loan. The right to enjoy the benefits from transactions or property and the liability to gain losses from engaging in those transactions or using that property are governed by a number of rules that are central to both commercial and daily transactions (Zeitun 2006). The Islamic financial system is characterised by the concept of profit and loss sharing. *Shariah*-compliant tools and mechanisms have been used in the Islamic banking system to replace interest-based financial intermediation with the risk-sharing and interest-free paradigm. That is, the Islamic banking system relies on profit and loss sharing.

As aforementioned, to meet customers' needs and perform lending, borrowing and investment functions according to *shariah*, Islamic banks had to develop financial instruments that could work with profit and loss sharing and address *shariah* requirements. These instruments include *mudarabah* (venture capital) and *musharakah* (partnership contract) as the major instruments; and *murrabahah* (resale with pre-agreed profit), *ijarah* (leasing), *bai salam* (forward sale contract) and *bai istisna* (procurement engagement) as the secondary instruments (Khan & Bhatti 2008b; Hassan 2009).

### *3.3.3 Prohibition of Riba*

Prohibition of collecting *riba* is central to the system of Islamic law. *Riba* is prohibited because of its potentially destructive effects. According to the Islamic faith, *riba* is not useful and the reward gained from it comes without productive effort. According to Abbasi, Hollman and Murrey (1989), no benefit comes from *riba*. Forbidding *riba* is intended to protect people from exploitation and unwarranted hardship, while also encouraging investors to combine their resources in joint ventures. Muslim scholars usually accept this

prohibition to mean not only interest attained from loaning money, but also from any fixed or guaranteed interest payment on cash advances or deposits.

Iqbal and Molyneux (2004) stated that there are two main reasons for prohibiting *riba*. First, *riba* causes injustice to the borrower. When one obtains money and uses this for one's business, the results might be a gain or loss. In the case of a loss, borrowers lose their business and their money, and are forced to repay a loan with interest to the lender. This injustice is the first reason *riba* is prohibited. Second, in the case of attaining profit, in an inflationary environment, the interest rate might be negative compared to the profit generated by the borrowers. For example, if the interest rate is 10 per cent and the borrower earns a rate of 50 to 100 per cent, then she or he will pay back 10 per cent, which might not be equivalent to the inflation rate. With the profit sharing concept that Islamic law encourages, all parties share the profit and the risk of losing.

*Riba* also affects the economy. According to Iqbal and Molyneux (2004), *riba* results in distributing society's resources inefficiently. With a system that uses *riba*, the major criterion for distributing credit is the worthiness of the borrowers. In a sharing system, the major criterion for distributing credit is the productivity of the project.

There are two main kinds of *riba* in Islamic literature: *riba al-qard* (also known as *al-nas'ah*) and *riba al-buyu* (see Figure 3.8). However, Iqbal and Khan (2005) stated that Islamic jurists have used the term '*riba*' in three senses—one basic and two subsidiaries. The basic sense relates to bank interest and is called '*riba al-qard*'. As *riba* is not merely restricted to loans, the two subsidiaries of *riba* relate to other kinds of transactions, such as sales transactions. The two subsidiaries of *riba* are *riba al-nas'iah* and *riba al-fadl*. These fall into the category of *riba al-buyu* (*riba* on sales or interest on sales).

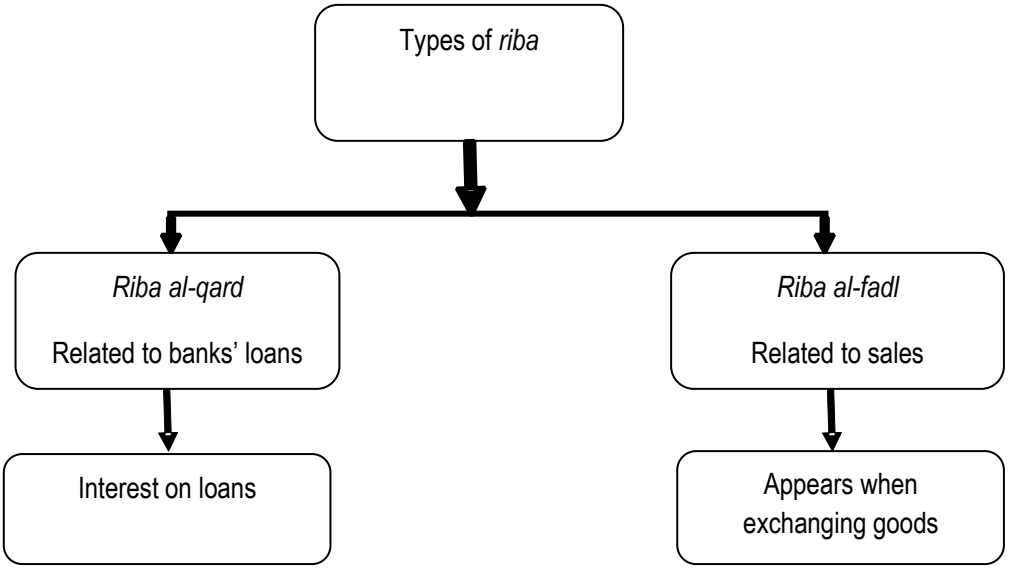



Figure 3.8 Riba

Source: Developed by the researcher

*3.3.3.1 Riba Al-qard*

*Riba al-qard* is also known in Islamic literature as *riba al-Nasi'ah*. In a legal sense, Obaidullah (2005, p. 24) explained the relationship between *riba* from an Islamic perspective and in terms of interest on loans:

> Interest implies that excess amount which a creditor settles to receive or recover from his debtor in consideration of giving time to the debtor for repayment of his loan. Various classical and contemporary Islamic scholars have defined riba as that 'increase' which an owner of valuable property (mal) receives from his debtor for giving him time to repay his debt. Riba is the name of every increase in lieu of which there is no consideration. Conventionally, interest or the excess (increase) in loan is the consideration or compensation for the period of repayment of loan. Since this period is not a valuable property (mal), its return has been declared as unlawful.

*Riba al-qard* (*al-nasi'ah*) can occur when a loan contract is made or rescheduled. As understood from the explanation above, *riba al-nasi'ah* refers to the interest on the loan. This is prohibited because the fixing in advance of a positive return on a loan as a reward for waiting is not acceptable by Islam. However, if the return is not fixed and can be either

positive or negative, depending on the final outcome of the business, which neither party knows in advance, it is allowed, provided that it is shared in accordance with the principles of justice laid down by Islam.

*3.3.3.2 Riba Al-fadl*

According to Iqbal and Khan (2005), the scope of *riba al-fadl* is much wider in a bargain economy than in contemporary market economies. In contemporary economics, one important application of *riba al-fadl* is the trade in currencies. In Islamic systems, exchange of currencies must be hand to hand and at current market exchange rate.

### *3.3.4 Prohibition of Gharar*

*Gharar* (uncertainty) means to unknowingly expose oneself or one's property to hazard (Iqbal & Molyneux 2004). All forms of contracts and transactions must be free from excessive *gharar*. This means that contracting under conditions of excessive uncertainty is not permitted (Obaidullah 2005). *Maysir* (gambling) comes under the definition of *gharar.* Islam prohibits all forms of gambling and games of chance. This is based on clear texts in the Qur'an:

> O, you who believe! Intoxicants [all kinds of alcoholic drinks], and gambling, and Al-Ansab [animals that are sacrificed in the name of idols on altars] and Al-Azlam [arrows thrown to seek luck or make decisions] are an abomination of Satan's handiwork. So avoid that in order that you may be successful (Surah al-Ma`idah, verse 90).

According to Vogel and Hayes (1998), scholars use three characteristics influenced by the type of risk condemned as *gharar*. These three characteristics include:

1. The parties' lack of knowledge about the object;
2. That the object does not currently exist; and
3. That the object evades the parties' control.

These three characteristics are considered uncertain, and this uncertainty is prohibited by Islam because risk can be assumed only after making a proper assessment based on available information. While all business decisions involve speculation, the prohibition

relates to situations that involve a gross absence of relevant information, or conditions of excessive uncertainty that make speculation similar to a game of chance.

### *3.3.5 Islamic Financial Instruments*

The major challenge for Islamic finance is to develop products that are compatible with *shariah* (Al-Salem 2009). Problems arise not because the Islamic instruments do not exist, but because conventional financial products receive more attention, even in Islamic countries. During medieval times, economic transactions were undertaken according to Islamic law. In his book, *Medieval Islamic Economic Thought: Filling the 'Great Gap' in European Economics*, Ghazanfar (2003) provided details about the influence of Arab-Islamic thought on performing early economic transactions. He argued that there were some scholars who eliminated the influence of Islamic and Arab scholarship on economic development during the European dark ages (e.g. Schumpeter 1987). Ghazanfar (2003) reported that there have been scholars who have highlighted the influence of Arab and Muslim scholars on developing economic thoughts since medieval times (e.g. Butler 1933; Harris 1959; Goitein 1971; Copelston 1972; Rescher 1968; Draper 1864). For example, Goitein (1971) stated that the principles of partnership and profit sharing as borrowing and lending instruments were used during the twelfth and thirteenth centuries in the Mediterranean region.

However, these Islamic instruments were overlapped by conventional instruments following the end of World War II. After Western colonisation at the end of the nineteenth century, in most Arab and Muslim countries, the principles of conventional banks began to become widespread. Following the increasing importance of the Arabic Gulf area after the discovery of oil, Western bank branches expanded further in the region. However, during the 1970s, Islamic banking and financial concepts emerged. According to Iqbal and Molyneux (2004), the period from 1975 and 1990 witnessed the most important phase in the development of the Islamic financial industry.

Islamic banks generally do not charge or pay interest rates on loans or deposits. Instead, they use a profit-sharing system to replace interest on borrowed or loaned money. That is, Islamic banks do not charge a fixed rate of interest; rather, they become a partner with the borrower on investment projects (Abbasi, Hollman & Murrey 1989). Some of the

instruments used by banks and investors in order to avoid participation in illegal transactions include leasing (*ijarah*), profit sharing agreement (*mudarabah*), equity participation (*musharakah*) and cost-plus-profit sale (*murabahah*). Each of these instruments is discussed in the following sections.

McGee and Bose (2009) highlighted the five major categories of Islamic funds that are used most commonly around the world:

1. Equity funds;
2. Commodity funds;
3. *Ijarah* funds;
4. *Murabahah* funds; and
5. Mixed funds.

Within these categories, McGee and Bose (2009) discussed different kinds of instruments, including *musharakah* and *mudarabah*. These five categories are the source of funds, while *musharakah* and *murabahah* are more a descriptive of the degree of relationship between two or more parties who are participating in risk and gain. However, in this section of the thesis, some of these categories (*ijarah* and *murabahah*) are considered instruments. This means they are sources of funds.

In Saudi Arabia, the share of *shariah*-compliant banking services and products has grown rapidly in recent years. All Saudi Arabian commercial banks have engaged in two main *shariah*-compliant products: ***Bai'salam***[13] (forward contract) and *murabahah*. According to the IMF (2006) country report, at the end of 2003, ***Bai'salam*** represented 46 per cent of total *shariah*-compliant banking sector assets, while *murabahah* transactions accounted for 31 per cent. However, most of the *shariah*-compliant products were at the individual level. According to Barakat and Rao (2012), in a study undertaken by the National Commercial Bank of Saudi Arabia, 95 per cent of the business of commercial banks in Saudi Arabia was undertaken with individuals to buy durable goods.

[13] ***Bai'salam*** is a type of sale in which the seller agrees to deliver specific goods to the buyer at a future date in advanced price paid in full (Kaleem & Wajid 2009). The quality and quantity of the products should be defined very well at the time of contract to avoid uncertainty (*gharar*).

*3.3.5.1 Mudarabah*

*Mudarabah* is a contract between two parties. The first party is the capital owner or financer, which in most cases is the bank. The second party is the investor (*mudarib*), which can be a person or an institution. According to Iqbal and Khan (2005), the classic contract of *mudarabah* provides a partnership arrangement between two parties in which capital owners or financers and investment managers join to establish a business. Profit is distributed between the two parties in accordance with the ratio that they agree upon at the time of the contract.

Acording to Atmeh and Ramadan (2012), *mudarabah* contracts might appear as liability in the financial statements of Islamic banks. In this case, the fund providers (depositors) are engaged in the contract, and their returns depend on the profits that will be generated through investing the money provided by the bank. *Mudarabah* contracts can also appear as assets in the financial statements of Islamic banks. In this case, the bank may invest some of the funds provided by investors in *mudarabah* contracts. The bank acts as a financier to the parties who borrow the funds, and the bank will receive a profit.

From the above description, it can be see that for *mudarabah* contracts, Islamic banks accept funds from depositors under risk-sharing arrangements. After accepting the contract from both the bank and the depositor, the bank either directly invests these funds in profitable investments or extends them to entrepreneurs on a risk-sharing basis. The main point here is that Islamic banks share the profits or losses made on *mudarabah* ventures with its depositors. The bank's purpose of doing this is to obtain funds from the public and to produce funds and profits based on Islamic law. In this case, the bank is organised as a joint stock company with shareholders supplying the initial capital.

*3.3.5.2 Musharakah*

*Musharakah*, like *mudarabah*, is a profit and loss sharing instrument. It is one of the earliest forms of Islamic finance, involving a partnership between the provider of the capital and the user or entrepreneur sales contracts (Wilson 1997). In *musharakah*, the contract is an arrangement between the Islamic bank to invest depositors' funds in joint enterprises with entrepreneurs who generally manage the project for a specific period, in addition to

making a capital contribution. However, as reported by Usmani (2004), every partner in a *musharakah* contract normally has the right to take part in business management.

As in a *mudarabah* contract, in a *musharakah* contract, both parties share the risk and returns. Losses are shared based on how much capital has been contributed. Profits are shared in any way the partners decide. In general, the Islamic bank allows the client to manage all the affairs of a *musharakah* business. The Islamic bank and the client mutually share the profits or losses made on the *musharakah* investment. This contrasts to the interest used in conventional banking, which has a predetermined fixed rate of return on a loan advanced by the financier, regardless of the profit earned or the loss suffered by the debtor. Figure 3.9 illustrates the *mudarabah* and *musharakah* processes.

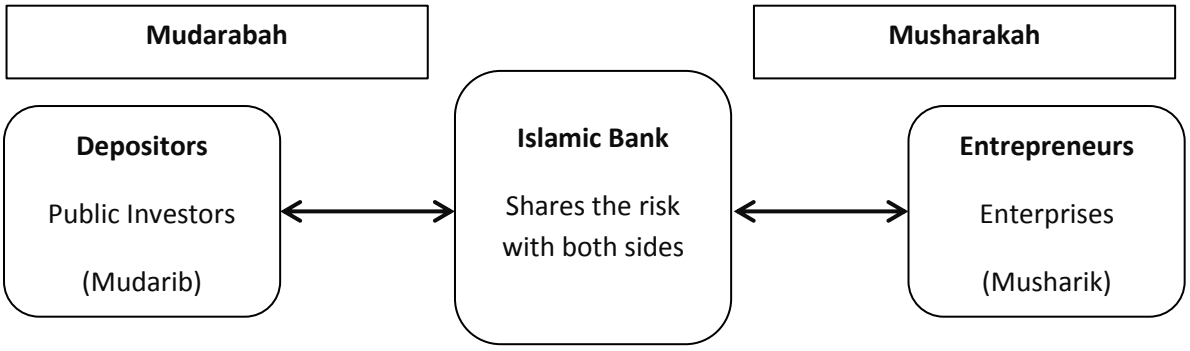



Figure 3.9 Mudarabah and Musharakah Process

Source: Developed by the researcher

*3.3.5.3 Murabahah*

*Murabahah* is a type of sale, compliant with *shariah*, where the seller clarifies how much the commodities for sale cost him or her, and sells it to another person by adding some profit. This is a debt instrument that involves the sale process. This method is one of the most popular methods used by banks in Islamic countries in order to promote interest-free transactions. This is used by many banks in asset financing, property, microfinance and commodity import and export (Securities and Exchange Commission of Pakistan 2005). *Murabahah* is also called '*tawarooq*' (obtaining cash from selling an asset).

*Murabahah* (*tawarooq*) mostly occurs when a person needs to borrow money from a bank. The process of *murabahah* is shown in Figure 3.10. The bank purchases and owns the

title to the relevant assets or particular commodities from a third-party broker. The bank then sells the commodity to the borrower at a cost price, with a certain amount of profit. The payment of the sale price is usually deferred and structured according to the wishes of the parties. The borrower enters a contract to sell the commodity again to the broker for the cost price. At the end of the transaction, the borrower will have created a deferred payment obligation to the bank. The borrower will be responsible for paying the bank according to a payment plan upon which they agreed.

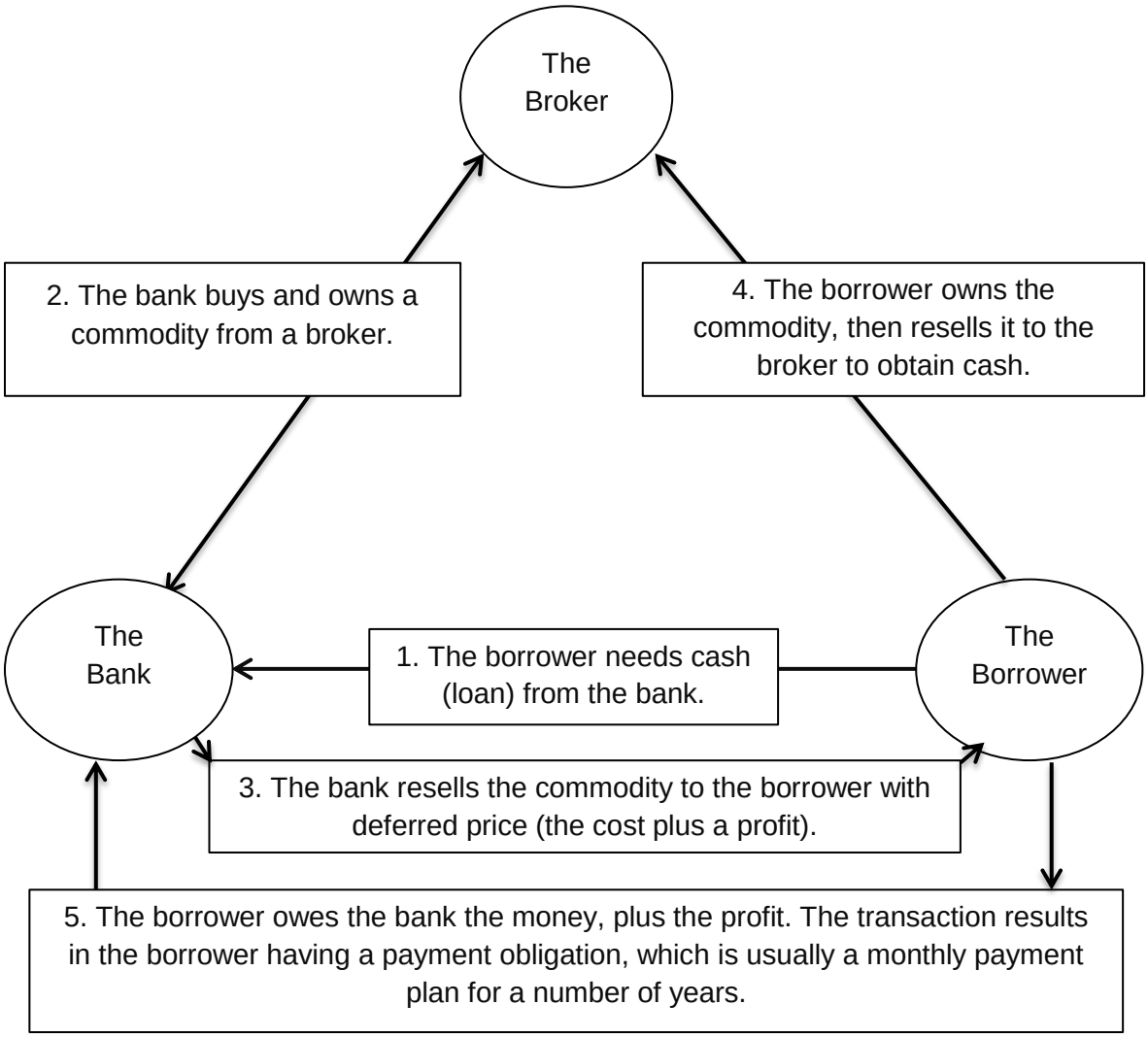



Figure 3.10 The Process of Murabahah (Tawarooq)

Source: Developed by the researcher

*3.3.5.4 Ijarah*

*Ijarah* refers an Islamic form of leasing and is a quasi-debt instrument. The process of *ijarah* is simple and similar to that known as leasing in Western methods. A number of reasons account for the rapid growth of leasing. It is considered an acceptable instrument by most scholars; it is an efficient means of financial intermediation; and, by financing assets, it is a useful tool to promote economic development. In addition, it is a well-established instrument that lends itself to standardised mechanisms and procedures; it is similar to conventional leasing; and it has a flexible mode of financing that is applicable to

securitisation, secondary trading and collaboration with conventional institutions. Thus, *ijarah* is one of the fastest growing Islamic financial instruments (Warde 2000).

In practical Islamic finance, there are two types *ijarah*:

1. Operating leasing (*ijarah*): The lessor owns the asset and is responsible for maintenance costs and ownership risks. The lessor has to return the item after finishing using it; and
2. Financial leasing (*ijarah muntahiah bi tamlik*): The lessee is responsible for maintenance costs and ownership risks, while the lessor owns the asset only technically.

Financial leasing related to capital investment is similar to the process of sales. According to Khan and Bhatti (2008b), the *ijarah* financing process is similar to conventional lease financing. However, according to *shariah*, the lessor—as an assets owner—is still responsible for all maintenances issues (such as damage, repairs, insurance and depreciation of the leased asset). The lessor is also responsible for any risk due to uncertainty associated with the productive life of the leased asset.

The financial lease contract requires full amortisation of the asset value throughout the contract term; hence, it is also called 'capital' lease. This means that the total contracted rental payments cover the entire cost of the asset and produce a reasonable return to the lessor's invested capital (Abu Ghuddah 2007). The financial leasing contract is similar to the operating leasing contract, except that the lessor also promises to transfer the ownership of the asset at the end of the lease period via a separate sale agreement or gift (Australian Government Board of Taxation 2010).

### *3.3.6 Sukuk*

In Section 3.2.5, *sukuk* was introduced as an element of capital market development. In this section, *sukuk* will be introduced as an Islamic financial instrument. *Sukuk* is an Islamic debt instrument equivalent to bonds. It is defined by the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI 2003, p. 298) as 'certificates of equal value representing undivided shares in ownership of tangible assets, usufruct and services or (in the ownership of) the assets of particular projects or special investment

activity'. According to Ayub (2008), *sukuk* is an alternative source of funding, particularly for wealthy people (such as sovereigns) and companies. This is because *sukuk* is usually present as a large loan over a long period.

*Sukuk* differs to common shares and bonds. Common shares represent ownership of a company as a whole, and are not specified by a certain period. *Sukuk* represents specified assets for a certain period. *Sukuk* differs from bonds in that *sukuk* holders participate directly in the possession of the asset or group of assets that issued the basis of the instrument. A bond is a debt due to the exporting authority, including interest payments, which are prohibited by *shariah*. There is no interest in *sukuk*; instead, the *sukuk* holder receives the proceeds of real economic transactions in the form of participation in the lease of assets that was issued on the basis of the instruments. Hence, *sukuk* is built on the concepts of *ijarah* and *musharakah.*

As reported by Ayub (2008) in the Islamic Standard for Investment, which was developed by the AAOIFI, there are eight types of investment certificate (*sukuk*). The most important types of *sukuk* are those issued on the basis of *musharakah*, *ijarah*, *salam* and *istisna'a*:

1. *Musharakah sukuk* (partnership certificates): This is an easier method of securitisation, especially when financing projects that require large amounts of money (Ayub 2008). Each participant is given a certificate that presents his or her proportion of ownership of the project. The profit earned by the project is shared according to the proportion of ownership;
2. *Ijarah sukuk* (leasing certificate): This concept is used in the case of transferring funds to develop long-term projects. Thus, it is similar to *musharakah sukuk*. However*, ijarah sukuk* represents ownership of well-defined assets tied to a lease contract, rental of which is the return payable to the *sukuk* holders. *Ijarah sukuk* holders are able to enjoy part of the rent according to their proportion of ownership of the assets. In the case of damage or destruction of the asset, the *sukuk* holders also suffer losses according to their proportion of ownership;
3. *Salam sukuk* (advanced payment for goods): According to Ayub (2008, p. 403), 'Salam Sukuk are certificates of equal value issued for the sake of mobilizing capital that is paid in advance in the shape of the price of the commodity to be delivered later'. The holder of s*alam sukuk* is the holder of the commodity that will

be delivered. The commodity must be visible, concrete, verifiable and owned by the seller. The date of delivery must also be identified; and

4. *Istisna'a sukuk* (manufacturing goods certificate): This is similar to *salam sukuk*; however, *istisna'a sukuk* is associated with manufacturing goods. In the process of *istisna'a*, the project does not exist prior to the investment being made.

From above information, it can be concluded that *sukuk* are Islamic instruments developed to meet the needs of Muslim investors to attain money, complete projects or purchase commodities according to the teachings of Islamic law. *Sukuk* is a financial certificate of a loan that does not entail any interest. Instead, it is built on the concepts of partnerships and profit and loss bearing. *Sukuk* is similar to bonds in Western markets, and provides a good alternative for Muslim society. In Saudi Arabia, *sukuk* is new market that is growing quickly.

### *3.3.7 Insurance Market Contract and Gambling*

Insurance contracts are built on the element of chance; thus, some link insurance to gambling, which is prohibited in Islam (Iqbal & Khan 2005). However, it is important to distinguish between games of pure chance, and activities that deal with the uncertainties of business activities and subsequently involve an element of chance and risk-taking.

According to Iqbal and Khan (2005), there are three types of risk: entrepreneurial risk, risk caused by nature disasters, and risk that arises from uncertainties that are not part of everyday life. Entrepreneurial risk is part of the normal course of business. In Islam, business risk is not prohibited as *gharar*. The second type of risk arises from natural disasters and unavoidable calamities. People have sought ways to protect themselves from incurring personal loss due to such calamities. In Islam, seeking insurance against natural calamities is allowed. However, there is a strong preference among Islamic scholars for cooperative insurance. Thus, an Islamic insurance company, usually called *takaful*, has the following main features:

1. The company does not assume the risks or take the profits; it is the participants (the policy holders) who mutually protect each other;

2. All contributions (premium) are accumulated into funds. This fund is invested using Islamic modes of investment, and the net profit resulting from these investments is credited back to the fund;
3. All claims are paid from this fund. The policy holders, as a group, are the owners of any net profits that remain after paying all the claims. They are also collectively responsible if the claims exceed the balance in the fund; and
4. The company acts as a trustee on behalf of the participants to manage the operations of the *takaful* business. The relationship between the company and the policy holders is governed by the terms of a *mudarabah* contract.

The third type of risk that arises from uncertainties that are not part of everyday life is unnecessary risk. People create these risks themselves. Such risks do not contribute any economic benefit to society, and individuals are not allowed to participate in these types of risks.

## 3.4 Zakat

Islamic law and teaching is based on concepts of justice that consider the benefits of all parties involved. *Zakat* is one of the ideals of Islamic teaching. It considers those in need, without placing pressure on the people who are giving *zakat*. One of the clearest differences between *zakat* and Western tax is that *zakat* adheres to the obligatory pillars of Islam, while tax is a positive law. In addition, the principles of *zakat* cannot be changed over time, while tax can be changed according to human considerations and as a consequence of changes in economic or political situations. Moreover, *zakat* should be taken from surplus money or wealth and given to the needy, while tax is taken from both the wealthy and poor and is mostly used by the government. Thus, *zakat* is not a tax, and tax cannot be considered *zakat*. However, in a society where Muslim and non-Muslim people live together, there can be a coordinated and integrated process between *zakat* and tax, which helps achieve social and economic development in accordance with the provisions and principles of Islamic law (Shehata 2012).

*Zakat* is the third pillar of Islam and is stressed by the Qur'an. In the Qur'an, Allah is recorded as stating:

> O ye who believe! There are indeed many among the priests and anchorites, who in Falsehood devour the substance of men and hinder [them] from the way of

> Allah. And there are those who buy gold and silver and spend it not in the way of Allah. Announce unto them a most grievous penalty—On the Day when heat will be produced out of that [wealth] in the fire of Hell, and with it will be branded their foreheads, their flanks, and their backs, their flanks, and their backs—This is the [treasure] which ye buried for yourselves: taste ye, then, the [treasures] ye buried! (19:34-35).

*Zakat* literally means 'purification' and the increase of wealth. Al-Ajmi, Abo Hussain and Al-Saleh (2009) defined *zakat* as the corporate taxation levied on any wealth that remains idle and unused by a business for the entire Islamic calendar year. Another definition of *zakat* was provided by Samad and Glenn (2010, p. 303), who stated that *zakat* means 'the fertility or growth'. Sabiq (1991, p. 1) defined *zakat* as 'that portion of a man's wealth which is designated for the poor'. Zaim (1989, p. 101) defined it as 'a compulsory levy imposed on the Muslims so as to take surplus money or wealth from the *comparatively* well-to-do members of the Muslim Society and give it to the destitute and needy'. From these definitions, the social objective of *zakat* is clear. It seeks to distribute wealth among society to ensure high income earners support low income earners. This reflects the value that Islam places on social solidarity and welfare (Abd. Wahab & Abdul Rahman 2011; Jawad 2009).

The main challenge for *zakat* remains operational in nature: how can companies calculate and define the *zakat* base? How can the conditions of *zakat* be applied to the business environment? The Islamic juristic concluded some conditions that should be available for assets or money to be obligatory. As reported by Uthman (1997), these conditions include:

1. Absolute ownership: The wealth or assets that are subject to *zakat* should be owned completely by the firm or the individual. This condition also implies the exclusion of any form of debt or wealth that cannot be attributed to a private entity or trusts, or is illegally acquired;
2. Real or assumed growth: The growth of wealth can be by reproduction, such as with livestock; the result of growth of goods, such as agricultural products; or can grow in value via exchange, such as money, gold, silver and other tradable goods;
3. Minimum amount liable to *zakat* (*nisab*): Each type of asset has a minimum amount that is due to *zakat*; if earnings are below this minimum amount, no *zakat* is collected. This will be discussed in more detail later;

4. Excess over basic needs: There is no *zakat* on assets used for basic needs, such as motor vehicles, clothes and houses. Basic needs must be met before *zakat* is taken; and
5. Elapsing of 12 lunar months: One year must pass on the ownership of a particular form of wealth before *zakat* can be claimed. However, this condition applies only to livestock, money, gold, silver and tradable items; it is not applicable to agricultural products, honey and minerals. This is because agriculture products are the result of growth and cannot grow any further; however, the other groups, such as money, gold, silver and livestock, need time to grow and increase.

### *3.4.1 Zakat in Saudi Arabia*

As stated earlier, Saudi Arabia has some characteristics that make it an attractive area for economic studies in general and for financial studies in particular. One of these characteristics is the *zakat* payment. Al-Sakran (2001) stated that the absence of income tax on citizens is one of the basic features of the Saudi Arabian economy. *Zakat* is instead used as a form of tax in Saudi Arabia and is based on individuals' and companies' net worth.

The year 2011 witnessed significant developments in the area of tax and *zakat* in Saudi Arabia (KPMG 2009). According to Saudi's tax law,[14] no income tax is charged on people from Saudi Arabia or Gulf Cooperation Council (GCC) states. However, based on their net worth, national corporations in Saudi Arabia are asked, according to Islamic law, to pay *zakat*. *Zakat* is 2.5 per cent of the *zakat* base, which is determined according to a corporation's net worth. As explained by Al-Ajmi, Abo Hussain and Al-Saleh (2009), if the *zakat* base is negative or lower than the adjusted net income for the year, *zakat* is imposed on the adjusted net income. If both are negative, no *zakat* is due.

According to KPMG (2009), Saudi Arabian individuals and nationals of the states of the GCC (Bahrain, Kuwait, Oman, Qatar and the United Arab Emirates) who conduct business in commercial goods in Saudi Arabia are subject to *zakat*. Also subject to *zakat* are Saudi Arabian companies, companies owned by nationals of GCC states that conduct business in Saudi Arabia, all shares of Saudis, and any nationals of GCC states who participate in

[14] The new tax law became effective from 30 July 2004.

joint companies in Saudi Arabia. If a company has GCC national owners and non-GCC owners, GCC nationals pay *zakat* on their share of the *zakat* base and non-GCC owners pay income tax on their share of the taxable income.

Resident capital companies that are not owned by Saudi or GCC shareholders and non-residents who have business activities in Saudi Arabia through permanent establishments are subject to a corporate income tax at a rate of 20 per cent. According to Saudi Arabian tax law, a company is considered a resident company if it is formed under the Saudi Companies Regulations, or if its central control and management is situated within Saudi Arabia. For these companies, both *zakat* and tax are collected by the DZIT (KPMG 2009).

The DZIT was established by Ministerial Resolution 394, dated 7/8/1370 H. (14 June 1951). The mission of the DZIT is to administer and collect *zakat* on commercial goods from Saudi Arabian individuals and companies, and from GCC state individuals and companies, subject to the same treatment as Saudis. The DZIT also administers and collects tax from non-Saudi individuals who are undertaking business in Saudi Arabia, resident Saudi companies who have shares of non-Saudi partners, and non-resident companies undertaking business in Saudi Arabia through permanent establishments or from deriving income from a source in Saudi Arabia (Ministry of Finance n.d.).

The way *zakat* is extracted from annual wealth and companies' profits is not clear and is subject to each company's definitions. Therefore, the following section focuses on *zakat's* items related to capital structure, which is mainly related to corporate *zakat* and income tax. This includes *zakat* base calculation in an effort to demonstrate the effect of *zakat* on a firm's capital structure and profit.

### *3.4.2 Zakat and Monetary Wealth*

Monetary wealth refers to the cash or semi-cash that can be transferred from one person to another. It is different from buildings, motor vehicles, land and so forth. It can be cash (currency) or semi-cash, such as gold, silver or securities, including equity and *sukuk*. Semi-cash can be transferred to cash more quickly and easily than other assets, such as buildings or land. When an individual reaches or exceeds a certain amount of money, *zakat* must be paid. Gold and silver is the base of determining the minimum amount of

wealth that is obligated to *zakat* payment (*nisab*). This is calculated based on the market price of 85 grams of gold or 595 grams of silver. According to Alsultan (1986), because gold is more constant than silver in price, it is recommended for use as the basis of calculating the minimum amount of wealth obligated to *zakat* payment (*nisab)*. Hence, if one has cash that is equal to the price of 85 grams of gold (*nisab*), and this amount of money is idle and unused for one year,[15] 2.5 per cent of this must be paid *zakat*. For example, if the price of one gram of pure gold today was $50, the minimum amount of money subject to *zakat* would be $4,250 ($50 x 85 grams). The *zakat* amount due on that $4,250 would be $106.25 (4,250 x 2.5% or 4,250/40). According to this example, if one has less than $4,250 for one year, one is not subject to *zakat*. In this situation, one is more likely to receive *zakat*.

In the early Islamic period (approximately 1,430 years ago), according to Suhaib (2009), *zakat* was applied to gold, silver, merchandise, livestock, treasure, minerals and agricultural produce. In contemporary society, Islamic jurists agree that *zakat* should be paid on holdings of currency and various types of financial assets, such as bank deposits, shares and securities. Some items that are excluded from *zakat* include private houses, clothing apparel, household utensils, transportation (including cars, bicycles and animals such as horses), food, articles of adornment (other than gold and silver), coins for personal expenditure, books, tools and machinery used for production, and animals used in agriculture (Metwally 1997). Thus, anything that has personal use, does not grow in wealth, or is not used for trading purpose is not subject to *zakat*.

In business, the principle of *zakat* is based on *urud at-tijarah* (trade goods), which refers to anything obtained for the purpose of trade for profit (Abdul Rahman 2007; Al-Qardawi 1999). *Zakat* should be paid once each year (usually at the end of the financial year) at the rate of 2.5 per cent. A company's capital structure might include equity and debt. Equity is the amount of money one may invest in a joint stock company. Equity owners might have more than one share certificate, which presents in total the amount investors own in the

[15] The condition that net wealth must be stored for one year does not apply to companies and business practices. This is because it is difficult to determine the amount of company money that stays idle for one year, due to the continuous selling and buying process. Thus, if the minimum amount of wealth obligated to *zakat* is available at the end of the financial year, the company has to pay 2.5 per cent of this as *zakat*. Most companies will have the wealth that is obligated to *zakat* at the end of each financial year, except those that have attained no profit. Hence, each company that has attained profit at the end of the financial year is expected to pay *zakat*.

company. Equity returns are usually presented at the end of the financial year with profit or loss. Hence, equity is a part of the company capital structure and is subject to *zakat*. According to Alsultan (1986), Saudi Arabian commercial law requires joint stock companies to pay *zakat* on their net worth, which includes all shares others have in companies.

### *3.4.3 Firms' Zakat and its Components*

It can be concluded that there is a difference between *zakat* as a compulsory Islamic tax, and the tax that non-Muslim companies trading in Saudi Arabia have to pay. As mentioned in Section 3.4.1, firms in Saudi Arabia that are owned by non-Muslims are required to pay tax, while firms that are owned by Muslims are required to pay *zakat*. As Abdul Rahman (2007) stated, Muslim-owned companies are expected to pay *zakat* on their business wealth as part of their obligations towards the rightful recipients of *zakat*. Accordingly, it is expected that Muslim states allow companies that pay *zakat* on their business wealth to claim rebates from their tax liability to help ease their financial burden. Tax rebates also encourage companies that are owned by a majority of Muslims to pay *zakat*.

As defined by the DZIT (n.d.) regulations, the *zakat* base includes a capital amount that has been held for one year. However, any increments to capital during this year are not added unless they are from a capitalised equity item that has been held for one year. Balances of all provisions and reserves that have been held for one year are added to the *zakat* base. Carried over profits[16] are considered additions to the entity's capital. However, retained profits for distribution[17] are not added to the *zakat* base if they are no longer in possession of the company, but are deposited at a bank for the benefits of shareholders, and the company cannot withdraw or accrue interest on them. The year's net profit, as adjusted for *zakat* purposes, is added to the *zakat* base.

When calculating the *zakat* base for a company, some items must be added to the *zakat* base and some items can be deducted from the *zakat* base. Two of the most important items added to the *zakat* base are entity capital and net profit. Some considerations must

[16] Carried over profits are profits realised in prior years and retained (not distributed among partners).
[17] Retained profits for distribution are the amount of profits the company has decided to distribute to shareholders, but has not yet distributed.

be met by items added to the *zakat* base. One of these conditions is that the item should be held to account for one year. Another condition is that the item should have a trading purpose and be completely owned by the company.

The items charged to the *zakat* base include fixed assets' net value. The net value of fixed assets is an allowed deduction that should meet two conditions. The assets must be fully paid and their value must not exceed the total of paid capital, the prior year's profits carried over, the provisions, the reserves or the current credit account. The value of the entity's construction in progress is an allowed deduction for *zakat* because it is considered a fixed asset.

Debt, as part of monetary wealth, can be for a company (receivable notes or credit) or on a company (payable notes or debt). That is, a company might be a creditor, a debtor or both. In terms of *zakat*, the important aspect of debt is that which customers pay to the company (credit) because this is part of the company's net worth. A company should add debt that can be received (good debt) to the *zakat* base when calculating it.

Loans used to finance acquisition of capital assets or investments are added to the *zakat* base. Loans used to finance inventories are added to the *zakat* base after one year. The owner or partner's current credit account is included in the *zakat* base because it is considered an investment in the entity's business. Either the beginning or ending balance is included—whichever is less. The higher balance is included when the increment has resulted from closing carried profits or similar items in the account.

Long-term investments are not included in the *zakat* base. However, short-term investments that are retained to be resold are included because they are considered goods for trade. Investment in the capital of local companies is not included, in order to avoid double subjection to *zakat*, given these have already been subject to *zakat* in the companies in which they are invested. The long-term investments by banks in Saudi Arabian governmental bonds are deducted from the *zakat* base.

The value of lands and buildings is deducted from the *zakat* base if these are owned by the entity. Any lands owned by a partner that are contributed to the entity as the partner's in-kind share in capital, and used in the entity's activity, are considered owned by the

entity. The partner owning the land has a current credit account that fully covers the value of the land; thus, this is considered owned by the entity and subject to *zakat* deduction.

Table 3.6 summarises the items that must be added to the *zakat* base. Capital, profit and loans are the basic items added to the *zakat* base. Table 3.7 summarises items that can be deducted from the *zakat* base. Fixed assets, losses and expenses are the main items that can be deducted. Although expenses can be deducted, some expenses items must be added. Tables 3.8 and 3.9 summarise those expenses that must be added to the *zakat* base and those that can be deducted.

Table 3.6 Items Added to Zakat Base

| Item | Details |
|---|---|
| **Capital** | Capital amounts that have been held to account for one year are added to the *zakat* base; however, increments to capital during the year are not added unless they are a capitalised equity item that has been held for one year. |
| **Balances of all provisions and reserves** | Balances of all provisions and reserves that have been held to account for one year are added to the *zakat* base, with exception to the balance of depreciated provision. |
| **Carried over profit** | Carried over profits are profits realised in prior years and retained (not distributed among partners). These profits are considered additions to the entity's capital. |
| **Retained profits for distribution** | This refers to the amount of profits the company has decided to distribute to shareholders, but has not yet distributed. Such profits are not added to the *zakat* base if they are no longer in the possession of the company, if they are deposited at a bank for the benefits of shareholders, and if the company cannot withdraw or accrue interest on them. |
| **Year's net profit, as adjusted** | The year's net profit, as adjusted for *zakat* purposes, is added to the *zakat* base. |
| **Loans** | Loans used to finance the acquisition of capital assets or investments for the entity are added to the *zakat* base. Loans used to finance inventories are also added to the *zakat* base after one year. |
| **Owner and partner's current credit account** | The owner or partner's current credit account is included in the *zakat* base because it is considered an investment in the entity's business. Either the beginning or ending balance is included—whichever is less. The higher balance is included when the increment has resulted from closing carried profits and similar items in the account. |
| **Subsidies** | Subsidies are considered income (compensation) to recipient companies. Subsides are added to the *zakat* base of recipient companies in the year of the actual receipt, and notwithstanding the one year term. |

Source: KPMG (2009).

Table 3.7 Items Deducted from Zakat Base

| Item | Details |
|---|---|
| **Fixed assets' net value** | The net value of fixed assets is an allowed deduction, provided the following conditions are met:<br>1. The assets are fully paid; and<br>2. The assets' value does not exceed the total of paid capital, the prior year's profits carried over, the provisions, the reserves or the current credit account. |
| **Carried over losses, as adjusted** | Carried forward losses that have been added to the previous year's accounts as a result of a profit or loss are deducted from *zakat* to prevent doubling *zakat*. |
| **Pre-incorporation or pre-establishment expenses** | The balance of pre-incorporation or pre-establishment expenses is deducted from the *zakat* base. |
| **Entity's construction in progress (capital expansion)** | The value of the entity's construction in progress is an allowed deduction for *zakat* because it is considered a fixed asset. |
| **Investment** | 1. Long-term investments are not included in the *zakat* base;<br>2. Short-term investments that are kept to be resold are included in the *zakat* base because they are considered goods for trade;<br>3. Investments in the capital of local companies are not included in order to avoid double subjection to *zakat*, as they have already been subject to *zakat* in the companies in which they are invested; and<br>4. Long-term investments by banks in Saudi Arabian governmental bonds are deducted from the *zakat* base. |
| **Lands** | The value of lands and buildings is deducted from the *zakat* base if owned by the company. Either of the following is considered ownership by the company:<br>1. Lands owned by a partner, contributing to the entity as the partner's in-kind share in capital, and used in the entity's activity; and<br>2. The partner who owns the land has a current credit account that fully covers the value of the land. |

Source: KPMG (2009).

Table 3.8 Expenses Deducted from Zakat Base

| Item | Details |
|---|---|
| **Wages and salaries** | Wages, salaries and similar benefits are allowed deductions if they meet the above conditions. The taxpayer should attach a certificate by the General Organization for Social Insurance stating any wages that are subject to the social insurance system, and a certificate by the taxpayer's chartered accountant certifying wages that are not subject to the social insurance system. |
| **Depreciation** | The following conditions apply for depreciation:<br>- The asset is a fixed asset;<br>- The asset is owned by the entity;<br>- The asset is of a depreciable nature;<br>- The asset is used in the entity's business;<br>- Only the straight-line method is used; and<br>- The depreciation rates used are the legally prescribed rates. |
| **School fees** | School fees paid by taxpayers to their employees' children are deductible expenses, provided they do not exceed four children per employee and 5,000 Saudi riyals per child. |
| **Bad debts** | Bad debts are deductible, provided the following conditions are met:<br>- Serious efforts have been made by the taxpayer to collect the debt, with no success;<br>- A decision has been made by the taxpayer's board of directors approving the write off of the debt, and confirming it by deleting it from the taxpayer's records;<br>- A certificate by the taxpayer's chartered accountant has been provided to certify the writing off of the debt from the taxpayer's books and records; and<br>- The taxpayer seeks to reinstate any written off debts if they are ever received in the year of collection. |
| **Prior year's losses** | The prior year's losses are allowable expenses, provided it is confirmed that they were not deducted during the loss years. |

Source: KPMG (2009).

Table 3.9 Expenses Not Deducted from Zakat Base

| Item | Details |
|---|---|
| **Provisions or reserves** | Except for banks that are allowed a bad debt provision, provided two conditions are met:<br>- Submittal of a certificate by SAMA of the amount of frozen debt (doubtful debts); and<br>- The debt is reported once it is collected. |
| **Expenses not related to the entity's activity** | Such as personal expenses. |
| **End-of-service provision** | This is not an allowable deduction. However, actual paid end-of-service payments are allowable deductions, provided they are supported with documents. |
| **Fees to the board of directors** | As they are considered distribution of profit. |
| **Salaries and awards to partners** | As they are considered distribution of profit. |

Source: KPMG (2009).

### *3.4.4 Firms' Zakat Calculation*

As reported earlier, *zakat* influences the measurement (valuation) aspect of accounting (Sulaiman 2003). As Abdul Rahman (2007) stated, the AAOIFI, based in Bahrain, issued a Financial Accounting Standard for *zakat* called FAS 9. This standard was effective from 1 January 1999. According to Paragraph 1 of FAS 9, this standard provides guidelines for the accounting treatments related to the determination of the *zakat* base, measurement of items included in the *zakat* base and disclosure of *zakat* in the financial statements of Islamic banks and other financial institutions. Hence, aside from these constant basic rules, the use of the standard might differ from one Islamic state to another. Thus, there is a need to improve and establish a constant *zakat* accounting standard that firms and businesses can adopt and apply around the world. This issue has been argued by different scholars (e.g. Abdul Rahman 2007; Abu Bakar 2007).

As reported by Graham (2000), one of the problems that researchers face when they investigate how tax incentives affect corporate financial policy and firm value is the difficulty of calculating corporate tax rates due to data problems and the complexity of the tax code. Other challenges relate to quantifying the effects of interest taxation at the personal level and understanding the bankruptcy process and the attendant costs of financial distress. In Saudi Arabia, the situation is often more complex. There is no clear

standard of calculating *zakat* in the corporation environment. Moreover, it seems that *zakat* is subject to personal understandings rather than a base of quantifiable methods.

The numbers of Islamic banks are not only increasing in Muslim countries; they are also increasing and appearing in non-Muslims countries, such as Great Britain, continental Europe, the US and Australia (e.g. Tomkins & Karim 1987; MCCA 2009). The increase of Islamic banks will support the increase of business with Islamic compliancy. In turn, this should enhance Islamic accounting practice (e.g. Gambling & Karim 1986; Hamid, Craig & Clarke 1993). These developments in Islamic banks and Islamic accounting will enhance Islamic financial practice.

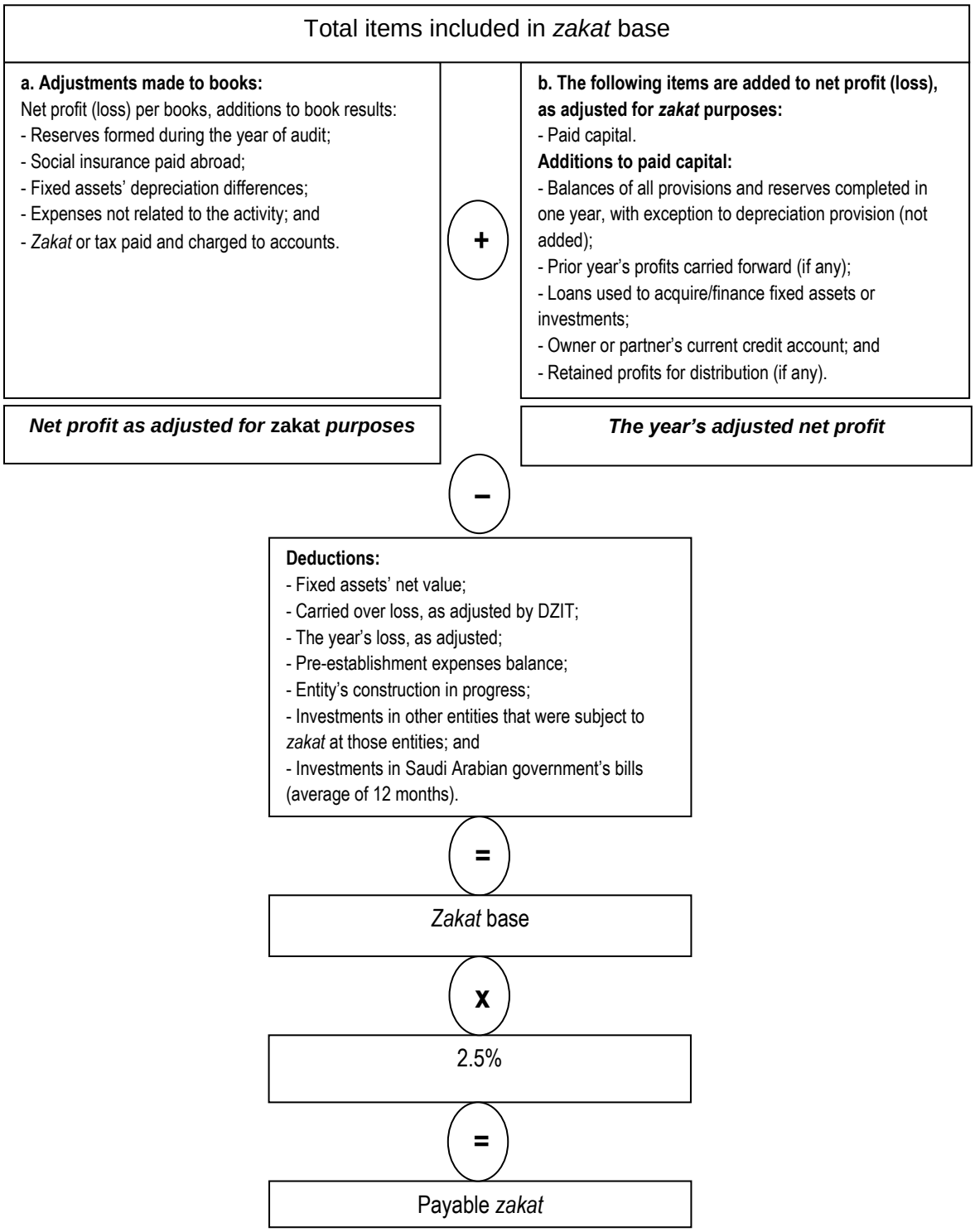
As can be concluded from Tables 3.6, 3.7, 3.8 and 3.9, a company's *zakat* calculation consists of four main parts. The first part is net profit (or loss), as adjusted for *zakat* purposes. The second part is the items that are added to the net profit for *zakat* purposes. The third part is the items that are allowed to be deducted from the *zakat* base. The first three parts comprise the *zakat* base. The fourth part is payable *zakat*, which consists of 2.5 per cent of the *zakat* base.

As shows Figure 3.11, net profit is the most important for calculating the *zakat* base; however, this is not necessarily easy. The net profit must be adjusted in order to be ready for *zakat* calculation. Some items and expenses have to be deducted from the total amount of *zakat* base. Some other items need to be added to the *zakat* base. All these processes can be organised via arrangements with the DZIT.

In brief:

*Zakat* = net current assets (current assets – current liabilities) +/- adjustments x 2.5% x Muslim ownership share

Figure 3.11 Zakat Calculation



## 3.5 Conclusion

Due to global economic and political issues, Saudi Arabia has to manage ongoing internal and external social and economic challenges. Dependence on oil as its main source of income was diagnosed in the 1980s as a major problem that Saudi Arabia still needs to solve. Hence, Saudi Arabia continuously seeks to diversify its economy and engage in privatisation plans in order to make its economy an attractive and safe investment environment for local and foreign individuals, companies and investors.

The Saudi Arabian stock market has engaged in an in-depth development plan since the beginning of the twenty-first century. In 2003, the CMA assumed responsibility for overseeing the market. Since then, the CMA has launched many rules and regulations to govern the stock market. However, the effect of these rules and regulations became clearest after 2006. The stock market collapse at the end of 2006 called for these regulations to become stricter. After 2006, stock market transactions became more realistic and stable. This resulted from the regulations and subsequent punishments upheld by the CMA, despite the delay in applying them to the market. Some of the most important events in the history of the Saudi Arabian stock market following 2006 included an increase in the sectors involved in the market, and an increase in the number of listed companies in the market.

The Saudi Arabian investment legal system has two main unique characters. First, it prohibits *riba* (interest) on debt, and has replaced this with other Islamic financial instruments that tend to be fairer to all parties, and cause all parties to share the risk according to their participation in the transactions. The second is *zakat*, which is the Islamic complementary tax. In Islamic accounting, *riba* influences the capital structure of a company and its effect on the disclosure practices of that company. *Zakat* influences the measurement (valuation) aspect of accounting.

# Chapter 4: Approach and Methodology

## 4.1 Introduction

The methodology and approach used in this research were developed with consideration of quantitative methods by focusing on predetermined and numeric data. This chapter presents the research design, hypotheses and methodology employed to address the research questions posed earlier. This chapter is divided into seven sections. Section 4.2 discusses the hypothesis process development for this study. Section 4.3 gives information about the sampling and data collection processes. Section 4.4 discusses the measurement methods for the variables and their underlying rationales. Section 4.5 introduces the statistical approach used in this study. Detailed information about the statistical analysis methods are also discussed in section 4.6. Section 4.7 concludes the chapter.

## 4.2 Hypotheses Development

The trade-off theory suggests that the biggest advantage of using debt is the tax savings that will be achieved. This advantage can be offset by the very low tax (*zakat*) applied to Saudi Arabian companies, which does not exceed 2.5 per cent of net worth. Moreover, investors in Saudi Arabia are forbidden from investing in companies that have a debt ratio higher than 33 per cent (Al-Ajmi, Abo Hussain & Al-Saleh 2009). Figure 4.1 shows the normal distribution of the debt ratio of 74 companies in the Saudi Arabian stock market in 2009. The mean of debt to total assets is approximately 0.31.

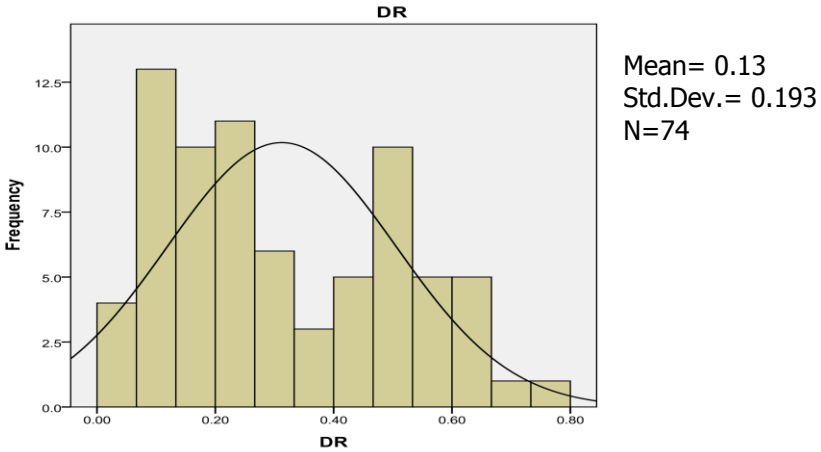



Figure 4.1 Debt Ratios of Saudi Arabian Firms 2009

Therefore, the hypotheses developed for this study will consider the expected low debt ratio and how this reflects on firms' financial performance in Saudi Arabia. The hypotheses will also reflect the low tax situation that characterises the Saudi Arabian economic system.

### *4.2.1 Capital Structure Effects*

Capital structure theories mainly focus on the expenses and risks associated with the choice of capital structure. The aim is to reduce the risks associated with capital structure choice and choose the optimal one to help improve firms' values—an optimal capital structure will improve the financial performance of the firm. However, the theoretical relationship between financial performance and financial leverage is confusing. Modigliani and Miller (1958) concluded that capital structure is irrelevant to determining firm value.

The pecking order theory of Donaldson (1961) concludes that management strongly prefers to use internal funds when available, and does not use an external source of funds unless internal resources are unavailable. Myers (1984) and Myers and Majluf (1984) provided a theoretical justification of Donaldson's results. Myers (1984) referred to this as the pecking order theory of financing. This states that firms prefer to finance new investment first internally with retained earnings, second with debt, and last with an issue of new equity. According to this theory, firms consider all the financing methods available and choose the least expensive. This theory predicts that high growth firms, typically with large financing needs, will end up with high debt ratios due to managers' unwillingness to issue equity. However, Barclay, Smith and Morellec (2006) found that firms with high growth consistently use less debt in their capital structures. According to this explanation of pecking order theory, it is expected that firms with high liquidity will tend to use less debt because they are willing to use internal funds if they are available.

Myers and Majluf (1984) argued that information availability leads managers and investors in their investment decisions. Managers will hesitate to issue equity if they feel that it is undervalued by the market. However, investors will be aware of the hesitation of managers to issue new equity when it is underpriced. Hence, both managers and investors react according to the available information. Therefore, if managers tend to issue undervalued equity (low priced equity), wealth will be transferred to the investors against the

shareholders' benefits and wealth. In this situation, internal funds and debt will be preferred against equity.

The trade-off theory arose in response to the original theory of Modigliani and Miller. Kraus and Litzenberger (1973) developed a model of optimal financial leverage. This theory concluded that optimal capital structure comes from balancing the benefits of tax from using debt against the costs associated with debt, such as bankruptcy or financial distress (Scott 1976; Kim 1978). The trade-off theory suggests that an optimal capital structure exists and that a firm can predict its optimal capital structure by balancing the benefits and costs associated with issuing debt. In a market where tax is expected to be very low, the cost of issuing more debt will exceed the associated tax benefits. Hence, in this scenario, an optimal capital structure will have low debt and higher equity.

Several researchers have undertaken studies regarding the above theories, but have failed to determine a conclusive relationship between capital structure and financial performance. Furthermore, most research regarding capital structure has been undertaken in the Western economic environment, where debt can offer tax-shield benefits to firms. The hypotheses listed in the following sections have been developed to test the validity of these studies and theories in the Saudi Arabian environment, where tax-shield benefits are expected to be low.

Hypothesis 1 states:

**H1:** A firm's profitability tends to increase with any decrease in leverage scale.

### *4.2.2 Zakat Effects*

A tax shield is a benefit of using more debt in the capital structure mix. As stated in the literature review section, the absence of income tax on citizens is one of the basic features of the Saudi Arabian economy (Al-Sakran 2001). *Zakat* is the form of tax used in the Saudi Arabian economy. In general, *zakat* is based on an individual or company's net worth. As reported before, Saudi Arabian individuals or nationals of GCC states who conduct business in Saudi Arabia in commercial goods are subject to *zakat*. Also affected are Saudi companies and companies owned by nationals of GCC states that conduct business

in Saudi Arabia, all shares of Saudis, and nationals of GCC states who participate in joint companies in Saudi Arabia.

As aforementioned, the trade-off theory states that suitable capital is based on the way firms balance capital structure component costs successfully. This can be achieved by creating a balance between the tax savings that arise from debt, thus decreasing agency costs, bankruptcy threats and financial distress (Ayen & Oruas 2008). The benefits of maximising a firm's value, as suggested by the trade-off theory, can be traded for the cost of issuing debt. That is, the benefits of the trade-off theory are traded against their costs in order to maximise a firm's value. Saudi Arabia's tax system maintains its own identity with respect to *zakat* and taxes. The tax system in Saudi Arabia maintains an influence on the trade-off theory. In a market where tax expected to be very low, the cost of issuing more debt exceeds the tax benefits associated with it. Hence, in such a scenario, an optimal capital structure will be one with low debt and more equity.

In his study of leverage determinants in the absence of the corporate tax system in Saudi Arabia, Al-Sakran (2001) stated that *zakat* makes no difference if financing uses equity or debt, since both are included in the *zakat* base. He added that the effect of interest payments on loans, if any, would be small because it is deducted from income, which is included in the *zakat* base. Hence, the effect of *zakat* on financial performance is small and insignificant. The following hypotheses were developed to test these propositions:

**H2:** There is a relationship between capital structure and *zakat*.

**H3:** There is a relationship between *zakat* and profitability.

## 4.3 Sampling and Data Collection

This study used a secondary data method to collect the necessary data. This method was chosen because the data needed for this study were all quantitative. The data were collected from different resources. The first of these was the Saudi Arabian stock market (Tadawul) website. For most of the firms, some data were available at this website for the period from 2005 to 2010. However, it was found that some firms' data were available only from 2007. As a result, another data resource was added. The firms' own websites were used as secondary data resources. Some firms had their annual reports published on their websites; thus, the researcher checked each website for the availability of the data. A data

collection template was developed to assist the process of collecting data. The data were initially stored in a Microsoft Excel file to assist calculation of the variables. Table 4.1 shows the summary results of the data collection process for each year.

Table 4.1 Data Collection Summary

| Sectors[18] | Numbers of Companies Available for Each Sector Each Year | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| **1** | 5 | 6 | 6 | 7 | 7 | 10 | 12 | 14 | 14 |
| **2** | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| **3** | 4 | 4 | 4 | 4 | 4 | 6 | 7 | 8 | 9 |
| **4** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| **5** | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 13 |
| **6** | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 4 |
| **7** | 4 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 |
| **8** | 6 | 6 | 6 | 6 | 6 | 8 | 8 | 11 | 12 |
| **9** | 7 | 7 | 7 | 7 | 7 | 9 | 12 | 12 | 13 |
| **10** | 3 | 3 | 3 | 3 | 3 | 4 | 6 | 6 | 6 |
| **11** | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 |
| **12** | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| **13** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| **Total** | 57 | 60 | 60 | 62 | 62 | 72 | 82 | 91 | 96 |
| **Sample size*** | 513 | 480 | 420 | 372 | 310 | 288 | 246 | 182 | 96 |

*Sample size = number of firms (e.g. 57) x number of years (e.g. 9).

As can be seen from Table 4.1, the data sample consisted of 531 cases (57 firms x 9 years) for 13 sectors. In this study, the financial sectors (commercial banks, insurance sector and non-bank financing companies) were excluded because the nature of their financial reports usually differs from other sectors. The sectors included in this study were:

- Petrochemical industries;
- Cement;
- Retail;
- Energy and utilities;
- Agriculture and food industries;

[18] The numbers 1-13 represented the sectors included in the study where number 1 represented the Petrochemical industries sector; number 2 represented Cement sector…etc.

- Telecommunication and IT;
- Multi-investment;
- Industrial investment;
- Building and construction;
- Real estate development;
- Transport;
- Media and publishing; and
- Hotels and tourism.

In order to maintain consistency in the data, any companies established after 2002 were excluded. The study also omitted any company whose financial year ended on a day other than 31 December.

Using the period from 2002 to 2010 for data collection was considered reasonable. During this period, the seventh and eighth development plans were implemented, which focused on the privatisation strategy. There was also notable development in the Saudi Arabian stock market. Strict regulation was implemented and more companies joined the market. The private sectors showed stable growth, thus supporting the oil and government sectors. As a result, the numbers of companies joining the stock market further increased (Figure 4.2). Moreover, the availability and reliability of data were greater during this period than during previous periods.

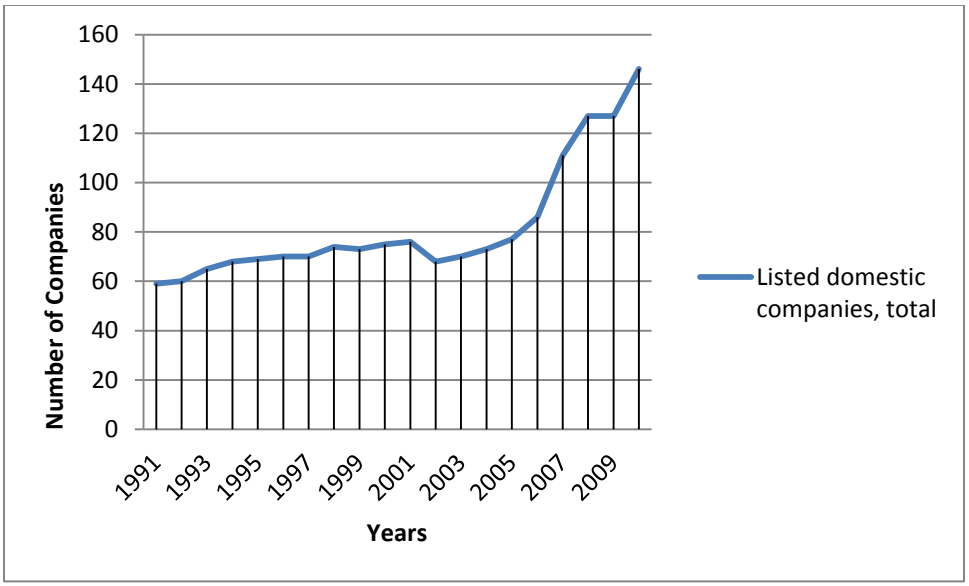



Figure 4.2 Number of Listed Domestic Companies 1991–2009

Source: Modified by researcher from information provided by the World Bank (n.d.) data statistics.

## 4.4 Variables and Measurements

As reported in the above sections, the data matrix consisted of 513 cases (57 firms x 9 years) in the rows, and 10 variables—firms, years (2002 to 2010), leverage (debt level), GPM, NPM, ROA, ROE, *zakat*, age (years) and size (logarithm of sales)—in the columns. This section highlights the variables and their measures. Table 4.2 summarises the variables' components and measurements.

### *4.4.1 Independent Variable (Financial Leverage and Zakat)*

The definition of company leverage depends on the objectives and aims of the researcher. However, Rajan and Zingales (1995) offered one of the most important empirical studies to analyse leverage and its determinants. They introduced five definitions of leverage, while prior studies focused on the debt–total assets ratio as an acceptable measure of financial leverage (e.g. Ebaid 2009; Zeitun & Tian 2007; Abor 2005; Abdullah 2005). Such studies applied three measures of financial leverage: short-term debt to total assets, long-term debt to total assets and total debt to total assets.

Given the observed differences in measuring leverage, and in order to follow the aims of this thesis, this study used total debt to total assets (total debt (liabilities)/total assets) as a measure of financial leverage. This offered a complex view of how greatly firms depend on debt to finance their assets. Similarly, this study focused on total debt (or total liabilities) rather than short-term debt or long-term debt in order to follow the principal aim of this research, which focused on total liabilities in general. *Zakat* is presented in income statements as a tax item. Therefore, this study used the logarithm of actual *zakat* amount as a measurement of this variable.

### *4.4.2 Dependent Variables*

Given the observed differences in the composition of financial performance measurement, it is clear that ROA and ROE have been used most frequently as performance measures in prior studies (Ebaid 2009; Krishnan & Moyer 1997; Zeitun & Tian 2007; Sanda, Garba & Mikailu 2008). Other measurements have also been used, such as Tobin's q, which mixes market values with accounting values (Zeitun & Tian 2007); price–earnings ratio; and stock return (Sanda, Garba & Mikailu 2008).

Collier, Mcgowan and Muhammad (2010) depended upon the DuPont system of financial analysis for their evaluation of banks' financial performance. The DuPont system is known as the 'ROE model', which divides performance into three components to determine ROE. These components include NPM, total asset turnover and equity multiplier. The profit margin allows financial analysts to evaluate income statements and their components. The total asset turnover allows financial analysts to evaluate the left side of the balance sheet, which comprises the asset accounts. The equity multiplier allows financial analysts to evaluate the right side of the balance sheet, which includes liabilities and owner's equity.

Following the thesis objectives, this study used the most acceptable financial performance measurements of ROA, ROE, GPM and NPM. These measurements helped evaluate income statements, as well as the left and right sides of the balance sheet. Moreover, ROE is a primary concern for many firms, while also offering an acceptable measurement of financial performance. Assets turnover was used in this study as a measurement of financial efficiency.

### *4.4.3 Controlled Variables*

Previous studies have suggested that firm size and age can influence financial performance. Hence, size and age variables were included in this study's models. A firm's size can be measured by the natural logarithm of total assets (Abdullah 2005). Age can be measured by the numbers of years that firms have been operating. Age is equal to the present year minus the year of foundation. These two variables can be expressed by the following equations:

Size = log total assets (1)

Age = present year – year of foundation (2)

Table 4.2 Summary of Variable Measures

| Main Variable | Variable Components | Measurements |
|---|---|---|
| **Leverage** | Total debt<br>Total assets | Debt ratio: total debt divided by total assets |
| **Financial performance** | GPM<br>NPM<br>ROA<br><br>ROE | Gross profit divided by revenue<br>Net income divided by revenue<br>Net income divided by total assets<br>Net income divided by total equity |
| **Age** | Logarithm age | Age is defined as the current year (examined year) minus the establishment year |
| **Size** | Logarithm of total assets (Log (TA)) | Total assets are defined as the sum of net fixed assets, working capital, net current assets and other assets |
| **Zakat** | Logarithm *zakat* | *Zakat* is defined by the company's contract with the DZIT |
| **Time** | Years | 2002 to 2010 |
| **Firms** | 57 firms | Publicly traded companies listed in the Saudi Arabian stock exchange between 2002 and 2010 |

## 4.5 Statistical Approach

In this study, different types of descriptive and inferential statistics were used, including simple statistical techniques, such as the number of cases; minimum, maximum and

mean; factors analysis; standard deviation; and analysis of variance (ANOVA), with the help of the Statistical Package for the Social Sciences (SPSS, version 20).

Hair et al. (2010, p. 350) stated that 'as statistical inference procedure, both the univariate techniques (t test and ANOVA) and their multivariate extensions (Hotelling's $T^2$ and MANOVA [multivariate ANOVA]) are used to assess the statistical significance of differences between groups'. The univariate ANOVA technique was applied to the data to test the relationships between leverage and *zakat*. Another type of ANOVA is the MANOVA, which has been used to analyse data for decades in different sciences and studies (Anderson 2001). See, for example, Hotelling (1931), Wilks (1932), Fisher (1936), Bartlett (1939), Lawley (1939) and Pillai (1955).

The analysis of multivariate data in financial studies is becoming increasingly important. Financial studies often need to test hypotheses concerning the effects of experimental factors on whole assemblages of species at once. This study involved many variables and groups that needed to be examined, as there was more than one dependent variable (GPM, NPM, ROA and ROE). Therefore, MANOVA was adapted to test some hypotheses. As reported by Stevens (2002), using MANOVA helps answer the following questions:

1. Do changes in the independent variables have significant effects on the dependent variables?
2. What are the relationships among the dependent variables?
3. What are the relationships among the independent variables?

These three questions needed to be answered in order to answer the main question of this study. Another important part of the analysis used the multilevel linear regression analysis. This was used because the variables in this study had multilevel characteristics. More details about the analysis procedure and technique will be introduced in the following section and in the analysis and discussion chapter.

## 4.6 Statistical Analysis

Prior to the statistical analysis, the data were screened for missing or erroneous values, cleaned by excluding outliers, and normalised by square root or logarithmic transformation. Different types of descriptive and inferential statistics were used in this study. A time series

analysis described the annual changes in the mean leverage, financial performance, age, size and *zakat* of the 57 firms at yearly intervals from 2002 to 2010. The patterns in the time series data provided evidence to hypothesise that a change in the leverage levels may be associated with a change in profit margins and returns on both assets and equity. Descriptive statistics (means and standard deviations) and error bar charts (means and 95 per cent confidence intervals) were used to summarise the relationships between leverage levels, financial performance indicators and *zakat*.

Hypotheses relating financial performance to financial structure were tested using MANOVA. The aim was to determine if the mean values of the four inter-correlated financial performance indices (GPM, NPM, ROA and ROE) varied significantly with respect to eight ordinal levels of leverage. Hypotheses concerning the relationships between leverage and *zakat* were tested by ANOVA. The aim was to determine if the mean *zakat* varied significantly with respect to eight ordinal levels of leverage.

Factor analysis based on principal components was used to combine the four inter-correlated financial performance indicators (GPM, NPM, ROA and ROE) into one factor. Hypotheses concerning the relationships between the financial performance factor, financial structure, age and size were tested by multilevel linear regression analysis. Nine equations, with regression coefficients stratified across nine years between 2002 and 2010, were constructed, using four independent variables for each equation. The general form of each equation was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

where:

Y = predicted average value of the financial performance factor (principal component scores extracted from GPM, NPM, ROA and ROE);

$\beta_0$ = intercept (predicted value of Y when all other X values are zero);

$X_1$ = $\sqrt{}$ Leverage;

$X_2$ = size;

$X_3$ = $\log_{10}$ age;

$X_4$ = $\log_{10}$ *zakat*;

$\beta_1$ to $\beta_4$ = standardised regression coefficients for $X_1$ to $X_4$, respectively; and

$\varepsilon$ = residual error.

The patterns in the standardised regression coefficients over time revealed the effects of *zakat* and leverage on financial performance on an annual basis, controlling for the effects of age and size. The relationships between financial performance, *zakat* and leverage were interpreted to determine that Saudi Arabian firms could attempt to improve their financial performance by balancing their *zakat* liabilities and leverage borrowing levels.

## 4.7 Conclusion

Data collection was undertaken using a secondary data method that depended mainly on firms' annual reports. The independent variables—financial leverage (debt level) and *zakat*—were developed in a way that gave consistency to prior studies and underlying theories. Similarly, the dependent variables were measured according to financial and mathematical guidelines and measures. The main data tool was the annual reports of each company involved in the sample, for the nine years from 2002 to 2010. The sample resulted in 513 cases. The data used in the models were collected through three resources—the first resource being data published in the Saudi Arabian stock market (Tadawul). Other resources included each firms' website and the Ministry of Commerce and Industry in Saudi Arabia.

Different types of descriptive and inferential statistics were used in this study to examine the variables and test the hypotheses. The analysis included time series analysis to describe the changes in each variable. Descriptive statistics were used to summarise the relationships between leverage levels, financial performance indicators and *zakat*. MANOVA was used to test the hypotheses relating financial performance to financial structure. The relationship between *zakat* and leverage (debt level) was tested using ANOVA. Finally, a multilevel regression analysis was used to test whether leverage, size, age and *zakat* are good predictors of financial performance.

# Chapter 5: Data Analysis and Discussion

## 5.1 Introduction

This chapter systematically presents the analyses and results in seven sections, as follows. Section 5.2 discusses the screening, cleaning and transformation of data. Section 5.3 presents the descriptive analysis. Section 5.4 presents the results of the test of Hypothesis 1—that high financial performance is not significantly related to lower capital structure. Section 5.5 presents the results of the test of Hypothesis 2—that there is no significant relationship between capital structure and *zakat*. Section 5.6 presents the results of the test of Hypothesis 3—that leverage, size, age and *zakat* are not significant predictors of financial performance. Section 5.7 interprets the results of the study, with reference to previously published research.

## 5.2 Screening, Cleaning and Transformation of Data

The database was stored initially in a Microsoft Excel file and then transferred to the data editor of SPSS. All the data analysis was performed in SPSS using the protocols described by Field (2009). The data matrix consisted of 513 cases (57 firms x 9 years) in the rows, and 10 variables—firms, years (2002 to 2010), leverage (debt level), GPM, NPM, ROA, ROE, *zakat*, age (years) and size (logarithm of sales)—in the columns. All the variables were very carefully screened for missing or erroneous values to ensure they were ready to be entered for analysing. No missing values were found. The descriptive statistics for the original data (number of cases, minimum, maximum, mean and standard deviation [SD]) are presented in Table 5.1. The skewness statistics and p-values obtained using Kolmogorov-Smirnov tests for normality is also provided. All the variables were either positively or negatively skewed (indicated by skewness statistics greater or less than zero). The Kolmogorov-Smirnov tests indicated that six of the variables (leverage, GPM, NPM, ROA, *zakat* and age) deviated from normality ($p < 0.001$).

Table 5.1 Descriptive Statistics for Variables Originally Stored in Excel Spread sheet

| Variable | N | Mini-mum | Maxi-mum | Mean | SD | Skewness | Normality p-value |
|---|---|---|---|---|---|---|---|
| Leverage | 513 | 0.002 | 0.848 | 0.303 | 0.194 | 0.699 | < 0.001* |
| GPM | 513 | -1,346.6 | 20.8 | -2.2 | 59.5 | -22.603 | < 0.001* |
| NPM | 513 | -1,521.0 | 21.7 | -2.6 | 67.2 | -22.609 | < 0.001* |
| ROA | 513 | -1.310 | 0.434 | 0.066 | 0.115 | -3.319 | < 0.001* |
| ROE | 511 | -0.565 | 0.517 | 0.098 | 0.136 | -0.337 | 0.013 |
| *Zakat* | 513 | 0 | $25 \times 10^6$ | 35,983 | $1.8 \times 10^5$ | 8.977 | < 0.001* |
| Age | 513 | -1,976[a] | 55 | 19.7 | 88.9 | -22.158 | < 0.001* |
| Size | 513 | 4.582 | 8.502 | 6.071 | 0.706 | 0.893 | 0.001 |

* Significant deviation from normality at $p < 0.001$

[a] Assumed to be a transcription error

Z scores for each variable (where Z = the distance of each value from the mean, measured in SD) were computed to identify univariate outliers (extreme values that were not contiguous with normal frequency distributions, representing unusual cases that were not representative of the 57 companies as a whole). Z scores outside the expected normal limits of ±3.0 were considered to represent outliers. As variables containing outliers associated with high levels of skewness may at best compromise the results of inferential parametric statistics, and at worst render the results meaningless, the conventional cleaning procedure recommended by Hair et al. (2010) was conducted. The data were cleaned by excluding outliers, and the variables were normalised by transformation. However, there were some recognisable transaction errors (such as -1,976 for age), which increased the levels of skewness. Recognisable transcription errors were eliminated. The descriptive, skewness and normality statistics for the screened, cleaned and transformed data are presented in Table 5.2. After excluding erroneous values/outliers, transforming leverage by square roots, and transforming *zakat* and age by logarithms ($\log_{10}$), all of the variables were normally distributed, indicated by $p \geq 0.001$ for the Kolmogorov-Smirnov statistics. Consequently, it was justified to perform parametric inferential statistics using the cleaned, screened and transformed variables.

Table 5.2 Descriptive Statistics for Screened, Cleaned and Transformed Data in SPSS

| Variable | Outliers | N | Mini-mum | Maxi-mum | Mean | SD | Skewness | Normality p-value |
|---|---|---|---|---|---|---|---|---|
| √ Leverage | 0 | 513 | 0.046 | 0.921 | 0.521 | 0.181 | 0.064 | 0.097 |
| GPM | 31 | 482 | -2.272 | 0.988 | 0.442 | 0.510 | -2.075 | 0.001 |
| NPM | 31 | 482 | -2.369 | 0.963 | 0.399 | 0.532 | -2.190 | 0.001 |
| ROA | 3 | 510 | -0.416 | 0.386 | 0.069 | 0.095 | -0.042 | 0.002 |
| ROE | 4 | 509 | -0.565 | 0.517 | 0.101 | 0.132 | -0.108 | 0.014 |
| $\log_{10}$ *zakat* | 29 | 484 | 1.322 | 5.653 | 3.634 | 0.680 | -0.143 | 0.355 |
| $\log_{10}$ age | 0 | 513 | 0.602 | 1.740 | 1.329 | 0.200 | -0.268 | 0.188 |
| Size | 0 | 513 | 4.582 | 8.502 | 6.071 | 0.706 | 0.893 | 0.001 |

## 5.3 Descriptive Analysis

The time series of mean values (Figure 5.1) indicates that the mean ages and sizes of the companies increased over time. *Zakat* increased between 2002 and 2008, but stabilised between 2008 and 2010, when leverage was high and financial performance was low. The mean leverages declined between 2002 and 2004, followed by an increase until 2008, and thereafter another decrease. The mean profit margins (GPM and NPM) declined between 2002 and 2003, increased between 2004 and 2007, and declined after 2008. The ROA and ROE tended to increase between 2002 and 2005, when leverage was declining, but decreased between 2005 and 2008, when leverage was increasing. The patterns in the time series data provided evidence to hypothesise that a lowering of the leverage levels may be associated with rising profit margins and returns on both assets and equity, whereas a rising of the leverage levels may be associated with a lowering of profit margins and returns.

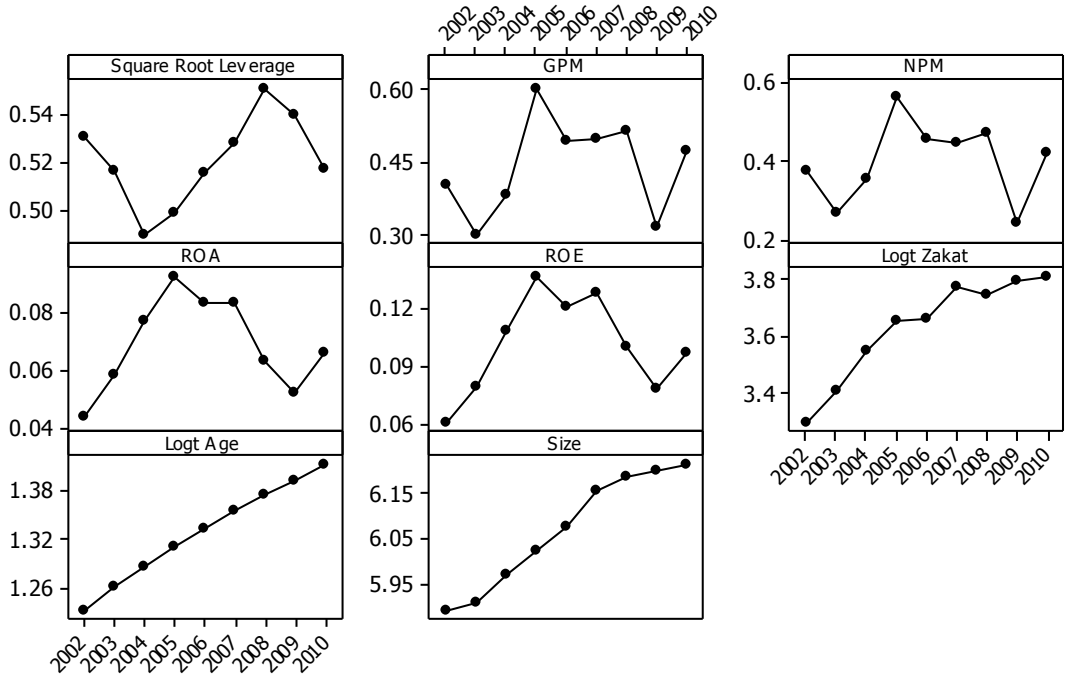



Figure 5.1 Time Series of Leverage, Performance Indicators, Zakat, Age and Size

## 5.4 Test of $H_{01}$: High Financial Performance is Not Significantly Related to Lower Capital Structure

The formal hypotheses ($H_0$) and alternative hypotheses ($H_A$) concerning the relationships between mean financial performance and financial structure previously identified in Figure 5.1 are listed in Table 5.3. The dependent and independent variables and the inferential statistics used to test the hypotheses are also summarised.

To test the hypotheses, it was necessary to break down the continuous leverage values into eight ordinal levels, with a class interval of 0.100 between each successive level. To simplify the analysis, time was not included as an independent variable. The repeated measures collected annually from 2002 to 2010 were temporally pseudo-replicated. Consequently, the variability in financial performance caused by time was not separated from the variability caused by leverage. This could be justified because the eight leverage levels were not significantly correlated with time (years), indicated by Spearman's rank correlation analysis (Spearman $r_S = 0.041$, $p = 0.357$).

Table 5.3 Testing of Null Hypothesis $H_{01}$

| Hypotheses | Dependent Variables | Independent Variables | Inferential Statistics |
|---|---|---|---|
| **$H_{01}$: High financial performance is not significantly related to lower capital structure**<br>**$H_{A1}$: High financial performance is significantly related to lower capital structure** | NPM<br>GPM<br>ROA<br>ROE | Leverage level:<br>1 = ≤ 0.100<br>2 = 0.101–0.200<br>3 = 0.201–0.300<br>4 = 0.301–0.400<br>5 = 0.401–0.500<br>6 = 0.501–0.600<br>7 = 0.601–0.700<br>8 = > 0.700 | Multivariate ANOVA |

The hypotheses were tested using MANOVA to determine if the mean values of the four financial performance indices (GPM, NPM, ROA and ROE) varied significantly with respect to the eight ordinal levels of leverage. The MANOVA simultaneously incorporated all four dependent variables (rather than four separate univariate ANOVAs). This approach was justified only if the four financial performance indices were positively correlated each other (Hair et al. 2010). The relationships between the four variables are visualised with a matrix of scatter plots in Figure 5.2. The strengths of the correlations were measured using Pearson's *r* coefficients (Table 5.4). All the correlation coefficients between the four financial performance indicators (Pearson's $r = 0.685$ to 0.994) were statistically significant at $\alpha = 0.05$, thus implying that MANOVA was justified. The MANOVA statistics are presented in Table 5.5.

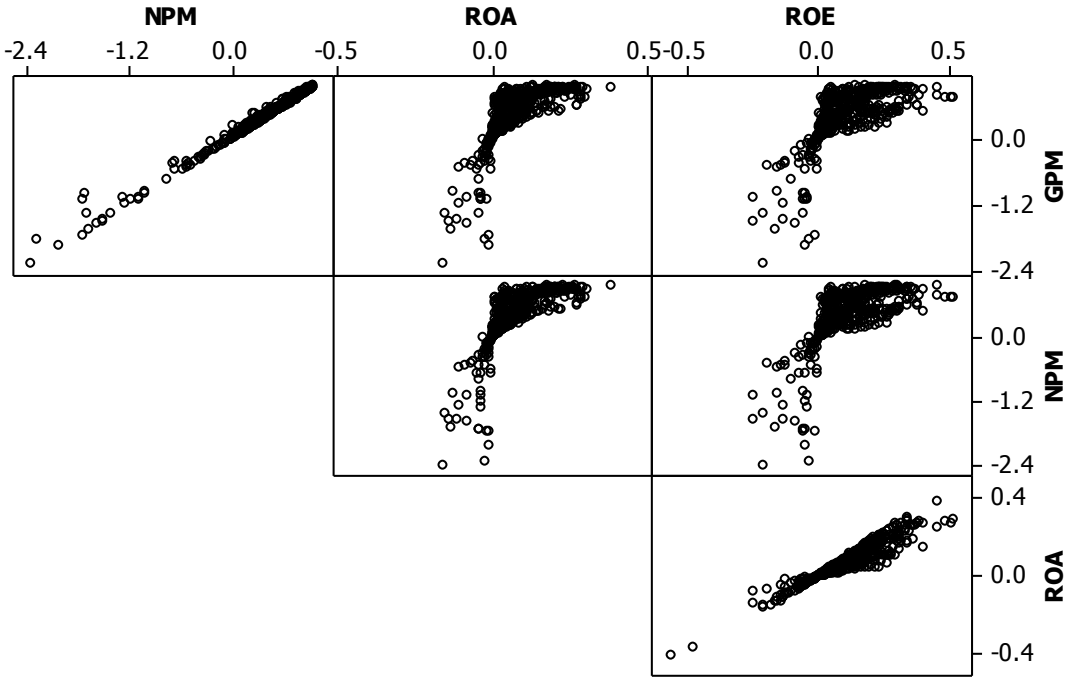



Figure 5.2 Matrix Plot Between Financial Performance Indicators

Table 5.4 Matrix of Pearson's Correlation Coefficients Between Financial Performance Indicators

| Variable | GPM | NPM | ROA |
|---|---|---|---|
| NPM | 0.994* | | |
| ROA | 0.726* | 0.724* | |
| ROE | 0.684* | 0.686* | 0.951* |

* Significant correlation at α = 0.05

Table 5.5 (a) MANOVA Statistics to Test $H_{01}$: Multivariate Statistics for Significance of MANOVA Model

| Effect | Wilk's λ | Multivariate F | Hypothesis df | Error df | p-value | Effect Size $\eta^2$ |
|---|---|---|---|---|---|---|
| Leverage | 0.525 | 11.864 | 28 | 1,696 | < 0.001* | 0.149 |

Table 5.5 (b) MANOVA Statistics to Test $H_{01}$: Effects of Leverage on Each Financial Performance Indicator

| Effect | Financial Performance Indicator | Type III Sum of Squares | df | Mean Square | F | p-value | Effect Size $\eta^2$ |
|---|---|---|---|---|---|---|---|
| Leverage | GPM | 9.088 | 7 | 1.298 | 5.295 | 0.000* | 0.073 |
| | NPM | 8.724 | 7 | 1.246 | 4.640 | 0.000* | 0.064 |
| | ROA | 0.256 | 7 | 0.037 | 5.212 | 0.000* | 0.072 |
| | ROE | 0.251 | 7 | 0.036 | 2.500 | 0.016* | 0.036 |

* Significant differences between leverage levels at $\alpha = 0.05$

The MANOVA model was statistically significant, indicated by $p < 0.001$ for the Wilk's $\lambda$ and multivariate F statistics. The null hypothesis was rejected at the prescribed significance level of $\alpha = 0.05$, with respect to all four of the financial performance indicators. Rejection of the null hypothesis was indicated by $p < 0.05$ for the F statistics. Leverage was found to have a statistically significant, but relatively small, effect on all four dimensions of financial performance, indicated by the magnitudes of the *eta* squared values ($\eta^2 = 0.036$ to 0.073).

The direction of these effects is described using descriptive statistics in Table 5.6 and graphs in Figure 5.3. Generally, there was a negative relationship between financial performance and capital structure. The general pattern was for the mean financial performance indicators to decline with respect to leverage. However, the relationships were not linear. Below a leverage level of five, the mean GPM, NPM and ROA remained relatively constant, although the ROE tended to increase. The cut-off point, above which the mean financial performance tended to decrease, was a level of five, corresponding to a leverage of approximately 0.400.

Table 5.6 Descriptive Statistics (Means and SDs) Indicating the Relationships Between Leverage Levels and Financial Performance Indicators

| Financial Performance Indicator | Leverage Level | N | Mean | SD |
|---|---|---|---|---|
| **GPM** | 1 | 58 | 0.582 | 0.572 |
| | 2 | 122 | 0.524 | 0.522 |
| | 3 | 108 | 0.479 | 0.536 |
| | 4 | 46 | 0.445 | 0.521 |
| | 5 | 48 | 0.485 | 0.368 |
| | 6 | 47 | 0.288 | 0.259 |
| | 7 | 36 | 0.127 | 0.377 |
| | 8 | 16 | 0.070 | 0.685 |
| **NPM** | 1 | 58 | 0.532 | 0.576 |
| | 2 | 122 | 0.475 | 0.554 |
| | 3 | 108 | 0.436 | 0.553 |
| | 4 | 46 | 0.401 | 0.567 |
| | 5 | 48 | 0.450 | 0.370 |
| | 6 | 47 | 0.255 | 0.277 |
| | 7 | 36 | 0.100 | 0.378 |
| | 8 | 16 | 0.002 | 0.771 |
| **ROA** | 1 | 58 | 0.100 | 0.096 |
| | 2 | 122 | 0.085 | 0.092 |
| | 3 | 108 | 0.094 | 0.095 |
| | 4 | 46 | 0.083 | 0.079 |
| | 5 | 48 | 0.088 | 0.084 |
| | 6 | 47 | 0.051 | 0.049 |
| | 7 | 36 | 0.023 | 0.049 |
| | 8 | 16 | 0.023 | 0.026 |
| **ROE** | 1 | 58 | 0.108 | 0.104 |
| | 2 | 122 | 0.099 | 0.106 |
| | 3 | 108 | 0.126 | 0.129 |
| | 4 | 46 | 0.128 | 0.118 |
| | 5 | 48 | 0.160 | 0.150 |
| | 6 | 47 | 0.112 | 0.107 |
| | 7 | 36 | 0.064 | 0.137 |
| | 8 | 16 | 0.094 | 0.108 |

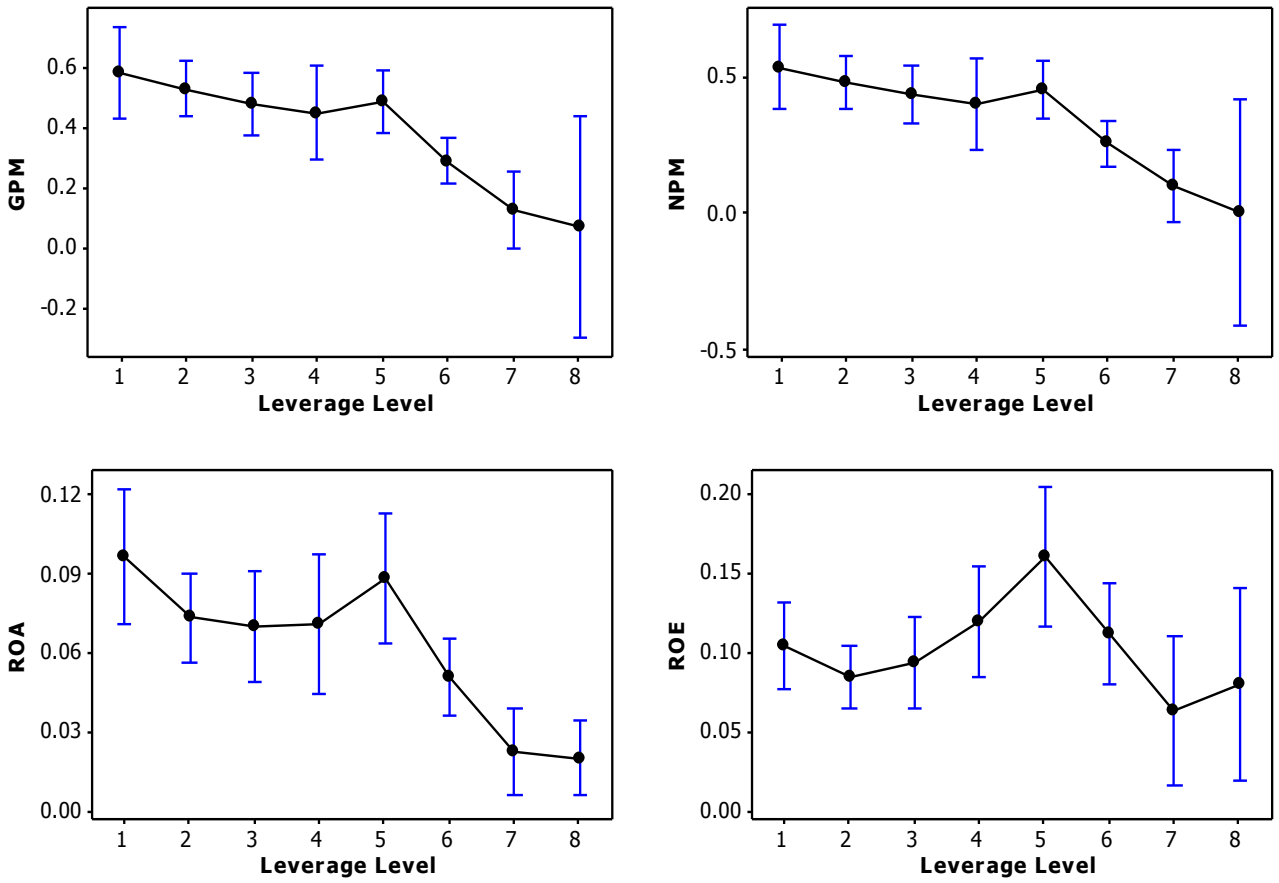



Figure 5.3 Relationships Between Leverage Levels and Financial Performance Indicators (Mean ±95% Confidence Intervals)

## 5.5 Test of $H_{02}$: There is No Significant Relationship Between Capital Structure and Zakat

The formal null hypothesis ($H_0$) and alternative hypothesis ($H_A$) concerning the relationship between capital structure and *zakat* are listed Table 5.7. The dependent and independent variables and the inferential statistics used to test the hypotheses are also summarised. To test the hypotheses, it was necessary to collapse the continuous leverage values into eight ordinal levels, with a class interval of 0.100 between each successive level. The repeated measures were temporally pseudo-replicated. Consequently, the statistics could not separate the variability in *zakat* caused by time from the variability caused by leverage.

Table 5.7 Testing of Null Hypothesis $H_{02}$

| Hypotheses | Dependent Variables | Independent Variables | Inferential Statistics |
|---|---|---|---|
| **$H_{02}$: There is no significant relationship between capital structure and *zakat*** | log10 *zakat* | Leverage level:<br>1 = ≤ 0.100<br>2 = 0.101–0.200<br>3 = 0.201–0.300<br>4 = 0.301–0.400<br>5 = 0.401–0.500<br>6 = 0.501–0.600<br>7 = 0.601–0.700<br>8 = > 0.700 | Repeated measures ANOVA |
| **$H_{A2}$: There is a significant relationship between capital structure and *zakat*** | | | |

The null hypothesis was tested by univariate ANOVA to determine if *zakat* varied significantly with respect to the eight ordinal levels of leverage. The null hypothesis was rejected at $\alpha = 0.05$, indicated by $p < 0.001$ for the F statistic (Table 5.8). Leverage was found to have a statistically significant, but relatively small, effect on *zakat*, indicated by $\eta^2 = 0.058$. The direction of this effect is demonstrated using descriptive statistics in Table 5.9 and a graph in Figure 5.4.

Table 5.8 Univariate ANOVA Statistics to Test $H_{02}$

| Source | Type III Sum of Squares | df | Mean Square | F | p-value | $\eta^2$ |
|---|---|---|---|---|---|---|
| Leverage | 12.897 | 7 | 1.842 | 4.174 | < 0.001* | 0.058 |
| Residual error | 210.132 | 476 | 0.441 | | | |

* Significant difference between leverage levels at $\alpha = 0.05$

The mean *zakat* values tended to remain relatively constant between leverage levels one to three. The mean values then systematically increased with respect to leverage levels four to seven, but remained relatively constant between levels seven and eight.

Table 5.9 Descriptive Statistics (Means and SDs) Indicating the Relationships Between Leverage Levels and Zakat

| Leverage Level | N | $Log_{10}$ *Zakat* | | *Zakat* | |
|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD |
| **1** | 57 | 3.479 | 0.773 | 3,013.8 | 5.9 |
| **2** | 128 | 3.533 | 0.597 | 3,415.4 | 4.0 |
| **3** | 116 | 3.526 | 0.676 | 3,357.7 | 4.7 |
| **4** | 48 | 3.672 | 0.564 | 4,694.4 | 3.7 |
| **5** | 48 | 3.785 | 0.673 | 6,088.6 | 4.7 |
| **6** | 43 | 3.855 | 0.715 | 7,157.8 | 5.2 |
| **7** | 29 | 3.992 | 0.799 | 9,820.0 | 6.3 |
| **8** | 15 | 3.991 | 0.485 | 9,797.6 | 3.1 |

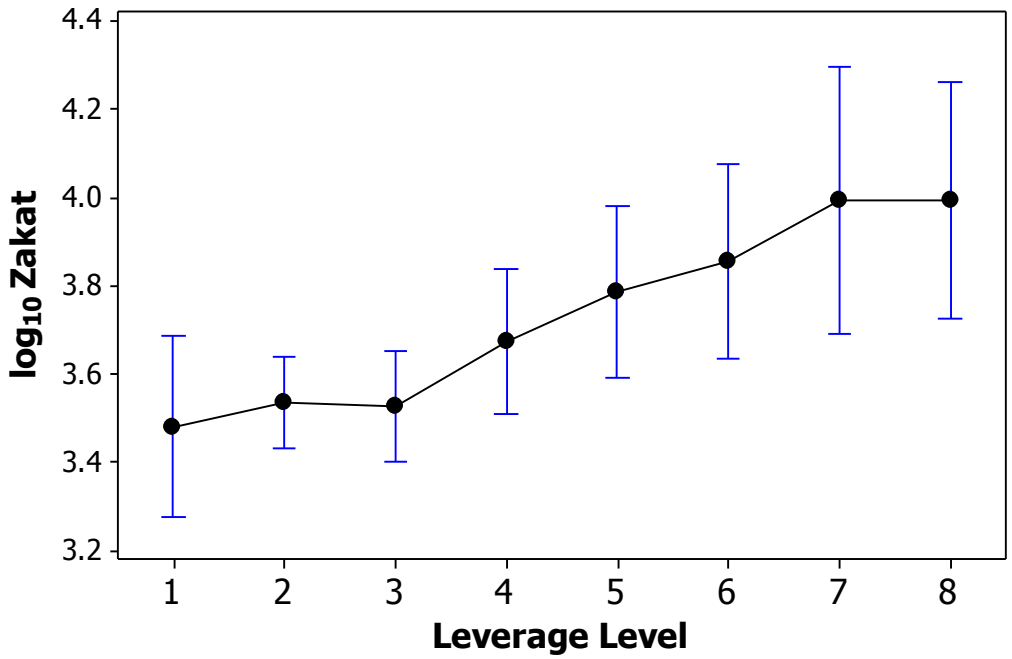



Figure 5.4 Graph of the Relationship Between $Log_{10}$ Zakat and Leverage Levels (Mean ±95% Confidence Intervals)

## 5.6 Test of $H_{03}$: Leverage, Size, Age and Zakat are Not Significant Predictors of Financial Performance of Each Firm in Each Year

The formal null hypothesis ($H_0$) and alternative hypothesis ($H_A$) concerning the relationships between financial performance, leverage, size, age and *zakat* are presented

in Table 5.10. The dependent and independent variables, and the inferential statistics used to test the hypotheses are also summarised.

Table 5.10 Testing of Null Hypothesis $H_{02}$

| Hypotheses | Dependent Variables | Independent Variables | Inferential Statistics |
|---|---|---|---|
| **$H_{03}$: Leverage, size, age and *zakat* are not significant predictors of financial performance**<br>**$H_{A3}$: Leverage, size, age and *zakat* are significant predictors of financial performance** | NPM<br>GPM<br>ROA<br>ROE | √ Leverage of firm I at time t<br>Size of firm I at time t<br>$\log_{10}$ age of firm I at time t<br>$\log_{10}$ *zakat* of firm I at time t | Multilevel regression |

The test of $H_{03}$ required that the dependent variables consist of four financial performance indicators (GPM, NPM, ROA and ROE). As these were very strongly inter-correlated (indicated by the high Pearson's *r* coefficients in Table 5.4), it was possible to combine the four financial performance indicators into one composite variable, or unidimensional factor, by using principal components factor analysis (Hair et al. 2010). The first principal component, with an Eigen value of 3.337, explained most (84.4 per cent) of the variance in financial performance (Table 5.11). The factor loadings (that is, the correlation coefficients between each financial performance and the factor) were very strong (0.899 to 0.928). Consequently, factor analysis was justified to condense the four individual dimensions of financial performance, measured using GPM, NPM, ROA and ROE, into one dimension. One set of principal component scores could be defensibly used as a valid and reliable substitute for the four sets of GPM, NPM, ROA and ROE values.

Table 5.11*(a) Factor Analysis: Total Variance Explained by Four Principal Components

| Principal Component | Eigen Values | | |
|---|---|---|---|
| | Total | % of Variance | Cumulative % |
| 1 | 3.377 | 84.43 | 84.43 |
| 2 | 0.558 | 13.95 | 98.38 |
| 3 | 0.059 | 1.48 | 99.86 |
| 4 | 0.006 | 0.140 | 100.00 |

Table 5.11 (b) Factor Analysis: Factor Loadings for the First Principal Component

| Dimensions | Loading |
|---|---|
| GPM | 0.928 |
| NPM | 0.928 |
| ROA | 0.921 |
| ROE | 0.899 |

*Factor analysis to indicate that financial performance indicators can be combined into one latent variable based on the first principal component.

A multilevel linear regression analysis was performed to construct nine equations, with regression coefficients for each of the nine years between 2002 and 2010, using five independent variables for each equation. The general form of each equation was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:

Y = predicted average value of the financial performance factor (principal component scores);

$\beta_0$ = intercept (predicted value of Y when all other X values are zero);

$X_1$ = √ Leverage;

$X_2$ = Size;

$X_3$ = $\log_{10}$ age,

$X_4$ = $\log_{10}$ *zakat*;

$\beta_1$ to $\beta_4$= standardised regression coefficients for $X_1$ to $X_4$, respectively; and

ε = residual error.

The null hypothesis that an equation did not explain a significant proportion of the variance was rejected if $p < 0.05$ for the $R^2$ value. The null hypothesis that a β coefficient was not significantly different from zero was rejected if $p < 0.05$ for the t-test statistic. These inferences could be compromised by colinearity (that is, strong inter-correlation between the independent variables), which inflates the SDs. Colinearity was indicated if the variance inflation factor (VIF) was > 5.0. The statistics are presented in Table 5.12.

Table 5.12 Multilevel Linear Regression Statistics (2002 to 2007)

| Year | $R^2$ % | p-value | Variable | | Standardised β Coefficient | t | p-value | VIF (Colinearity) |
|---|---|---|---|---|---|---|---|---|
| 2002 | 35.3 | < 0.001 * | Intercept | $\beta_0$ | -0.461 | -0.399 | 0.691 | |
| | | | √ Leverage | $\beta_1$ | -0.425 | -3.510 | 0.001* | 1.2 |
| | | | Size | $\beta_2$ | -0.240 | -1.030 | 0.308 | 4.3 |
| | | | $\log_{10}$ age | $\beta_3$ | 0.209 | 1.741 | 0.088 | 1.1 |
| | | | $\log_{10}$ *zakat* | $\beta_4$ | 0.629 | 2.686 | 0.010* | 4.3 |
| 2003 | 25.3 | 0.001 * | Intercept | $\beta_0$ | -1.958 | -1.232 | 0.224 | |
| | | | √ Leverage | $\beta_1$ | -0.297 | -2.306 | 0.025* | 1.2 |
| | | | Size | $\beta_2$ | -0.089 | -0.380 | 0.706 | 3.8 |
| | | | $\log_{10}$ age | $\beta_3$ | 0.107 | 0.854 | 0.397 | 1.1 |
| | | | $\log_{10}$ *zakat* | $\beta_4$ | 0.571 | 2.466 | 0.017* | 3.7 |
| 2004 | 28.9 | < 0.001 * | Intercept | $\beta_0$ | -0.404 | -0.264 | 0.793 | |
| | | | √ Leverage | $\beta_1$ | -0.307 | -2.375 | 0.022* | 1.2 |
| | | | Size | $\beta_2$ | -0.296 | -1.185 | 0.242 | 4.5 |
| | | | $\log_{10}$ age | $\beta_3$ | 0.066 | 0.538 | 0.593 | 1.1 |
| | | | $\log_{10}$ *zakat* | $\beta_4$ | 0.760 | 3.150 | 0.003* | 4.2 |
| 2005 | 26.7 | 0.001 * | Intercept | $\beta_0$ | -0.948 | -0.808 | 0.423 | |
| | | | √ Leverage | $\beta_1$ | -0.356 | -2.684 | 0.010* | 1.2 |
| | | | Size | $\beta_2$ | -0.274 | -1.166 | 0.250 | 3.8 |
| | | | $\log_{10}$ age | $\beta_3$ | 0.220 | 1.801 | 0.078 | 1.0 |
| | | | $\log_{10}$ *zakat* | $\beta_4$ | 0.613 | 2.781 | 0.008* | 3.4 |
| 2006 | 24.9 | 0.011 * | Intercept | $\beta_0$ | -4.086 | -2.140 | 0.038* | |
| | | | √ Leverage | $\beta_1$ | -0.111 | -0.839 | 0.406 | 1.1 |
| | | | Size | $\beta_2$ | 0.147 | 0.602 | 0.550 | 3.6 |
| | | | $\log_{10}$ age | $\beta_3$ | 0.121 | 0.926 | 0.359 | 1.0 |
| | | | $\log_{10}$ *zakat* | $\beta_4$ | 0.339 | 1.411 | 0.165 | 3.5 |
| 2007 | 28.8 | 0.002 * | Intercept | $\beta_0$ | -3.011 | -2.082 | 0.042* | |
| | | | √ Leverage | $\beta_1$ | -0.291 | -2.212 | 0.032* | 1.2 |
| | | | Size | $\beta_2$ | -0.060 | -0.278 | 0.782 | 3.3 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | $\log_{10}$ age | $\beta_3$ | 0.207 | 1.704 | 0.095 | 1.0 |
| | | | $\log_{10}$ *zakat* | $\beta_4$ | 0.533 | 2.447 | 0.018* | 3.3 |
| 2008 | 19.4 | 0.010 * | Intercept | $\beta_0$ | -4.246 | -2.820 | 0.007* | |
| | | | √ Leverage | $\beta_1$ | -0.296 | -2.055 | 0.046* | 1.2 |
| | | | Size | $\beta_2$ | 0.207 | 0.855 | 0.397 | 3.4 |
| | | | $\log_{10}$ age | $\beta_3$ | 0.273 | 1.984 | 0.054 | 1.1 |
| | | | $\log_{10}$ *zakat* | $\beta_4$ | 0.173 | 0.744 | 0.461 | 3.2 |
| 2009 | 41.2 | < 0.001 * | Intercept | $\beta_0$ | -6.654 | -3.775 | < 0.001* | |
| | | | √ Leverage | $\beta_1$ | -0.417 | -3.369 | 0.002* | 1.3 |
| | | | Size | $\beta_2$ | 0.139 | 0.672 | 0.505 | 3.5 |
| | | | $\log_{10}$ age | $\beta_3$ | 0.235 | 2.015 | 0.050 | 1.1 |
| | | | $\log_{10}$ *zakat* | $\beta_4$ | 0.416 | 2.127 | 0.039* | 3.2 |
| 2010 | 34.6 | < 0.001 * | Intercept | $\beta_0$ | -3.707 | -2.468 | 0.017* | |
| | | | √ Leverage | $\beta_1$ | -0.334 | -2.702 | 0.010* | 1.1 |
| | | | Size | $\beta_2$ | -0.184 | -0.830 | 0.411 | 3.7 |
| | | | $\log_{10}$ age | $\beta_3$ | 0.243 | 2.023 | 0.049* | 1.1 |
| | | | $\log_{10}$ *zakat* | $\beta_4$ | 0.655 | 3.077 | 0.004* | 3.4 |

* Significantly different from zero at $\alpha = 0.05$

The $R^2$ values, all of which were statistically significant at $\alpha = 0.05$, ranged from 19.4 per cent to 41.2 per cent, reflecting moderately strong effect sizes each year. The negative β coefficients with p-values < 0.05 indicated that the financial performance factor decreased significantly with respect to leverage every year, except 2006. The β coefficients for size were sometimes negative, and sometimes positive, but none were statistically significant at $\alpha = 0.05$; consequently, financial performance did not decrease or increase significantly with respect to size. Similarly, age was not a significant predictor of financial performance, except in 2010, when the p-value was marginally below 0.05. The positive and statistically significant β coefficients for *zakat* indicated that the financial performance factor consistently increased with respect to an increase in *zakat*, except in 2006.

The time varying fluctuations in the β coefficients between 2002 and 2010 are illustrated in Figure 5.5. While the β coefficients for *zakat* tended to decline between 2001 and 2008, the β coefficients for leverage tended to increase. After 2008, *zakat* increased, while leverage declined. The relationship between *zakat* and financial performance was the inverse of that between leverage and financial performance. The largest β coefficients were generally for *zakat*, implying that *zakat* was a relatively stronger positive predictor of financial performance than leverage was a negative predictor. Between 2001 and 2008, there was a general trend for the strength of the positive relationships between financial performance and *zakat* to decrease (the β coefficients became lower) and for the negative relationships between financial performance and leverage to become weaker (the β coefficients became less negative). However, after 2008, the strength of the positive correlation between *zakat* and financial performance increased, and the strength of the negative correlation between financial performance and leverage at the same time became more negative.

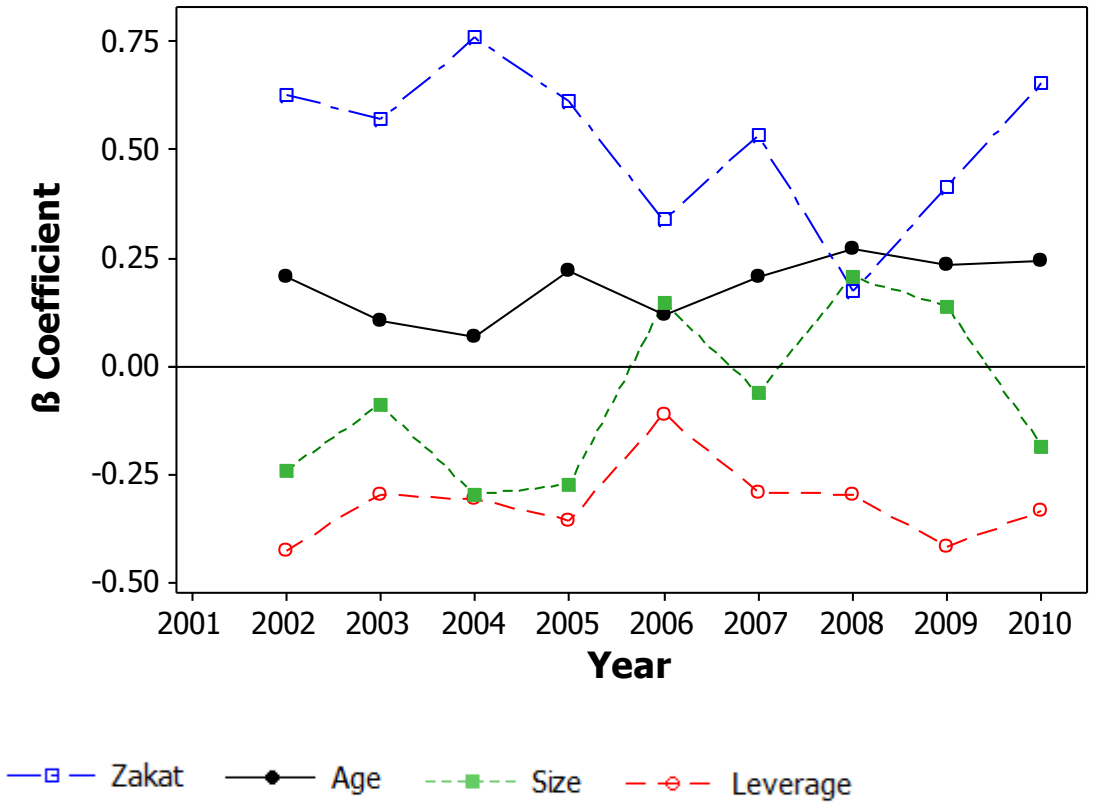



Figure 5.5 Graph of the Changes in β Coefficients (Representing the Relative Importance of Each Predictor of Financial Performance) 2001–2010

Diagnostic checks indicated that the theoretical assumptions were not violated. The VIF statistics were less than 5.0, reflecting limited colinearity between the independent variables. The residuals were relatively evenly scattered around their mean (zero), implying that the variance was approximately homogeneous, and the bell-shaped frequency distribution indicated that the residuals were approximately normal (see Figure 5.6). The regression equation was a good fit to the data and a valid predictor of financial performance between 2002 and 2010.

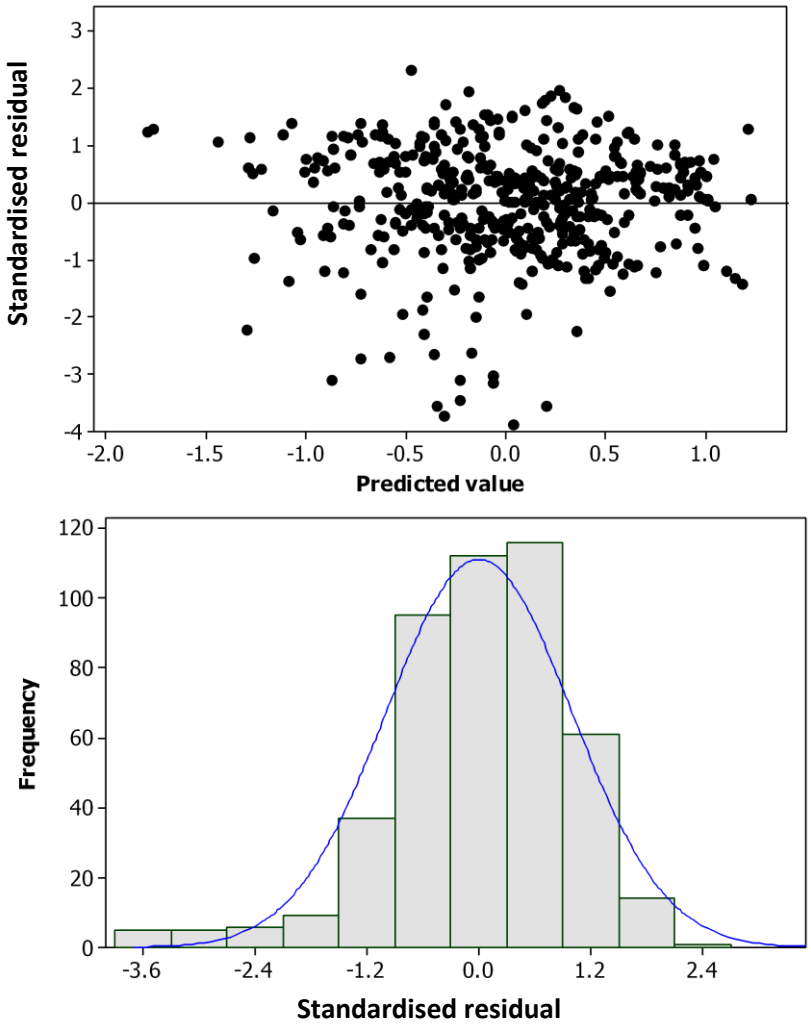



Figure 5.6 Distributions of Residuals

## 5.7 Results Discussion

The main aim of this study was to investigate the effect of financial structure (debt and equity mix) on the financial performance (NPM, ROA and ROE) of 57 publicly traded firms listed in the Saudi Arabian stock market between 2002 and 2010. This study extended understandings previously reported in the literature of how financial performance is linked to financial structure, *zakat*, and the ages and sizes of Saudi Arabian firms in a no-interest based financial system. It also indicated how the 2006 Saudi Arabian stock market collapse and the lowering of businesses' trust in bank loans as a source of funds following

the GFC in 2008 affected the relationships between financial structure and financial performance.

The results of this study are discussed in this section, with particular reference to answering the main research question: how does capital structure mix affect firms' financial performance in Saudi Arabian companies? Emphasis is given to the following:

1. Whether lower leverage levels lead to higher profit margins and returns on both assets and equity;
2. The degree to which *zakat* is influenced by capital structure; and
3. The combined effects of *zakat* and firms' leverage, age and size on financial performance.

In addition, this section considers how these findings relate to previous research. A discussion of the limitations of the results is also included.

### *5.7.1 Relationship Between Capital Structure and Capital Performance*

A simple visual analysis of the patterns in the time series data provided evidence to hypothesise that a lowering of the leverage levels may be associated with rising profit margins and returns on both assets and equity, whereas a rising of the leverage levels may be associated with a lowering of profit margins and returns. The use of MANOVA, incorporating GPM, NPM, ROA and ROE as inter-correlated dependent variables, and eight ordinal levels of leverage as independent variables, provided evidence to reject the null hypothesis that variability in financial performance is not related to leverage. When the effect of time was neglected, lower leverage levels below 0.400 tended to lead to higher profit margins and higher returns on both assets and equity. In contrast, progressively higher leverage levels above 0.400 tended to lead to progressively lower profit margins and lower returns on both assets and equity. Leverage was found to have a statistically significant, but relatively small, effect on all four dimensions of financial performance, indicated by the low effect sizes ($\eta^2$ = 0.036 to 0.073). This interpretation follows Ferguson's (2009) recommendation (in which $\eta^2$ = 0.04 indicates a minimal effect, η2 = 0.25 indicates a moderate effect, and $\eta^2$ = 0.64 indicates a strong effect).

Multilevel regression analysis, stratified by time, after controlling for the age and size of the firms, also revealed a statistically significant negative effect of leverage on financial

performance on an annual basis. The effect sizes were moderate, ranging from $R^2$ = 19.4 per cent to 41.2 per cent. The negative β coefficients, ranging from a maximum of -0.425 in 2002 to a minimum of -0.111 in 2006, predicted that, across the 57 firms, the average financial performance decreased significantly with respect to an increase in leverage every year from 2001 to 2010, with the exception of 2006. A potential reason for 2006 being an exceptional year was that it coincided with the Saudi Arabian stock market collapse. After 2008, the relationships between financial performance and leverage tended to change—a possible reflection of the GFC. However, the overall conclusion is that, in the long term, in the absence of acute economic downturns, lower leverage levels tend to lead to higher profit margins and returns on both assets and equity. Moreover, a level leverage of 0.4 is a suitable leverage level to help to reduce borrowing and debt risks, and increase firms' profitability opportunities.

### *5.7.2 Relationship Between Zakat and Capital Structure*

A simple visual analysis of the patterns in the time series data provided evidence to indicate that *zakat* payments increased exponentially between 2001 and 2007 (that is, $\log_{10}$ *zakat* over time was approximately linear). During this period, there was a general trend for leverage to increase. However, between 2008 and 2010—potentially associated with the Saudi Arabian stock market crash and the GFC—*zakat* stabilised, and the trend was for leverage to decline.

The use of univariate ANOVA, incorporating *zakat* as the dependent variable, and eight ordinal levels of leverage as independent variables, provided evidence to reject the null hypothesis that the variability in *zakat* is not related to leverage. When the effect of time was neglected, leverage was found to have a statistically significant, but relatively small, effect on *zakat* ($\eta^2$ = 0.058). The relationship between *zakat* and capital structure was non-linear. The mean *zakat* values tended to remain relatively constant when the leverage was less than 0.300, but increased exponentially when the leverage increased from 0.3 to 0.6. Above a leverage of approximately 0.6, the mean *zakat* remained relatively constant. These findings provide evidence to conclude that higher leverage levels are associated with a higher level of *zakat*. The threshold level, above which *zakat* tended to increase, was approximately 0.3 to 0.4.

### *5.7.3 The Effect of Zakat on Financial Performance*

Multilevel regression analysis produced an equation that was a good fit to the data and a valid predictor of financial performance between 2002 and 2010. This equation, stratified by time, predicted that *zakat*, after controlling for the age and size of the companies, had a positive effect on financial performance on an annual basis. The positive β coefficients, ranging from a maximum of 0.760 in 2003 to a minimum of 0.173 in 2008, predicted that, across the 57 companies, the average financial performance increased significantly with respect to an increase in *zakat* every year from 2001 to 2010, with the exception of 2008. Between 2002 and 2008, there was a general trend for the strength of the positive relationship between financial performance and *zakat*, indicated by lower β coefficients, to decline. However, after 2008, the relationships between financial performance and *zakat* appeared to become stronger, indicated by higher β coefficients. A potential reason for 2008 being an exceptional year was that it coincided with the GFC. These findings provide evidence to conclude that both before and after the economic downturn at the end of the decade, there was potentially a significant effect of *zakat* on financial performance.

### *5.7.4 How the Findings Relate to Previous Research*

Other studies have suggested that size and age may influence the financial performance of firms in Saudi Arabia (Abdullah 2005; Osman & Mohammed 2010). A negative relationship between the size of a firm (corresponding to annual sales) and its dependence on internal financing is implicated. Larger firms that may have been established for a longer time are generally more diversified, have relatively easier access to debt markets, and have lower financial distress. Consequently, they can afford to have higher debt leverage. However, the multiple level regression model constructed in this study indicated that neither the age nor size of the 57 firms included in this study were significant predictors of annual average financial performance between 2002 and 2010.

The original theory of Modigliani and Miller (1958) posited that the value of firms is determined by firms' real assets and not by the amount of debt and equity available as part of their capital structure. This unrealistic proposition, which assumed a perfect market without taxes, implied that no relationship existed between financial performance and financial structure. Subsequent empirical studies have provided incontrovertible evidence

to demonstrate that such a relationship does exist in reality. Following the arguments of Jensen and Meckling (1976) and Jensen (1986) that capital structure influences firm performance, several researchers conducted studies to explore this relationship among Asian firms. Majumdar and Chhibber (1999), working in India, found a negative relationship between capital structure (debt level) and firm performance (profitability). Likewise, Chiang, Chang and Hui (2002) found a negative relationship between high leverage (high gearing) and firm performance, based on profit margin, in Hong Kong. The results of both these studies were consistent with the findings of the present study—that in the long term, lower leverage levels tend, on average, to lead to higher profit margins and returns on both assets and equity among firms in Saudi Arabia.

The relatively limited previous research has focused on the relationship between capital structure and financial performance among Arab companies, revealing mixed results. Ebaid (2009) concluded that leverage level had a negligible effect on financial performance, which was inconsistent with the findings of the present study. The results of this study agreed with those of Zeitun and Tian (2007) and Abdullah (2005), which stated that a negative relationship exists between leverage and the financial performance of firms in Saudi Arabia. The majority of previous findings in other parts of the world have also identified a negative relationship between profitability and debt leverage (Titman & Wessels 1988; Rajan & Zingales 1995; Baker & Wurgler 2002; Fama & French 2002).

One of the characteristic features of the Saudi Arabian economic system is *zakat*—a corporate tax that accounts for any corporation's wealth that remains idle and unused by the business for one year. Net profit is the main component used in calculating the *zakat* base. According to Al-Ajmi, Abo Hussain and Al-Saleh (2009), the benefits that companies gain from reducing their *zakat* liabilities may be important factors in determining the extent of their borrowing leverage. This study confirmed that a non-linear relationship exists between *zakat* and capital structure in Saudi Arabia. The threshold level, above which *zakat* tends to increase, is approximately 0.300 to 0.400. In the current study, it was found that the mean *zakat* values tended to remain relatively low and constant when the leverage was less than 0.300, but increased exponentially when the leverage increased from 0.300 to 0.600. Al-Sakran (2001) stated that the effect of *zakat* on financial performance is small and insignificant. In contrast, the current study's multilevel regression model predicted that, controlling for size, age and leverage, the average financial

performance of 57 Saudi Arabian firms increased significantly with respect to an increase in *zakat* every year from 2001 to 2010, with the exception of 2008, which was possibly due to the GFC. The largest β coefficients were generally for *zakat*, thus implying that *zakat* was a relatively stronger positive predictor of financial performance than leverage was a negative predictor.

### *5.7.5 Limitations*

This study involved the inferential statistical analysis of economic data collected annually over a period of nine years. The results were based on a set of normalised variables from which extreme values (outliers) were excluded. Consequently, the results only applied to those firms whose financial performance and financial structure conformed to normal expectations, and those that could be represented in terms of mean values, SDs and 95 per cent confidence intervals. The results did not apply to those firms with a financial structure and/or performance exceptionally outside the norm.

The fundamental theoretical assumptions that underpinned the inferential statistics used in this study were that all of the replicate measures that contributed towards the mean values were independent (they had no influence on each other) and randomly sampled from a known population. However, the values measured in this study were neither independent nor random. Each annual measure of financial performance and/or financial structure may have depended on the values collected in one or more previous years, and may also have determined the values in one or more future years. The comparison of mean values computed from time series data, known as temporal pseudo-replication, is criticised by some statisticians (Freeburg & Lucas 2009). Nevertheless, many researchers who collect variables at intervals over a long period generally ignore the assumptions of independent random sampling for practical reasons (Heffner, Butler & Reilly 1996). In the current study, temporal pseudo-replication was unavoidable, for practical reasons, in order to relate the mean levels of financial performance to *zakat* and different levels of leverage as simply as possible.

Another limitation of this study is that it is incorrect to assume that the statistics and p-values used to test the null hypotheses can be used to answer the question, ‘How meaningful are the results?’ According to Kline (2004), in practice, statistics and p-values

only answer the question, ‘Assuming that the sample(s) represent the target populations, then what is the probability that chance factors were responsible for the results?’ It is a commonly held misconception that rejecting a null hypothesis at $p < 0.05$ implies meaningfulness and importance and gives credibility to the data, and that the lower the p-value, the more useful the results.

This misconception has arisen because many researchers do not distinguish between statistical significance and practical significance (Hill & Thompson 2004). Practical significance implies that the results are meaningful, including the existence of measurable effects that have implications in reality; that real relationships exist among a set of data; and that these relationships are not merely an accident of sampling. Practical significance has nothing to do with the magnitude of a test statistic or a p-value, or the rejection of a null hypothesis. More information can be extracted from a set of data if the focus is on understanding the effect sizes, rather than interpreting test statistics and p-values. Accordingly, the effect sizes ($\eta^2$ and $R^2$ values) in this study were computed to measure the strengths of the relationships explored. However, the effect sizes were found to be low to moderate, thus implying that the results of this study, although statistically significant at the prescribed 0.05 level, can only be considered to have relatively limited practical significance.

# Chapter 6: Recommendations and Conclusions

## 6.1 Introduction

This chapter presents the recommendations based on the findings of this study. It is divided into four sections. Section 6.2 presents a general discussion of the results. Section 6.3 presents the recommendations of this study. These recommendations are presented with respect to the following: first, the need for further research; and second, the ways the results of this study can be applied in practice to help Saudi Arabian firms improve their financial performance. Section 6.4 of this chapter presents the overall conclusions of the study.

## 6.2 General Discussion

The purpose of this study, with its various ramifications, was to explore the relationship between capital structure and capital performance from an Islamic perspective within the Saudi Arabian context. It attempted to explore some gaps in Saudi Arabian firms' financial analysis, in addition to providing empirical evidence that could be the basis for further research and improved understanding in this field.

Debt is considered a good tool to reduce agency costs and FCF costs, according to the agency and FCF theories. With more debt, managers are unable to use cash flow in risky projects, which may lead to the risk of bankruptcy if the firm is unable to pay its debt. One of the motivations for undertaking this research was the GFC that occurred in 2008, which was mainly caused by overdue debts that banks were unable to collect, and thus went bankrupt. This lowered firms' trust in bank loans as a source of funds. Since 2003, the Saudi Arabian stock market has been reregulated and improved to become a trustworthy source of funds for business. However, the stock market had its own disaster, which was clearly exposed by its collapse in 2006. This study has proven that there could be a balance between debt and equity that could help improve businesses' financial performance by lowering the risk of bankruptcy through lowering debt in the capital structure.

This research indicates that Saudi Arabian firms have the potential to increase their profitability when managing borrowing behaviour with liability and *zakat*. One of this study's findings was that before and after the economic downturn at the end of the decade, there was a potentially significant effect of *zakat* on firms' financial performance. This relationship was generally positive. The average financial performance increased significantly with respect to an increase in *zakat* every year from 2001 to 2010, with the exception of 2008. One could argue that it is logical that when financial performance increases, *zakat* should increase, and vice versa. However, the definition of *zakat* suggests that this finding supports the meaning of *zakat*. In Chapter 3, *zakat* was defined as meaning 'purification' and an increase in wealth. Samad and Glenn (2010) defined *zakat* (according to its Islamic meaning) as 'the fertility or growth'. One scenario of this relationship between *zakat* and corporate financial performance is demonstrated in Figure 6.1. By contributing *zakat*, firms are involved in raising the standard of living of the whole community, which subsequently increases the ability of society to be involved in the economic cycle. A future investigation of the movement and spending of *zakat* might help prove this assumption.

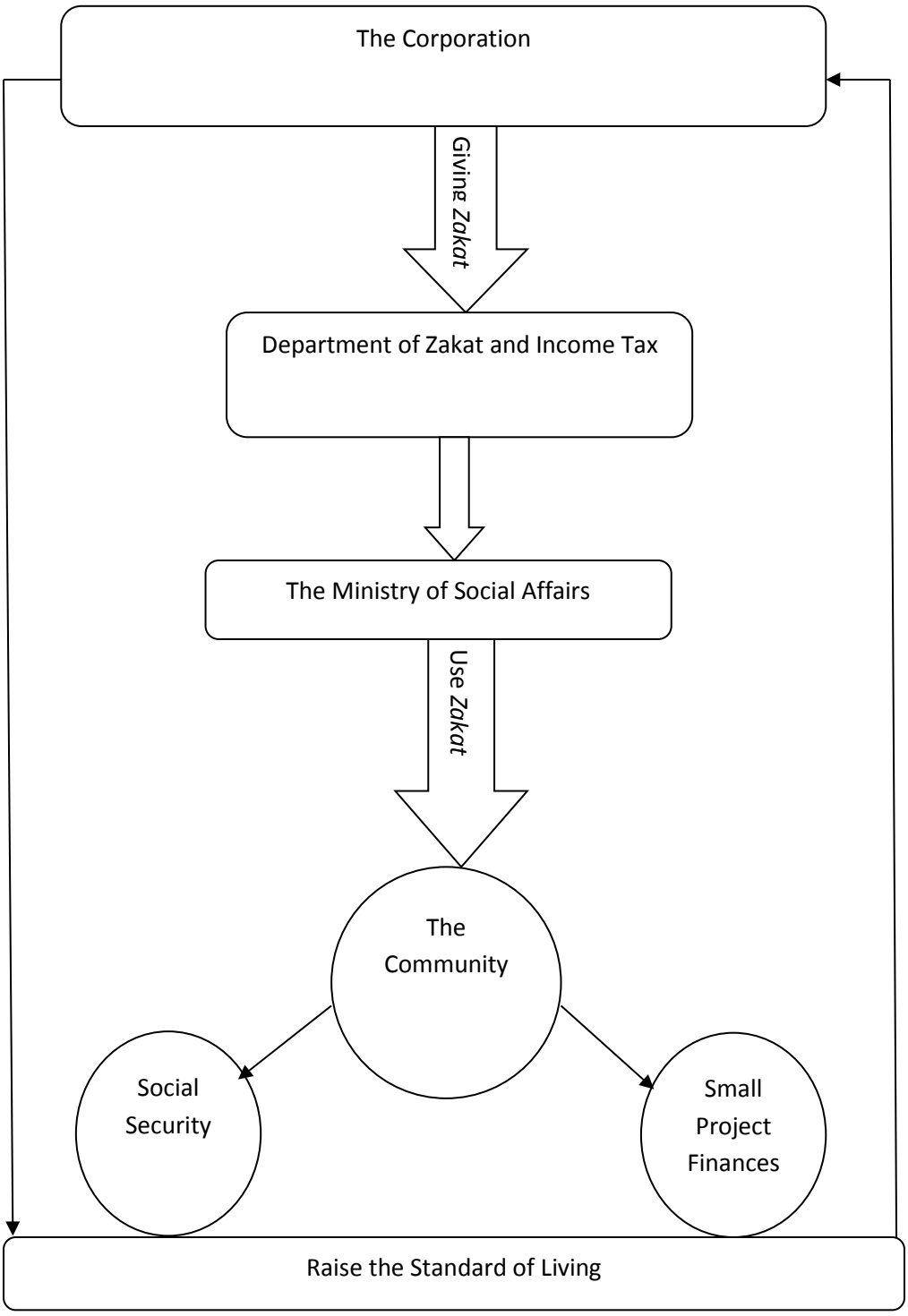



Figure 6.1 The Economic Cycle of Corporate Zakat

Another finding of this study was that higher leverage levels are associated with a higher level of *zakat*. The threshold level, above which *zakat* tended to increase, was approximately 0.3 to 0.4. According to the trade-off theory, it seems that no tax savings appear from increasing debt in capital structure for Saudi Arabian companies. Consequently, lowering debt will increase firms' financial performance. Hence, issuing more shares to raise funds seems to be better than attaining more debt. The healthy balance of leverage of Saudi Arabia firms is that lower than 0.4.

*Zakat* has many benefits compared to tax. First, *zakat* is generally taken as a stable percentage of income (2.5 per cent of net wealth) that is not subject to be changed in any circumstances—this makes it a permanent and regular system. Moreover, *zakat* is only required if wealth reaches a specific limit. Any wealth under that limit is not subject to *zakat*. For taxes, there are tax exemptions, but these are specified and prescribed by the government and tax authorities. This means that people can be required to pay tax even if they are unable to do so, unless the government determines that they are exempt from tax. Thus, these characteristics of the Saudi Arabian economy might help promote financial performance for both individuals and companies.

The pecking order theory states that firms' managers prefer to finance new investments first internally with retained earnings, second with debt, and last by issuing new equity. According to the findings of this study, the order of preferred finance methods for Saudi Arabian firms could first be internal funds, second issuing equity, and last by using debt.

The no-interest based loan of Saudi Arabia is called '*Al Gard Alhasan*', as reported in Chapter 3. This type of loan is provided by the government and by specialised lending institutions in order to promote growth and encourage development. The loans provided by banks using some Islamic instruments, as discussed in Section 3.6, are more close to being partnerships and trade activities that involve profit and loss bearing, rather than being debt processes. However, the practice of these Islamic instruments inside Saudi Arabian commercials banks mostly reflects the fixed interest on loans more than partnership and trade activities. Hence, most companies in Saudi Arabia rely more on the no-interest based *Al Gard Alhasan* loans that are provided by the government and specialised lending institutions, as these lower the cost of debt for companies.

## 6.3 Recommendations

The first recommendation that can be made from this study is that further studies about *zakat* are needed to examine *zakat's* calculation standards and effect on firms' capital structure and on society. The way *zakat* is calculated and presented in firms' financial statements is vague. The template provided by the DZIT can be helpful to identify the components of *zakat*; however, some firms add *zakat* as a constant of their financial statements. In addition, the calculation of *zakat* differs between sectors. Hence, a separate study for the effect of *zakat* on capital structure and financial performance for each sector may provide more in-depth knowledge about this relationship.

Statistical analysis of one set of data does not necessarily provide justification for predicting that repeating the same analysis on another set of data collected from other places at other times will result in the same outcomes. Only by measuring and demonstrating a phenomenon repeatedly can a researcher guarantee that it is a valid and reliable finding and not merely an accident of sampling (Allen & Yen 2002). Thus, the results of this study are not considered definitive, and this study's second recommendation is that these results need to be confirmed by further research and economic analysis.

In this study, a relatively simple descriptive analysis of the time series data was performed to describe the underlying trends, patterns and turning points in the variables and their inter-relationships over time, using mean values of 57 firms. This study's third recommendation is that a more comprehensive time series analyses should be conducted, based on individual firms and/or groups of firms classified according to their different sectors. The statistical techniques could include:

- Spectral analysis (to identify systematic cyclic trends in financial performance and structure over time);
- Forecasting (to construct a time series model that predicts future events);
- Intervention analysis (to examine whether there is a significant change in financial performance and structure before and after a specified event, such as the 2006 Saudi Arabian stock market collapse and the 2008 GFC; and
- Explanative analysis, including cross-correlations (to explore the statistical relationships between related sets of financial performance and structure data

collected in different years) (Box, Jenkins & Reinsel 1994; Campbell, Lo & MacKinlay 1996; Chatfield 1996).

The fourth recommendation is to explore the potential cause and effect relationships between financial performance and structure that may manifest in time series data. Granger (1988) suggested that if the values of a past set of time series data can be used to predict the values of a future set of data, then the past set can be assumed to be the cause (the initiator, precursor or antecedent) of the future set. This concept is known as 'Granger causality', and its most common application is to analyse trends in financial data (Campbell, Lo & MacKinlay 1996). The procedure applied to identify Granger causality is to test for the statistical significance of the bivariate regression equation relating a dependent variable (Y), assumed to be the effect, plotted on the vertical axis, to an independent variable lagged in time (X), assumed to be the cause, plotted on the horizontal axis. If Y increases consistently with respect to X, then X is assumed to be the cause of Y.

One of the major findings of this study was that, on average, across 57 Saudi Arabian firms, a non-linear positive relationship existed between *zakat* payments and capital structure. The point level of leverage, above which *zakat* tended to increase, was approximately 0.300 to 0.400. The mean *zakat* payments tended to remain relatively low and constant when the leverage was less than 0.300. The average level of debt to total assets was approximately 0.31 in 74 Saudi firms in 2009. This implies that it is normal for firms in Saudi Arabia to operate with a combination of relatively low leverage and relatively low taxation. It was found that *zakat* increased exponentially when the leverage increased from 0.300 to 0.600, thus implying that firms with high debt levels also incur more tax liabilities. This may provide a rationale for firms not to increase their leverage above the norm.

The trade-off theory suggests that there can be a tax saving from increasing the debt in capital structure, which this study did not validate. However, the regression model predicted that the average financial performance increased significantly with respect to an increase in *zakat* (with the exception of 2008—possibly because of the GFC). The largest β coefficients were generally for *zakat*, thus implying that *zakat* was a relatively stronger positive predictor of financial performance than leverage was a negative predictor. These

findings provide evidence to recommend that, under normal economic conditions, Saudi firms could attempt to improve their financial performance by balancing their *zakat* liabilities and leverage borrowing levels. Two graphs, based on the results of this study, might help firms in Saudi Arabia achieve this outcome. Figure 6.2 illustrates the linearised relationships between the relative financial performance (the principal component scores extracted by factor analysis from GPM, NPM, ROE and ROA) for 57 firms over nine years, versus the observed measures of $\log_{10}$ *zakat* and $\sqrt{}$ leverage.

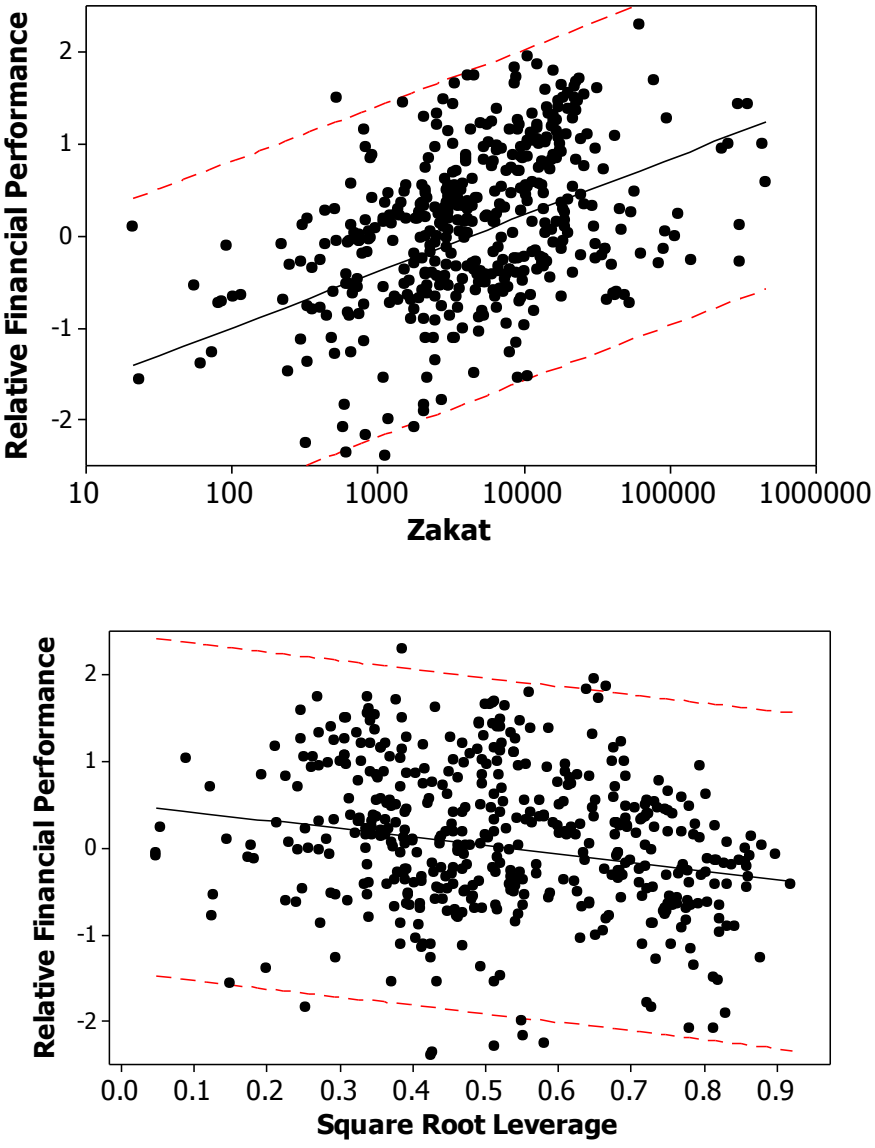



Figure 6.2 Prediction of Relative Financial Performance from Zakat and Leverage

The continuous line, sloping upwards for *zakat* and downwards for leverage, is the best line of fit through the points, drawn by linear regression, and represents a normal average firm. The dotted lines are the ±95 per cent prediction intervals. For any given level of *zakat* and leverage, the graphs permit firms in Saudi Arabia to determine whether or not their relative financial performance is greater than the norm and within the expected limits for 95 out of 100 firms (above the regression line, but within the 95 per cent prediction interval) or less than the norm (below the regression line, but within the 95 per cent prediction interval). If firms deviate substantially below the norm in terms of their financial performance with respect to their actual levels of leverage and *zakat*, then it is recommended that remedial action be taken by management to improve their profit margins, ROA and ROE by manipulating their borrowing levels.

## 6.4 Conclusions

The results of this study were consistent with the conclusion that there is a relationship between capital structure and capital performance in Saudi Arabian firms. On average, the mean financial performance of 57 firms tended to increase with respect to a decrease in leverage level. Lower leverage levels were found to be linked with higher gross profit margins, NPM, ROA and ROE.

The results of this study were also consistent with the conclusion that there is a relationship between capital structure and *zakat*. On average, the mean *zakat* payments of 57 firms tended to remain relatively constant below a leverage of approximately 0.3 (the approximate average among Saudi Arabian firms). The mean *zakat* then systematically increased with respect to increasing leverage, and stabilised above a level of approximately 0.6 to 0.7.

The results of this study were consistent with the conceptual framework that posited that capital structure predicts *zakat*; *zakat* predicts financial performance; and both leverage and *zakat*, controlling for the size and age of the firms, predict the average financial performance (a mathematical combination of GPM, NPM, ROA and ROE). The evidence for this statement is that a multilevel regression model predicted that, when controlling for size, age and leverage, the average financial performance of 57 Saudi Arabian firms increased significantly with respect to an increase in *zakat*, every year from 2001 to 2010,

with the exception of 2008, which was possibly due to the GFC. The largest β coefficients were generally for *zakat*, implying that *zakat* is a relatively stronger positive predictor of financial performance than leverage is a negative predictor. The only exceptions to this rule were in 2006 and after 2008, which was probably associated with the Saudi Arabian stock market crash, and the GFC, respectively.

One of the aims of this study was to formulate a conclusion about the best balance between debt and equity to improve corporate profit performance. The findings of this study provide evidence to recommend that, under normal economic conditions, Saudi Arabian firms could attempt to improve their financial performance by balancing their *zakat* liabilities with their leverage borrowing levels. The two graphs in Figure 6.2, based on the results of this study, are provided to help Saudi Arabian firms achieve such an outcome.

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# Appendix 1: Nominal and Real Oil Prices (In US$ per Barrel)

| Year | NOMINAL OIL PRICE | | REAL OIL PRICE | |
|---|---|---|---|---|
| | Arabian Light | North Sea (Brent) | Arabian Light | North Sea (Brent) |
| **1970** | 1.30 | 2.23 | 1.30 | 2.23 |
| **1971** | 1.65 | 3.21 | 1.57 | 3.05 |
| **1972** | 1.90 | 3.61 | 1.73 | 3.28 |
| **1973** | 2.70 | 4.25 | 2.28 | 3.58 |
| **1974** | 9.76 | 12.93 | 7.27 | 9.63 |
| **1975** | 10.72 | 11.50 | 7.18 | 7.70 |
| **1976** | 11.51 | 13.14 | 7.11 | 8.11 |
| **1977** | 12.40 | 14.31 | 7.05 | 8.14 |
| **1978** | 12.70 | 14.26 | 6.73 | 7.56 |
| **1979** | 17.26 | 32.11 | 8.37 | 15.57 |
| **1980** | 28.67 | 37.89 | 12.40 | 16.39 |
| **1981** | 34.23 | 36.68 | 13.44 | 14.40 |
| **1982** | 31.74 | 33.42 | 11.58 | 12.19 |
| **1983** | 28.77 | 29.83 | 9.98 | 10.34 |
| **1984** | 28.06 | 28.80 | 9.29 | 9.54 |
| **1985** | 27.54 | 27.33 | 8.76 | 8.69 |
| **1986** | 13.73 | 14.50 | 4.26 | 4.50 |
| **1987** | 17.23 | 18.34 | 5.20 | 5.53 |
| **1988** | 13.40 | 14.97 | 3.91 | 4.37 |
| **1989** | 16.21 | 18.22 | 4.53 | 5.09 |
| **1990** | 20.82 | 23.99 | 5.54 | 6.38 |
| **1991** | 17.43 | 19.99 | 4.44 | 5.10 |
| **1992** | 17.94 | 19.33 | 4.44 | 4.79 |
| **1993** | 15.68 | 17.00 | 3.78 | 4.10 |
| **1994** | 15.39 | 15.80 | 3.63 | 3.72 |
| **1995** | 16.73 | 17.01 | 3.85 | 3.91 |
| **1996** | 19.91 | 20.70 | 4.48 | 4.65 |
| **1997** | 18.71 | 19.06 | 4.12 | 4.20 |
| **1998** | 12.20 | 12.71 | 2.61 | 2.72 |
| **1999** | 17.45 | 17.91 | 3.68 | 3.78 |
| **2000** | 26.81 | 28.44 | 5.53 | 5.87 |
| **2001** | 23.06 | 24.46 | 4.62 | 4.90 |
| **2002** | 24.32 | 25.03 | 4.79 | 4.93 |
| **2003** | 27.69 | 28.81 | 5.35 | 5.56 |
| **2004** | 34.53 | 38.23 | 6.54 | 7.24 |
| **2005** | 50.15 | 54.37 | 9.31 | 10.09 |
| **2006** | 61.05 | 65.14 | 11.10 | 11.84 |
| **2007** | 68.75 | 72.55 | 12.24 | 12.92 |

| | | | | |
|---|---|---|---|---|
| **2008** | 95.16 | 97.37 | 16.31 | 16.69 |
| **2009** | 61.38 | 61.68 | 10.38 | 10.43 |

# Appendix 2: Number of Shares Traded by Sectors (Million Shares)

| Period | Banking & Financial Services | Cement | Telecommunication & IT | Insurance | Petrochemical Industries | Retail | Energy & Utilities | Agriculture & Food Industries | Multi-investment | Industrial Investment | Building & Construction | Real Estate Development | Transport | Media & Publishing | Hotel & Tourism | Total ** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1985** | 0.4 | 0.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 3.9 |
| **1986** | 0.8 | 0.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4.9 |
| **1987** | 0.9 | 3.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 13.9 |
| **1988** | 1.2 | 2.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 14.6 |
| **1989** | 2.6 | 2.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 15.3 |
| **1990** | 2.5 | 4.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 16.9 |
| **1991** | 6.0 | 5.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 33.6 |
| **1992** | 6.0 | 3.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 34.2 |
| **1993** | 13.7 | 1.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 60.3 |
| **1994** | 15.1 | 5.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 152.1 |
| **1995** | 27.2 | 8.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 116.6 |
| **1996** | 31.9 | 29.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 137.8 |
| **1997** | 78.2 | 37.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 314.0 |
| **1998** | 129.7 | 21.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 294.6 |
| **1999** | 156.1 | 33.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 527.5 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2000** | 92.1 | 46.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 554.9 |
| **2001** | 77.9 | 124.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 691.8 |
| **2002** | 77.9 | 126.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1,735.8 |
| **2003** | 87.1 | 88.0 | 323.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5,565.9 |
| **2004** | 95.1 | 119.2 | 294.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 10,298.3 |
| **2005** | 271.5 | 266.4 | 420.3 | 111.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 12,281.3 |
| **2006** | 1,135.4 | 1,066.7 | 894.1 | 129.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 68,515.3 |
| **2007** | 1,537.3 | 500.3 | 563.5 | 2,528.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 57,829.0 |
| **2008** | 9,391.3 | 378.9 | 6,055.2 | 2,972.8 | 14,352.7 | 1,550.4 | 1,793.0 | 2,991.2 | 2,949.5 | 4,402.8 | 2,150.3 | 6,139.8 | 2,967.6 | 331.0 | 300.6 | 58,727.1 |
| **2009** | 8,897.0 | 259.5 | 4,736.0 | 5,424.2 | 10,949.1 | 2,154.4 | 680.1 | 3,761.1 | 4,286.4 | 4,597.4 | 2,936.2 | 5,034.7 | 1,930.2 | 454.8 | 584.5 | 56,685.6 |
| **2010** | 5,873.5 | 624.1 | 1,952.6 | 3,097.7 | 9,492.6 | 574.2 | 1,041.5 | 1,212.3 | 2,431.6 | 2,037.4 | 1,407.8 | 2,737.3 | 555.6 | 93.7 | 123.2 | 33,255.1 |

Source: SAMA (2011) annual report. Modified by researcher.

** There is a mismatch between the total and data on sectors for the period from 1985 until 2007, due to the unavailability of data for each sector for the period after adopting the new classification of sectors.

# Appendix 3: Value of Shares Traded by Sectors (Million Riyals)

| Period | Banking & Financial Services | Cement | Telecommunication & IT | Insurance | Petrochemical Industries | Retail | Energy & Utilities | Agriculture & Food Industries | Multi-investment | Industrial Investment | Building & Construction | Real Estate Development | Transport | Media & Publishing | Hotel & Tourism | Total ** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1985** | 182 | 116 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 760 |
| **1986** | 294 | 56 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 831 |
| **1987** | 298 | 366 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1,686 |
| **1988** | 530 | 216 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2,098 |
| **1989** | 1,617 | 329 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 3,364 |
| **1990** | 2,257 | 615 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4,403 |
| **1991** | 3,613 | 949 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8,527 |
| **1992** | 7,096 | 865 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 13,699 |
| **1993** | 8,642 | 479 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 17,360 |
| **1994** | 6,189 | 976 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 24,871 |
| **1995** | 7,832 | 1,404 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 23,227 |
| **1996** | 10,406 | 5,342 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 25,397 |
| **1997** | 29,280 | 8,157 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 62,060 |
| **1998** | 32,820 | 3,484 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 51,509 |
| **1999** | 34,870 | 3,790 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 56,579 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2000** | 29,520 | 5,238 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 65,293 |
| **2001** | 24,385 | 20,789 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 83,601 |
| **2002** | 25,961 | 27,584 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 133,787 |
| **2003** | 35,748 | 21,919 | 105,067 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 596,510 |
| **2004** | 53,028 | 43,242 | 160,196 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1,773,859 |
| **2005** | 238,286 | 168,884 | 296,276 | 61,439 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4,138,695 |
| **2006** | 294,753 | 205,630 | 199,723 | 31,789 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5,261,851 |
| **2007** | 112,947 | 37,659 | 38,090 | 194,856 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2,557,712 |
| **2008** | 208,979 | 26,696 | 154,128 | 153,057 | 637,695 | 55,001 | 28,522 | 99,739 | 65,100 | 151,496 | 124,764 | 163,734 | 74,343 | 10,180 | 9,512 | 1,962,946 |
| **2009** | 149,423 | 12,500 | 74,876 | 201,112 | 299,899 | 55,274 | 8,220 | 94,172 | 56,559 | 99,909 | 86,292 | 66,086 | 30,308 | 11,393 | 17,989 | 1,264,011 |
| **2010** | 98,732 | 14,909 | 35,169 | 90,345 | 287,301 | 17,796 | 13,850 | 41,186 | 27,649 | 51,357 | 34,942 | 32,111 | 8,402 | 1,989 | 3,446 | 759,184 |

Source: SAMA (2011) annual report. Modified by researcher.

** There is a mismatch between the total and data on sectors for the period from 1985 until 2007, due to the unavailability of data for each sector for the period after adopting the new classification of sectors.

# Appendix 4: Data and Variables Information

| ID | Company | Sector | Years | Year | SqrtLeverage | Leverage Level | GPM | NPM | ROA | ROE | LogZakat | LogAge | Size | PCAScores |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | 1 | 1 | 2002 | 1 | 0.804 | 7 | 0.39 | 0.35 | 0.029 | 0.081 | 5.484 | 1.398 | 8 | -0.281 |
| **2** | 1 | 1 | 2003 | 2 | 0.795 | 7 | 0.48 | 0.46 | 0.061 | 0.166 | 5.477 | 1.415 | 8.04 | 0.117 |
| **3** | 1 | 1 | 2004 | 3 | 0.77 | 6 | 0.52 | 0.5 | 0.114 | 0.279 | 5.653 | 1.431 | 8.1 | 0.571 |
| **4** | 1 | 1 | 2005 | 4 | 0.738 | 6 | 0.58 | 0.56 | 0.14 | 0.307 |  | 1.447 | 8.14 | 0.776 |
| **5** | 1 | 1 | 2006 | 5 | 0.75 | 6 | 0.57 | 0.54 | 0.122 | 0.278 |  | 1.462 | 8.22 | 0.641 |
| **6** | 1 | 1 | 2007 | 6 | 0.803 | 7 | 0.55 | 0.52 | 0.105 | 0.296 |  | 1.477 | 8.41 | 0.607 |
| **7** | 1 | 1 | 2008 | 7 | 0.788 | 7 | 0.47 | 0.44 | 0.081 | 0.214 |  | 1.491 | 8.43 | 0.262 |
| **8** | 1 | 1 | 2009 | 8 | 0.797 | 7 | 0.33 | 0.3 | 0.031 | 0.084 |  | 1.505 | 8.47 | -0.327 |
| **9** | 1 | 1 | 2010 | 9 | 0.787 | 7 | 0.48 | 0.43 | 0.068 | 0.178 |  | 1.519 | 8.5 | 0.147 |
| **10** | 2 | 1 | 2002 | 1 | 0.39 | 2 | 0.54 | 0.5 | 0.026 | 0.03 | 3.932 | 1.568 | 6.64 | -0.249 |
| **11** | 2 | 1 | 2003 | 2 | 0.392 | 2 | 0.85 | 0.82 | 0.087 | 0.103 | 4.015 | 1.58 | 6.66 | 0.441 |
| **12** | 2 | 1 | 2004 | 3 | 0.442 | 2 | 0.91 | 0.86 | 0.125 | 0.155 | 4.544 | 1.591 | 6.72 | 0.727 |
| **13** | 2 | 1 | 2005 | 4 | 0.478 | 3 | 0.93 | 0.89 | 0.177 | 0.23 | 4.625 | 1.602 | 6.79 | 1.081 |
| **14** | 2 | 1 | 2006 | 5 | 0.538 | 3 | 0.92 | 0.9 | 0.173 | 0.243 | 4.431 | 1.613 | 6.82 | 1.097 |
| **15** | 2 | 1 | 2007 | 6 | 0.512 | 3 | 0.93 | 0.9 | 0.271 | 0.367 | 4.886 | 1.623 | 6.91 | 1.688 |
| **16** | 2 | 1 | 2008 | 7 | 0.429 | 2 | 0.96 | 0.93 |  |  | 5.039 | 1.633 | 6.99 |  |
| **17** | 2 | 1 | 2009 | 8 | 0.451 | 3 | 0.97 | 0.92 | 0.205 | 0.257 | 4.981 | 1.643 | 6.95 | 1.272 |
| **18** | 2 | 1 | 2010 | 9 | 0.385 | 2 | 0.98 | 0.96 | 0.386 | 0.453 | 4.786 | 1.653 | 6.92 | 2.297 |
| **19** | 3 | 1 | 2002 | 1 | 0.199 | 1 | -0.4 | -0.4 | -0.012 | -0.01 | 1.792 | 1.041 | 5.16 | -1.388 |
| **20** | 3 | 1 | 2003 | 2 | 0.219 | 1 | -1.6 | -1.6 | -0.083 | -0.09 | 2.064 | 1.079 | 5.13 | -3.048 |
| **21** | 3 | 1 | 2004 | 3 | 0.123 | 1 |  |  | -0.07 | -0.07 |  | 1.114 | 5.85 |  |
| **22** | 3 | 1 | 2005 | 4 | 0.127 | 1 | 0.47 | 0.24 | 0.005 | 0.005 | 3.487 | 1.146 | 5.85 | -0.539 |
| **23** | 3 | 1 | 2006 | 5 | 0.124 | 1 | 0.25 | 0.02 | 0 | 0 | 3.552 | 1.176 | 5.85 | -0.795 |
| **24** | 3 | 1 | 2007 | 6 | 0.874 | 8 | -1.1 | -1.7 | -0.014 | -0.06 | 4.159 | 1.204 | 6.44 | -2.62 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 3 | 1 | 2008 | 7 | 0.917 | 8 | | | -0.02 | -0.13 | 3.699 | 1.23 | 6.51 | |
| **26** | 3 | 1 | 2009 | 8 | 0.921 | 8 | -2 | -2 | -0.008 | -0.05 | 2.909 | 1.255 | 6.53 | -3.189 |
| **27** | 3 | 1 | 2010 | 9 | 0.919 | 8 | 0.31 | 0.27 | 0.012 | 0.076 | 3.877 | 1.279 | 6.55 | -0.431 |
| **28** | 4 | 1 | 2002 | 1 | 0.776 | 7 | 0.06 | 0.05 | 0.006 | 0.014 | 2.791 | 1 | 5.77 | -0.833 |
| **29** | 4 | 1 | 2003 | 2 | 0.779 | 7 | -0.7 | -0.8 | -0.041 | -0.1 | 2.76 | 1.041 | 5.73 | -2.093 |
| **30** | 4 | 1 | 2004 | 3 | 0.58 | 4 | -1 | -1 | -0.038 | -0.06 | 2.509 | 1.079 | 5.99 | -2.256 |
| **31** | 4 | 1 | 2005 | 4 | 0.607 | 4 | 0.42 | 0.33 | 0.027 | 0.043 | 3.909 | 1.114 | 6.04 | -0.365 |
| **32** | 4 | 1 | 2006 | 5 | 0.54 | 3 | 0.32 | 0.26 | 0.02 | 0.028 | 3.691 | 1.146 | 6.05 | -0.508 |
| **33** | 4 | 1 | 2007 | 6 | 0.688 | 5 | 0.48 | 0.44 | 0.019 | 0.037 | 3.472 | 1.176 | 6.24 | -0.315 |
| **34** | 4 | 1 | 2008 | 7 | 0.623 | 4 | | | -0.027 | -0.04 | 3.265 | 1.204 | 6.41 | |
| **35** | 4 | 1 | 2009 | 8 | 0.589 | 4 | -1.8 | -2.3 | -0.021 | -0.03 | 4 | 1.23 | 6.38 | -3.25 |
| **36** | 4 | 1 | 2010 | 9 | 0.473 | 3 | 0.38 | 0.3 | 0.014 | 0.021 | 3.993 | 1.255 | 6.39 | -0.494 |
| **37** | 5 | 1 | 2002 | 1 | 0.121 | 1 | 0.97 | 0.93 | 0.117 | 0.118 | 3.542 | 1 | 5.84 | 0.692 |
| **38** | 5 | 1 | 2003 | 2 | 0.225 | 1 | 0.98 | 0.96 | 0.135 | 0.142 | 3.726 | 1.041 | 6.19 | 0.819 |
| **39** | 5 | 1 | 2004 | 3 | 0.247 | 1 | 0.98 | 0.96 | 0.272 | 0.29 | 4.153 | 1.079 | 6.31 | 1.578 |
| **40** | 5 | 1 | 2005 | 4 | 0.089 | 1 | 0.99 | 0.96 | 0.176 | 0.178 | 4.026 | 1.114 | 6.37 | 1.035 |
| **41** | 5 | 1 | 2006 | 5 | 0.584 | 4 | 0.97 | 0.94 | 0.133 | 0.201 | 4.249 | 1.146 | 6.65 | 0.925 |
| **42** | 5 | 1 | 2007 | 6 | 0.609 | 4 | 0.85 | 0.81 | 0.088 | 0.14 | 4.337 | 1.176 | 6.7 | 0.524 |
| **43** | 5 | 1 | 2008 | 7 | 0.632 | 4 | 0.22 | 0.19 | 0.006 | 0.009 | 3.979 | 1.204 | 6.94 | -0.686 |
| **44** | 5 | 1 | 2009 | 8 | 0.849 | 8 | 0.67 | 0.52 | 0.016 | 0.056 | 4.954 | 1.23 | 7.29 | -0.142 |
| **45** | 5 | 1 | 2010 | 9 | 0.335 | 2 | 0.76 | 0.6 | 0.017 | 0.071 | 5.04 | 1.255 | 7.37 | -0.015 |
| **46** | 6 | 2 | 2002 | 1 | 0.415 | 2 | 0.85 | 0.81 | 0.137 | 0.166 | 3.914 | 1.672 | 6.14 | 0.729 |
| **47** | 6 | 2 | 2003 | 2 | 0.243 | 1 | 0.82 | 0.79 | 0.143 | 0.152 | 3.881 | 1.681 | 6.17 | 0.695 |
| **48** | 6 | 2 | 2004 | 3 | 0.306 | 1 | 0.89 | 0.85 | 0.195 | 0.216 | 4.164 | 1.69 | 6.2 | 1.064 |
| **49** | 6 | 2 | 2005 | 4 | 0.263 | 1 | 0.91 | 0.87 | 0.189 | 0.203 | 4.094 | 1.699 | 6.24 | 1.041 |
| **50** | 6 | 2 | 2006 | 5 | 0.3 | 1 | 0.88 | 0.84 | 0.184 | 0.203 | 4.243 | 1.708 | 6.26 | 0.989 |
| **51** | 6 | 2 | 2007 | 6 | 0.471 | 3 | 0.89 | 0.87 | 0.166 | 0.213 | 4.017 | 1.716 | 6.37 | 0.98 |
| **52** | 6 | 2 | 2008 | 7 | 0.601 | 4 | 0.82 | 0.8 | 0.088 | 0.138 | 4.001 | 1.724 | 6.56 | 0.498 |
| **53** | 6 | 2 | 2009 | 8 | 0.637 | 5 | 0.48 | 0.43 | 0.045 | 0.076 | 4.262 | 1.732 | 6.58 | -0.155 |
| **54** | 6 | 2 | 2010 | 9 | 0.631 | 4 | 0.76 | 0.73 | 0.061 | 0.102 | 3.978 | 1.74 | 6.62 | 0.264 |
| **55** | 7 | 2 | 2002 | 1 | 0.548 | 3 | 0.91 | 0.87 | 0.233 | 0.333 | 4.237 | 1.613 | 6.14 | 1.468 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **56** | 7 | 2 | 2003 | 2 | 0.526 | 3 | 0.93 | 0.89 | 0.261 | 0.361 | 4.255 | 1.623 | 6.17 | 1.632 |
| **57** | 7 | 2 | 2004 | 3 | 0.559 | 4 | 0.94 | 0.91 | 0.277 | 0.402 | 4.204 | 1.633 | 6.29 | 1.793 |
| **58** | 7 | 2 | 2005 | 4 | 0.646 | 5 | 0.93 | 0.9 | 0.185 | 0.318 | 4.204 | 1.643 | 6.43 | 1.305 |
| **59** | 7 | 2 | 2006 | 5 | 0.542 | 3 | 0.95 | 0.92 | 0.192 | 0.272 | 4.204 | 1.653 | 6.5 | 1.247 |
| **60** | 7 | 2 | 2007 | 6 | 0.586 | 4 | 0.95 | 0.92 | 0.203 | 0.309 | 4.301 | 1.663 | 6.56 | 1.367 |
| **61** | 7 | 2 | 2008 | 7 | 0.456 | 3 | 0.9 | 0.88 | 0.17 | 0.215 | 4.146 | 1.672 | 6.56 | 1.011 |
| **62** | 7 | 2 | 2009 | 8 | 0.416 | 2 | 0.93 | 0.9 | 0.152 | 0.184 | 4.255 | 1.681 | 6.57 | 0.905 |
| **63** | 7 | 2 | 2010 | 9 | 0.368 | 2 | 0.93 | 0.9 | 0.18 | 0.208 | 4.398 | 1.69 | 6.56 | 1.046 |
| **64** | 8 | 2 | 2002 | 1 | 0.403 | 2 | 0.83 | 0.81 | 0.16 | 0.191 | 3.978 | 1.672 | 6.33 | 0.851 |
| **65** | 8 | 2 | 2003 | 2 | 0.329 | 2 | 0.87 | 0.85 | 0.184 | 0.206 | 4.107 | 1.681 | 6.34 | 1 |
| **66** | 8 | 2 | 2004 | 3 | 0.306 | 1 | 0.88 | 0.85 | 0.195 | 0.215 | 4.233 | 1.69 | 6.35 | 1.059 |
| **67** | 8 | 2 | 2005 | 4 | 0.33 | 2 | 0.88 | 0.86 | 0.219 | 0.246 | 4.201 | 1.699 | 6.34 | 1.209 |
| **68** | 8 | 2 | 2006 | 5 | 0.323 | 2 | 0.9 | 0.88 | 0.236 | 0.263 | 4.169 | 1.708 | 6.43 | 1.319 |
| **69** | 8 | 2 | 2007 | 6 | 0.539 | 3 | 0.9 | 0.87 | 0.178 | 0.251 | 4.291 | 1.716 | 6.59 | 1.106 |
| **70** | 8 | 2 | 2008 | 7 | 0.61 | 4 | 0.86 | 0.84 | 0.137 | 0.218 | 4.202 | 1.724 | 6.66 | 0.871 |
| **71** | 8 | 2 | 2009 | 8 | 0.614 | 4 | 0.84 | 0.82 | 0.118 | 0.19 | 4.179 | 1.732 | 6.69 | 0.726 |
| **72** | 8 | 2 | 2010 | 9 | 0.519 | 3 | 0.86 | 0.84 | 0.143 | 0.196 | 4.228 | 1.74 | 6.66 | 0.837 |
| **73** | 9 | 2 | 2002 | 1 | 0.291 | 1 | 0.95 | 0.93 | 0.212 | 0.232 | 3.781 | 1.415 | 6.04 | 1.231 |
| **74** | 9 | 2 | 2003 | 2 | 0.247 | 1 | 0.96 | 0.93 | 0.217 | 0.231 | 3.958 | 1.431 | 6.05 | 1.248 |
| **75** | 9 | 2 | 2004 | 3 | 0.356 | 2 | 0.96 | 0.93 | 0.195 | 0.223 | 3.958 | 1.447 | 6.1 | 1.158 |
| **76** | 9 | 2 | 2005 | 4 | 0.521 | 3 | 0.96 | 0.93 | 0.173 | 0.237 | 4.048 | 1.462 | 6.21 | 1.12 |
| **77** | 9 | 2 | 2006 | 5 | 0.512 | 3 | 0.96 | 0.93 | 0.18 | 0.244 | 3.908 | 1.477 | 6.24 | 1.157 |
| **78** | 9 | 2 | 2007 | 6 | 0.51 | 3 | 0.97 | 0.93 | 0.262 | 0.355 | 4.363 | 1.491 | 6.31 | 1.665 |
| **79** | 9 | 2 | 2008 | 7 | 0.491 | 3 | 0.96 | 0.96 | 0.228 | 0.3 | 3.168 | 1.505 | 6.36 | 1.451 |
| **80** | 9 | 2 | 2009 | 8 | 0.431 | 2 | 0.95 | 0.91 | 0.268 | 0.329 | 4.347 | 1.519 | 6.35 | 1.611 |
| **81** | 9 | 2 | 2010 | 9 | 0.289 | 1 | 0.93 | 0.89 | 0.247 | 0.27 | 4.352 | 1.505 | 6.31 | 1.395 |
| **82** | 10 | 2 | 2002 | 1 | 0.516 | 3 | 0.91 | 0.89 | 0.224 | 0.306 | 4.157 | 1.38 | 6.32 | 1.389 |
| **83** | 10 | 2 | 2003 | 2 | 0.52 | 3 | 0.92 | 0.89 | 0.223 | 0.305 | 4.238 | 1.398 | 6.34 | 1.385 |
| **84** | 10 | 2 | 2004 | 3 | 0.309 | 1 | 0.95 | 0.91 | 0.26 | 0.288 | 4.35 | 1.415 | 6.32 | 1.49 |
| **85** | 10 | 2 | 2005 | 4 | 0.34 | 2 | 0.95 | 0.91 | 0.276 | 0.312 | 4.503 | 1.431 | 6.35 | 1.594 |
| **86** | 10 | 2 | 2006 | 5 | 0.341 | 2 | 0.96 | 0.92 | 0.251 | 0.284 | 4.367 | 1.447 | 6.4 | 1.465 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **87** | 10 | 2 | 2007 | 6 | 0.339 | 2 | 0.96 | 0.93 | 0.266 | 0.3 | 4.305 | 1.462 | 6.42 | 1.55 |
| **88** | 10 | 2 | 2008 | 7 | 0.376 | 2 | 0.96 | 0.93 | 0.288 | 0.335 | 4.381 | 1.477 | 6.44 | 1.699 |
| **89** | 10 | 2 | 2009 | 8 | 0.348 | 2 | 0.96 | 0.92 | 0.262 | 0.298 | 4.41 | 1.491 | 6.45 | 1.532 |
| **90** | 10 | 2 | 2010 | 9 | 0.349 | 2 | 0.94 | 0.91 | 0.232 | 0.265 | 4.355 | 1.505 | 6.45 | 1.352 |
| **91** | 11 | 2 | 2002 | 1 | 0.361 | 2 | 0.93 | 0.91 | 0.147 | 0.169 | 3.924 | 1.415 | 6.31 | 0.866 |
| **92** | 11 | 2 | 2003 | 2 | 0.25 | 1 | 0.95 | 0.93 | 0.181 | 0.193 | 4.065 | 1.431 | 6.32 | 1.045 |
| **93** | 11 | 2 | 2004 | 3 | 0.211 | 1 | 0.96 | 0.94 | 0.203 | 0.212 | 4.094 | 1.447 | 6.32 | 1.166 |
| **94** | 11 | 2 | 2005 | 4 | 0.363 | 2 | 0.96 | 0.94 | 0.202 | 0.233 | 4.093 | 1.462 | 6.35 | 1.209 |
| **95** | 11 | 2 | 2006 | 5 | 0.271 | 1 | 0.96 | 0.94 | 0.228 | 0.246 | 4.063 | 1.477 | 6.35 | 1.321 |
| **96** | 11 | 2 | 2007 | 6 | 0.306 | 1 | 0.96 | 0.94 | 0.258 | 0.284 | 4.269 | 1.491 | 6.41 | 1.498 |
| **97** | 11 | 2 | 2008 | 7 | 0.306 | 1 | 0.96 | 0.93 | 0.215 | 0.238 | 4.221 | 1.505 | 6.42 | 1.253 |
| **98** | 11 | 2 | 2009 | 8 | 0.383 | 2 | 0.95 | 0.93 | 0.17 | 0.2 | 4.065 | 1.519 | 6.45 | 1.023 |
| **99** | 11 | 2 | 2010 | 9 | 0.618 | 4 | 0.94 | 0.91 | 0.105 | 0.17 | 4.106 | 1.531 | 6.61 | 0.737 |
| **100** | 12 | 2 | 2002 | 1 | 0.26 | 1 | 0.86 | 0.84 | 0.175 | 0.188 | 3.813 | 1.279 | 6.13 | 0.923 |
| **101** | 12 | 2 | 2003 | 2 | 0.283 | 1 | 0.9 | 0.87 | 0.179 | 0.194 | 3.816 | 1.301 | 6.15 | 0.983 |
| **102** | 12 | 2 | 2004 | 3 | 0.271 | 1 | 0.9 | 0.88 | 0.171 | 0.184 | 3.849 | 1.322 | 6.2 | 0.943 |
| **103** | 12 | 2 | 2005 | 4 | 0.391 | 2 | 0.91 | 0.88 | 0.149 | 0.176 | 4.021 | 1.342 | 6.3 | 0.858 |
| **104** | 12 | 2 | 2006 | 5 | 0.415 | 2 | 0.92 | 0.89 | 0.201 | 0.243 | 4.197 | 1.362 | 6.35 | 1.183 |
| **105** | 12 | 2 | 2007 | 6 | 0.391 | 2 | 0.93 | 0.9 | 0.217 | 0.256 | 4.34 | 1.38 | 6.4 | 1.269 |
| **106** | 12 | 2 | 2008 | 7 | 0.384 | 2 | 0.91 | 0.88 | 0.197 | 0.232 | 4.224 | 1.398 | 6.34 | 1.132 |
| **107** | 12 | 2 | 2009 | 8 | 0.352 | 2 | 0.87 | 0.83 | 0.151 | 0.173 | 4.132 | 1.415 | 6.37 | 0.812 |
| **108** | 12 | 2 | 2010 | 9 | 0.325 | 2 | 0.87 | 0.84 | 0.145 | 0.162 | 4.151 | 1.431 | 6.37 | 0.777 |
| **109** | 13 | 2 | 2002 | 1 | 0.574 | 4 | 0.83 | 0.81 | 0.067 | 0.1 | 3.311 | 0.903 | 6.07 | 0.353 |
| **110** | 13 | 2 | 2003 | 2 | 0.543 | 3 | 0.82 | 0.8 | 0.068 | 0.096 | 3.293 | 0.954 | 6.05 | 0.335 |
| **111** | 13 | 2 | 2004 | 3 | 0.522 | 3 | 0.88 | 0.86 | 0.115 | 0.158 | 3.522 | 1 | 6.05 | 0.688 |
| **112** | 13 | 2 | 2005 | 4 | 0.451 | 3 | 0.9 | 0.88 | 0.15 | 0.188 | 3.602 | 1.041 | 6.02 | 0.881 |
| **113** | 13 | 2 | 2006 | 5 | 0.523 | 3 | 0.95 | 0.92 | 0.188 | 0.259 | 3.75 | 1.079 | 6.06 | 1.208 |
| **114** | 13 | 2 | 2007 | 6 | 0.496 | 3 | 0.94 | 0.92 | 0.161 | 0.214 | 3.763 | 1.114 | 6.14 | 1.02 |
| **115** | 13 | 2 | 2008 | 7 | 0.384 | 2 | 0.9 | 0.85 | 0.123 | 0.145 | 3.961 | 1.146 | 6.09 | 0.693 |
| **116** | 13 | 2 | 2009 | 8 | 0.421 | 2 | 0.89 | 0.82 | 0.095 | 0.115 | 3.983 | 1.176 | 6.11 | 0.516 |
| **117** | 13 | 2 | 2010 | 9 | 0.364 | 2 | 0.9 | 0.83 | 0.096 | 0.111 | 4.01 | 1.204 | 6.1 | 0.516 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **118** | 14 | 3 | 2002 | 1 | 0.407 | 2 | 0.65 | 0.61 | 0.037 | 0.044 | 2.879 | 1.322 | 5.58 | -0.061 |
| **119** | 14 | 3 | 2003 | 2 | 0.374 | 2 | 0.74 | 0.7 | 0.035 | 0.04 | 2.87 | 1.342 | 5.59 | 0.015 |
| **120** | 14 | 3 | 2004 | 3 | 0.388 | 2 | 0.71 | 0.69 | 0.055 | 0.065 | 2.82 | 1.362 | 5.6 | 0.115 |
| **121** | 14 | 3 | 2005 | 4 | 0.338 | 2 | 0.97 | 0.94 | 0.298 | 0.336 | 3.616 | 1.38 | 5.73 | 1.745 |
| **122** | 14 | 3 | 2006 | 5 | 0.371 | 2 | -0.4 | -0.5 | -0.023 | -0.03 | 3.335 | 1.398 | 5.64 | -1.555 |
| **123** | 14 | 3 | 2007 | 6 | 0.35 | 2 | 0.89 | 0.82 | 0.07 | 0.079 | 3.468 | 1.415 | 5.68 | 0.357 |
| **124** | 14 | 3 | 2008 | 7 | 0.346 | 2 | 0.88 | 0.79 | 0.076 | 0.086 | 3.616 | 1.431 | 5.67 | 0.367 |
| **125** | 14 | 3 | 2009 | 8 | 0.321 | 2 | 0.79 | 0.71 | 0.057 | 0.063 | 3.551 | 1.447 | 5.75 | 0.172 |
| **126** | 14 | 3 | 2010 | 9 | 0.357 | 2 | 0.7 | 0.68 | 0.061 | 0.07 | 3.091 | 1.462 | 5.77 | 0.135 |
| **127** | 15 | 3 | 2002 | 1 | 0.411 | 2 | 0.15 | 0.14 | 0.024 | 0.028 | 2.068 | 1.176 | 4.6 | -0.651 |
| **128** | 15 | 3 | 2003 | 2 | 0.339 | 2 | 0.1 | 0.05 | 0.011 | 0.013 | 2.555 | 1.204 | 4.58 | -0.798 |
| **129** | 15 | 3 | 2004 | 3 | 0.293 | 1 | -0.2 | -0.2 | -0.022 | -0.02 | 1.863 | 1.23 | 5.02 | -1.273 |
| **130** | 15 | 3 | 2005 | 4 | 0.338 | 2 | 0.36 | 0.29 | 0.071 | 0.081 | 3.254 | 1.255 | 5.07 | -0.195 |
| **131** | 15 | 3 | 2006 | 5 | 0.422 | 2 | | | -0.15 | -0.18 | 3.136 | 1.279 | 5.03 | |
| **132** | 15 | 3 | 2007 | 6 | 0.496 | 3 | 0.14 | 0.09 | 0.021 | 0.028 | 3.144 | 1.301 | 5.08 | -0.693 |
| **133** | 15 | 3 | 2008 | 7 | 0.549 | 4 | -0.4 | -0.5 | -0.089 | -0.13 | 3.072 | 1.322 | 5.06 | -2.002 |
| **134** | 15 | 3 | 2009 | 8 | 0.552 | 4 | -0.5 | -0.5 | -0.107 | -0.15 | 2.914 | 1.342 | 5 | -2.164 |
| **135** | 15 | 3 | 2010 | 9 | 0.661 | 5 | | | | | | 1.362 | 4.78 | |
| **136** | 16 | 3 | 2002 | 1 | 0.546 | 3 | 0.16 | 0.08 | 0.006 | 0.009 | 3.442 | 1 | 5.67 | -0.775 |
| **137** | 16 | 3 | 2003 | 2 | 0.541 | 3 | 0.33 | 0.28 | 0.028 | 0.039 | 3.409 | 1.041 | 5.67 | -0.448 |
| **138** | 16 | 3 | 2004 | 3 | 0.483 | 3 | 0.3 | 0.25 | 0.035 | 0.045 | 3.466 | 1.079 | 5.64 | -0.438 |
| **139** | 16 | 3 | 2005 | 4 | 0.295 | 1 | 0.29 | 0.24 | 0.02 | 0.022 | 3.482 | 1.114 | 5.84 | -0.546 |
| **140** | 16 | 3 | 2006 | 5 | 0.311 | 1 | 0.28 | 0.17 | 0.016 | 0.018 | 3.86 | 1.146 | 5.84 | -0.612 |
| **141** | 16 | 3 | 2007 | 6 | 0.409 | 2 | 0.08 | 0.01 | 0.001 | 0.001 | 3.699 | 1.176 | 5.88 | -0.884 |
| **142** | 16 | 3 | 2008 | 7 | 0.471 | 3 | 0.28 | 0.22 | 0.027 | 0.034 | 3.73 | 1.204 | 5.86 | -0.518 |
| **143** | 16 | 3 | 2009 | 8 | 0.396 | 2 | 0.22 | 0.14 | 0.014 | 0.017 | 3.808 | 1.23 | 5.86 | -0.671 |
| **144** | 16 | 3 | 2010 | 9 | 0.249 | 1 | 0.32 | 0.24 | 0.031 | 0.033 | 3.871 | 1.255 | 5.85 | -0.473 |
| **145** | 17 | 3 | 2002 | 1 | 0.673 | 5 | 0.7 | 0.68 | 0.169 | 0.31 | 3.514 | 1.602 | 5.75 | 1.002 |
| **146** | 17 | 3 | 2003 | 2 | 0.677 | 5 | 0.73 | 0.71 | 0.185 | 0.342 | 3.633 | 1.613 | 5.77 | 1.153 |
| **147** | 17 | 3 | 2004 | 3 | 0.687 | 5 | 0.73 | 0.7 | 0.191 | 0.362 | 3.703 | 1.623 | 5.8 | 1.211 |
| **148** | 17 | 3 | 2005 | 4 | 0.563 | 4 | 0.78 | 0.75 | 0.236 | 0.346 | 3.816 | 1.633 | 5.87 | 1.368 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **149** | 17 | 3 | 2006 | 5 | 0.5 | 3 | 0.81 | 0.78 | 0.288 | 0.384 | 3.933 | 1.643 | 5.93 | 1.649 |
| **150** | 17 | 3 | 2007 | 6 | 0.656 | 5 | 0.82 | 0.8 | 0.258 | 0.454 | 3.947 | 1.653 | 6.03 | 1.726 |
| **151** | 17 | 3 | 2008 | 7 | 0.64 | 5 | 0.76 | 0.74 | 0.286 | 0.484 | 3.942 | 1.663 | 6.07 | 1.817 |
| **152** | 17 | 3 | 2009 | 8 | 0.65 | 5 | 0.77 | 0.75 | 0.299 | 0.517 | 4.027 | 1.672 | 6.1 | 1.939 |
| **153** | 17 | 3 | 2010 | 9 | 0.666 | 5 | 0.78 | 0.76 | 0.28 | 0.502 | 4.094 | 1.681 | 6.16 | 1.854 |
| **154** | 18 | 4 | 2002 | 1 | 0.563 | 4 | 0.68 | 0.66 | 0.1 | 0.146 | 3.551 | 1.415 | 6.14 | 0.405 |
| **155** | 18 | 4 | 2003 | 2 | 0.563 | 4 | 0.63 | 0.61 | 0.09 | 0.131 | 3.614 | 1.431 | 6.15 | 0.285 |
| **156** | 18 | 4 | 2004 | 3 | 0.609 | 4 | 0.59 | 0.58 | 0.076 | 0.121 | 3.486 | 1.447 | 6.2 | 0.18 |
| **157** | 18 | 4 | 2005 | 4 | 0.52 | 3 | 0.65 | 0.63 | 0.109 | 0.149 | 3.684 | 1.462 | 6.2 | 0.407 |
| **158** | 18 | 4 | 2006 | 5 | 0.5 | 3 | 0.54 | 0.52 | 0.088 | 0.117 | 3.598 | 1.477 | 6.1 | 0.148 |
| **159** | 18 | 4 | 2007 | 6 | 0.513 | 3 | 0.67 | 0.65 | 0.093 | 0.127 | 3.553 | 1.491 | 6.17 | 0.327 |
| **160** | 18 | 4 | 2008 | 7 | 0.524 | 3 | 0.74 | 0.69 | 0.115 | 0.158 | 4.029 | 1.505 | 6.11 | 0.525 |
| **161** | 18 | 4 | 2009 | 8 | 0.512 | 3 | -0.3 | -0.3 | -0.044 | -0.06 | 3.957 | 1.519 | 6.13 | -1.547 |
| **162** | 18 | 4 | 2010 | 9 | 0.545 | 3 | 0.56 | 0.51 | 0.063 | 0.09 | 3.921 | 1.531 | 6.15 | 0.018 |
| **163** | 19 | 4 | 2002 | 1 | 0.747 | 6 | 0.15 | 0.15 | 0.011 | 0.025 | 4.57 | 1.415 | 7.99 | -0.695 |
| **164** | 19 | 4 | 2003 | 2 | 0.751 | 6 | 0.18 | 0.17 | 0.014 | 0.032 | 4.693 | 1.431 | 8.01 | -0.644 |
| **165** | 19 | 4 | 2004 | 3 | 0.764 | 6 | 0.18 | 0.17 | 0.013 | 0.031 | 4.627 | 1.447 | 8.04 | -0.647 |
| **166** | 19 | 4 | 2005 | 4 | 0.779 | 7 | 0.2 | 0.2 | 0.013 | 0.032 | 4.634 | 1.462 | 8.07 | -0.62 |
| **167** | 19 | 4 | 2006 | 5 | 0.793 | 7 | 0.18 | 0.18 | 0.011 | 0.03 |  | 1.477 | 8.11 | -0.651 |
| **168** | 19 | 4 | 2007 | 6 | 0.805 | 7 | 0.19 | 0.19 | 0.011 | 0.032 | 4.609 | 1.491 | 8.14 | -0.633 |
| **169** | 19 | 4 | 2008 | 7 | 0.816 | 7 | 0.68 | 0.68 | 0.008 | 0.023 |  | 1.505 | 8.16 | -0.146 |
| **170** | 19 | 4 | 2009 | 8 | 0.839 | 8 | 0.64 | 0.64 | 0.007 | 0.024 |  | 1.519 | 8.22 | -0.191 |
| **171** | 19 | 4 | 2010 | 9 | 0.857 | 8 | 0.76 | 0.76 | 0.012 | 0.045 |  | 1.531 | 8.28 | -0.007 |
| **172** | 20 | 5 | 2002 | 1 | 0.711 | 6 | 0.24 | 0.23 | 0.06 | 0.121 | 3.956 | 1.362 | 6.54 | -0.243 |
| **173** | 20 | 5 | 2003 | 2 | 0.728 | 6 | 0.31 | 0.3 | 0.076 | 0.163 | 3.845 | 1.38 | 6.6 | -0.02 |
| **174** | 20 | 5 | 2004 | 3 | 0.816 | 7 | 0.39 | 0.37 | 0.081 | 0.243 | 4.283 | 1.398 | 6.79 | 0.25 |
| **175** | 20 | 5 | 2005 | 4 | 0.795 | 7 | 0.52 | 0.51 | 0.148 | 0.403 | 4.488 | 1.415 | 6.91 | 0.951 |
| **176** | 20 | 5 | 2006 | 5 | 0.679 | 5 | 0.48 | 0.46 | 0.102 | 0.189 | 4.66 | 1.431 | 7.05 | 0.293 |
| **177** | 20 | 5 | 2007 | 6 | 0.618 | 4 | 0.47 | 0.43 | 0.106 | 0.172 | 5.062 | 1.447 | 7.06 | 0.241 |
| **178** | 20 | 5 | 2008 | 7 | 0.749 | 6 | 0.11 | 0.08 | 0.014 | 0.032 | 4.727 | 1.462 | 7.16 | -0.727 |
| **179** | 20 | 5 | 2009 | 8 | 0.772 | 6 | 0.26 | 0.25 | 0.055 | 0.137 | 4.802 | 1.477 | 7.24 | -0.198 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **180** | 20 | 5 | 2010 | 9 | 0.778 | 7 | 0.25 | 0.21 | 0.05 | 0.126 | 5.147 | 1.491 | 7.25 | -0.264 |
| **181** | 21 | 5 | 2002 | 1 | 0.425 | 2 | -0.2 | -0.2 | -0.017 | -0.02 | 2.814 | 1.079 | 5.3 | -1.263 |
| **182** | 21 | 5 | 2003 | 2 | 0.414 | 2 | -0.1 | -0.1 | -0.01 | -0.01 | 2.687 | 1.114 | 5.29 | -1.108 |
| **183** | 21 | 5 | 2004 | 3 | 0.383 | 2 | 0.06 | 0.03 | 0.003 | 0.004 | 2.657 | 1.146 | 5.28 | -0.875 |
| **184** | 21 | 5 | 2005 | 4 | 0.464 | 3 | | | -0.373 | -0.48 | 2.598 | 1.176 | 5.11 | |
| **185** | 21 | 5 | 2006 | 5 | 0.386 | 2 | 0.74 | 0.73 | 0.291 | 0.342 | 2.714 | 1.204 | 5.24 | 1.5 |
| **186** | 21 | 5 | 2007 | 6 | 0.365 | 2 | 0.3 | 0.23 | 0.041 | 0.048 | 3.33 | 1.23 | 5.26 | -0.425 |
| **187** | 21 | 5 | 2008 | 7 | 0.287 | 1 | 0.45 | 0.39 | 0.076 | 0.083 | 3.39 | 1.255 | 5.27 | -0.077 |
| **188** | 21 | 5 | 2009 | 8 | 0.339 | 2 | 0.27 | 0.18 | 0.029 | 0.033 | 3.425 | 1.279 | 5.3 | -0.542 |
| **189** | 21 | 5 | 2010 | 9 | 0.271 | 1 | 0.47 | 0.4 | 0.083 | 0.09 | 3.472 | 1.301 | 5.32 | -0.024 |
| **190** | 22 | 5 | 2002 | 1 | 0.556 | 4 | 0.53 | 0.51 | 0.215 | 0.31 | 3.985 | 1.041 | 6.22 | 0.966 |
| **191** | 22 | 5 | 2003 | 2 | 0.625 | 4 | 0.51 | 0.5 | 0.183 | 0.301 | 3.991 | 1.079 | 6.3 | 0.835 |
| **192** | 22 | 5 | 2004 | 3 | 0.679 | 5 | 0.5 | 0.49 | 0.154 | 0.286 | 3.975 | 1.114 | 6.38 | 0.697 |
| **193** | 22 | 5 | 2005 | 4 | 0.721 | 6 | 0.47 | 0.46 | 0.13 | 0.27 | 4.01 | 1.146 | 6.47 | 0.549 |
| **194** | 22 | 5 | 2006 | 5 | 0.705 | 5 | 0.45 | 0.43 | 0.123 | 0.246 | 4.136 | 1.176 | 6.58 | 0.451 |
| **195** | 22 | 5 | 2007 | 6 | 0.72 | 6 | 0.46 | 0.45 | 0.105 | 0.219 | 4.257 | 1.204 | 6.8 | 0.349 |
| **196** | 22 | 5 | 2008 | 7 | 0.747 | 6 | 0.47 | 0.46 | 0.111 | 0.252 | 4.392 | 1.23 | 6.91 | 0.45 |
| **197** | 22 | 5 | 2009 | 8 | 0.714 | 6 | 0.48 | 0.46 | 0.1 | 0.204 | 4.466 | 1.255 | 7.04 | 0.317 |
| **198** | 22 | 5 | 2010 | 9 | 0.716 | 6 | 0.48 | 0.47 | 0.102 | 0.21 | 4.415 | 1.279 | 7.1 | 0.343 |
| **199** | 23 | 5 | 2002 | 1 | 0.513 | 3 | | | -0.416 | -0.57 | 3.661 | 1.301 | 5.91 | |
| **200** | 23 | 5 | 2003 | 2 | 0.485 | 3 | -1.4 | -1.7 | -0.043 | -0.06 | 3.853 | 1.322 | 5.92 | -2.813 |
| **201** | 23 | 5 | 2004 | 3 | 0.471 | 3 | | | -0.058 | -0.08 | 3.787 | 1.342 | 5.88 | |
| **202** | 23 | 5 | 2005 | 4 | 0.453 | 3 | | | -0.051 | -0.06 | 3.725 | 1.362 | 5.85 | |
| **203** | 23 | 5 | 2006 | 5 | 0.744 | 6 | | | | | 3.886 | 1.38 | 5.39 | |
| **204** | 23 | 5 | 2007 | 6 | 0.73 | 6 | 0.31 | 0.21 | 0.025 | 0.054 | 3.427 | 1.398 | 5.39 | -0.466 |
| **205** | 23 | 5 | 2008 | 7 | 0.722 | 6 | 0.34 | 0.22 | 0.021 | 0.043 | 3.452 | 1.415 | 5.4 | -0.483 |
| **206** | 23 | 5 | 2009 | 8 | 0.721 | 6 | -0.4 | -0.7 | -0.034 | -0.07 | 3.438 | 1.431 | 5.37 | -1.799 |
| **207** | 23 | 5 | 2010 | 9 | 0.694 | 5 | 0.43 | 0.36 | 0.048 | 0.092 | 3.362 | 1.447 | 5.38 | -0.173 |
| **208** | 24 | 5 | 2002 | 1 | 0.424 | 2 | -0.1 | -0.1 | -0.013 | -0.02 | 3.522 | 1.322 | 6.02 | -1.11 |
| **209** | 24 | 5 | 2003 | 2 | 0.432 | 2 | 0.2 | 0.17 | 0.026 | 0.032 | 3.676 | 1.342 | 6.03 | -0.597 |
| **210** | 24 | 5 | 2004 | 3 | 0.446 | 2 | 0.28 | 0.26 | 0.053 | 0.066 | 3.536 | 1.362 | 6.04 | -0.345 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **211** | 24 | 5 | 2005 | 4 | 0.544 | 3 | 0.27 | 0.24 | 0.049 | 0.07 | 3.907 | 1.38 | 6.1 | -0.366 |
| **212** | 24 | 5 | 2006 | 5 | 0.534 | 3 | 0.28 | 0.25 | 0.063 | 0.088 | 3.855 | 1.398 | 6.14 | -0.27 |
| **213** | 24 | 5 | 2007 | 6 | 0.664 | 5 | 0.26 | 0.25 | 0.059 | 0.106 | 3.938 | 1.415 | 6.28 | -0.252 |
| **214** | 24 | 5 | 2008 | 7 | 0.753 | 6 | 0.16 | 0.14 | 0.028 | 0.065 | 3.894 | 1.431 | 6.39 | -0.554 |
| **215** | 24 | 5 | 2009 | 8 | 0.782 | 7 | -0.1 | -0.1 | -0.015 | -0.04 | 3.953 | 1.447 | 6.4 | -1.16 |
| **216** | 24 | 5 | 2010 | 9 | 0.588 | 4 | 0.16 | 0.14 | 0.031 | 0.046 | 3.834 | 1.462 | 6.38 | -0.582 |
| **217** | 25 | 5 | 2002 | 1 | 0.554 | 4 | 0.34 | 0.33 | 0.008 | 0.011 | 1.74 | 1.23 | 5.29 | -0.542 |
| **218** | 25 | 5 | 2003 | 2 | 0.776 | 7 | 0.18 | 0.18 | 0.005 | 0.013 |  | 1.255 | 5.29 | -0.702 |
| **219** | 25 | 5 | 2004 | 3 | 0.333 | 2 | 0.45 | 0.45 | 0.007 | 0.008 |  | 1.279 | 5.61 | -0.421 |
| **220** | 25 | 5 | 2005 | 4 | 0.427 | 2 | 0.94 | 0.87 | 0.127 | 0.155 | 3.783 | 1.301 | 5.75 | 0.756 |
| **221** | 25 | 5 | 2006 | 5 | 0.438 | 2 |  |  | -0.108 | -0.13 | 3.431 | 1.322 | 5.7 |  |
| **222** | 25 | 5 | 2007 | 6 | 0.434 | 2 | -0.4 | -0.7 | -0.006 | -0.01 | 3.042 | 1.342 | 5.7 | -1.544 |
| **223** | 25 | 5 | 2008 | 7 | 0.541 | 3 | 0.13 | 0.04 | 0.001 | 0.001 | 2.876 | 1.362 | 5.76 | -0.851 |
| **224** | 25 | 5 | 2009 | 8 | 0.54 | 3 |  |  | -0.012 | -0.02 |  | 1.38 | 5.75 |  |
| **225** | 25 | 5 | 2010 | 9 | 0.542 | 3 |  |  | -0.033 | -0.05 | 2.146 | 1.398 | 5.73 |  |
| **226** | 26 | 5 | 2002 | 1 | 0.391 | 2 | 0.22 | 0.17 | 0.014 | 0.016 | 3.211 | 1.279 | 5.62 | -0.657 |
| **227** | 26 | 5 | 2003 | 2 | 0.401 | 2 | 0.32 | 0.28 | 0.037 | 0.044 | 3.328 | 1.301 | 5.63 | -0.406 |
| **228** | 26 | 5 | 2004 | 3 | 0.43 | 2 | 0.37 | 0.34 | 0.047 | 0.058 | 3.393 | 1.322 | 5.65 | -0.291 |
| **229** | 26 | 5 | 2005 | 4 | 0.4 | 2 | 0.49 | 0.46 | 0.093 | 0.111 | 3.451 | 1.342 | 5.66 | 0.098 |
| **230** | 26 | 5 | 2006 | 5 | 0.392 | 2 | 0.36 | 0.34 | 0.057 | 0.067 | 3.305 | 1.362 | 5.65 | -0.246 |
| **231** | 26 | 5 | 2007 | 6 | 0.389 | 2 | 0.3 | 0.28 | 0.045 | 0.053 | 3.18 | 1.38 | 5.65 | -0.373 |
| **232** | 26 | 5 | 2008 | 7 | 0.388 | 2 | 0.32 | 0.3 | 0.054 | 0.064 | 3.25 | 1.398 | 5.64 | -0.303 |
| **233** | 26 | 5 | 2009 | 8 | 0.376 | 2 | 0.17 | 0.13 | 0.017 | 0.019 | 3.288 | 1.415 | 5.63 | -0.687 |
| **234** | 26 | 5 | 2010 | 9 | 0.393 | 2 | 0.24 | 0.2 | 0.027 | 0.033 | 3.339 | 1.431 | 5.63 | -0.553 |
| **235** | 27 | 5 | 2002 | 1 | 0.462 | 3 | 0.08 | 0.05 | 0.012 | 0.015 | 3.254 | 1.322 | 5.39 | -0.802 |
| **236** | 27 | 5 | 2003 | 2 | 0.461 | 3 | -1.2 | -1.3 | -0.107 | -0.14 | 3.118 | 1.342 | 5.33 | -2.868 |
| **237** | 27 | 5 | 2004 | 3 | 0.489 | 3 | -2.3 | -2.4 | -0.158 | -0.21 | 3.08 | 1.362 | 5.27 | -4.343 |
| **238** | 27 | 5 | 2005 | 4 | 0.612 | 4 |  |  | -0.237 |  | 2.891 | 1.38 | 5.21 |  |
| **239** | 27 | 5 | 2006 | 5 | 0.393 | 2 | -1.5 | -1.5 | -0.111 | -0.13 | 2.904 | 1.398 | 5.42 | -3.158 |
| **240** | 27 | 5 | 2007 | 6 | 0.4 | 2 | -1.6 | -1.7 | -0.135 | -0.16 | 2.79 | 1.415 | 5.36 | -3.471 |
| **241** | 27 | 5 | 2008 | 7 | 0.424 | 2 | -1 | -1 | -0.129 | -0.16 | 3.176 | 1.431 | 5.3 | -2.745 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **242** | 27 | 5 | 2009 | 8 | 0.522 | 3 | -1.4 | -1.4 | -0.154 | -0.21 | 3 | 1.447 | 5.27 | -3.358 |
| **243** | 27 | 5 | 2010 | 9 | 0.668 | 5 | -1.5 | -1.5 | -0.137 | -0.25 | 2.603 | 1.462 | 5.29 | -3.505 |
| **244** | 28 | 5 | 2002 | 1 | 0.427 | 2 | 0.57 | 0.47 | 0.035 | 0.043 | 2.924 | 1.204 | 5.09 | -0.187 |
| **245** | 28 | 5 | 2003 | 2 | 0.456 | 3 | 0.4 | 0.33 | 0.023 | 0.029 | 2.782 | 1.23 | 5.1 | -0.417 |
| **246** | 28 | 5 | 2004 | 3 | 0.41 | 2 | 0.22 | 0.17 | 0.006 | 0.008 | 2.35 | 1.255 | 5.09 | -0.698 |
| **247** | 28 | 5 | 2005 | 4 | 0.456 | 3 | 0.69 | 0.62 | 0.074 | 0.093 | 3.039 | 1.279 | 5.15 | 0.184 |
| **248** | 28 | 5 | 2006 | 5 | 0.469 | 3 | 0.22 | 0.08 | 0.003 | 0.004 | 2.903 | 1.301 | 5.16 | -0.759 |
| **249** | 28 | 5 | 2007 | 6 | 0.449 | 3 | 0.39 | 0.3 | 0.018 | 0.022 | 2.865 | 1.322 | 5.16 | -0.471 |
| **250** | 28 | 5 | 2008 | 7 | 0.471 | 3 | | | -0.093 | -0.12 | 2.814 | 1.342 | 5.13 | |
| **251** | 28 | 5 | 2009 | 8 | 0.514 | 3 | | | -0.042 | -0.06 | | 1.362 | 5.06 | |
| **252** | 28 | 5 | 2010 | 9 | 0.501 | 3 | | | -0.048 | -0.06 | | 1.38 | 5.03 | |
| **253** | 29 | 5 | 2002 | 1 | 0.482 | 3 | 0.26 | 0.23 | 0.02 | 0.025 | 3.037 | 1.146 | 5.57 | -0.565 |
| **254** | 29 | 5 | 2003 | 2 | 0.449 | 3 | 0.14 | 0.11 | 0.013 | 0.016 | 3.088 | 1.176 | 5.56 | -0.732 |
| **255** | 29 | 5 | 2004 | 3 | 0.393 | 2 | 0.24 | 0.22 | 0.029 | 0.035 | 2.802 | 1.204 | 5.55 | -0.529 |
| **256** | 29 | 5 | 2005 | 4 | 0.438 | 2 | 0.31 | 0.23 | 0.031 | 0.039 | 3.584 | 1.23 | 5.59 | -0.472 |
| **257** | 29 | 5 | 2006 | 5 | 0.472 | 3 | 0.48 | 0.43 | 0.081 | 0.105 | 3.605 | 1.255 | 5.69 | 0.026 |
| **258** | 29 | 5 | 2007 | 6 | 0.39 | 2 | 0.57 | 0.52 | 0.098 | 0.115 | 3.736 | 1.279 | 5.71 | 0.197 |
| **259** | 29 | 5 | 2008 | 7 | 0.366 | 2 | 0.59 | 0.53 | 0.1 | 0.115 | 3.755 | 1.301 | 5.74 | 0.218 |
| **260** | 29 | 5 | 2009 | 8 | 0.272 | 1 | 0.64 | 0.57 | 0.109 | 0.118 | 3.873 | 1.322 | 5.76 | 0.304 |
| **261** | 29 | 5 | 2010 | 9 | 0.292 | 1 | 0.64 | 0.6 | 0.109 | 0.119 | 3.655 | 1.342 | 5.79 | 0.319 |
| **262** | 30 | 5 | 2002 | 1 | 0.429 | 2 | | | -0.04 | -0.05 | | 0.954 | 5.46 | |
| **263** | 30 | 5 | 2003 | 2 | 0.405 | 2 | -0.1 | -0.1 | -0.003 | -0 | | 1 | 5.42 | -1.047 |
| **264** | 30 | 5 | 2004 | 3 | 0.389 | 2 | 0.78 | 0.76 | 0.093 | 0.109 | 2.96 | 1.041 | 5.5 | 0.401 |
| **265** | 30 | 5 | 2005 | 4 | 0.351 | 2 | 0.88 | 0.87 | 0.152 | 0.173 | 2.95 | 1.079 | 5.65 | 0.839 |
| **266** | 30 | 5 | 2006 | 5 | 0.193 | 1 | 0.86 | 0.85 | 0.161 | 0.167 | 3.353 | 1.114 | 5.92 | 0.834 |
| **267** | 30 | 5 | 2007 | 6 | 0.181 | 1 | 0.73 | 0.61 | 0.018 | 0.019 | 3.47 | 1.146 | 5.9 | -0.138 |
| **268** | 30 | 5 | 2008 | 7 | 0.258 | 1 | 0.78 | 0.69 | 0.027 | 0.029 | 3.411 | 1.176 | 5.86 | -0.014 |
| **269** | 30 | 5 | 2009 | 8 | 0.334 | 2 | | | -0.04 | -0.05 | 3.176 | 1.204 | 5.86 | |
| **270** | 30 | 5 | 2010 | 9 | 0.383 | 2 | 0 | 0 | -0.031 | -0.04 | 3.513 | 1.23 | 5.85 | -1.118 |
| **271** | 31 | 6 | 2002 | 1 | 0.643 | 5 | 0.37 | 0.36 | 0.087 | 0.148 | 4.965 | 0.602 | 7.61 | 0.042 |
| **272** | 31 | 6 | 2003 | 2 | 0.544 | 3 | 0.59 | 0.57 | 0.204 | 0.29 | 5.354 | 0.699 | 7.62 | 0.949 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **273** | 31 | 6 | 2004 | 3 | 0.516 | 3 | 0.56 | 0.55 | 0.221 | 0.301 | 5.403 | 0.778 | 7.62 | 1.003 |
| **274** | 31 | 6 | 2005 | 4 | 0.515 | 3 | 0.64 | 0.62 | 0.278 | 0.379 | 5.466 | 0.845 | 7.65 | 1.433 |
| **275** | 31 | 6 | 2006 | 5 | 0.509 | 3 | 0.64 | 0.63 | 0.278 | 0.375 | 5.535 | 0.903 | 7.66 | 1.427 |
| **276** | 31 | 6 | 2007 | 6 | 0.692 | 5 | 0.63 | 0.61 | 0.175 | 0.335 | 5.63 | 0.954 | 7.84 | 0.998 |
| **277** | 31 | 6 | 2008 | 7 | 0.757 | 6 | 0.4 | 0.37 | 0.111 | 0.259 | | 1 | 8 | 0.386 |
| **278** | 31 | 6 | 2009 | 8 | 0.732 | 6 | 0.39 | 0.35 | 0.099 | 0.214 | | 1.041 | 8.04 | 0.231 |
| **279** | 31 | 6 | 2010 | 9 | 0.719 | 6 | 0.31 | 0.28 | 0.085 | 0.176 | | 1.079 | 8.04 | 0.029 |
| **280** | 32 | 7 | 2002 | 1 | 0.145 | 1 | 0.76 | 0.76 | 0.046 | 0.047 | 1.322 | 1.146 | 5 | 0.103 |
| **281** | 32 | 7 | 2003 | 2 | 0.149 | 1 | -0.6 | -0.6 | -0.006 | -0.01 | 1.362 | 1.176 | 5 | -1.568 |
| **282** | 32 | 7 | 2004 | 3 | 0.161 | 1 | -1.8 | -1.8 | -0.012 | -0.01 | | 1.204 | 5 | -2.854 |
| **283** | 32 | 7 | 2005 | 4 | 0.173 | 1 | 0.62 | 0.61 | 0.033 | 0.034 | 1.959 | 1.23 | 5.01 | -0.113 |
| **284** | 32 | 7 | 2006 | 5 | 0.515 | 3 | 0.21 | 0.18 | 0.003 | 0.003 | 1.929 | 1.255 | 5.23 | -0.72 |
| **285** | 32 | 7 | 2007 | 6 | 0.046 | 1 | 0.72 | 0.7 | 0.019 | 0.019 | 2.644 | 1.279 | 5.92 | -0.088 |
| **286** | 32 | 7 | 2008 | 7 | 0.461 | 3 | 0.79 | 0.71 | 0.02 | 0.026 | 3.299 | 1.301 | 5.95 | -0.027 |
| **287** | 32 | 7 | 2009 | 8 | 0.052 | 1 | 0.91 | 0.87 | 0.045 | 0.045 | 3.127 | 1.322 | 5.89 | 0.239 |
| **288** | 32 | 7 | 2010 | 9 | 0.047 | 1 | 0.8 | 0.74 | 0.012 | 0.012 | 2.87 | 1.342 | 5.92 | -0.067 |
| **289** | 33 | 7 | 2002 | 1 | 0.528 | 3 | | | -0.061 | -0.08 | 2.7 | 0.954 | 5.64 | |
| **290** | 33 | 7 | 2003 | 2 | 0.544 | 3 | | | -0.048 | -0.07 | 2.455 | 1 | 5.62 | |
| **291** | 33 | 7 | 2004 | 3 | 0.512 | 3 | 0.73 | 0.7 | 0.131 | 0.178 | 3.461 | 1.041 | 5.68 | 0.616 |
| **292** | 33 | 7 | 2005 | 4 | 0.615 | 4 | 0.83 | 0.8 | 0.132 | 0.212 | 3.609 | 1.079 | 5.86 | 0.798 |
| **293** | 33 | 7 | 2006 | 5 | 0.651 | 5 | 0.83 | 0.81 | 0.09 | 0.156 | 3.301 | 1.114 | 5.9 | 0.548 |
| **294** | 33 | 7 | 2007 | 6 | 0.533 | 3 | 0.59 | 0.58 | 0.047 | 0.066 | 2.955 | 1.146 | 5.86 | -0.03 |
| **295** | 33 | 7 | 2008 | 7 | 0.537 | 3 | | | -0.101 | -0.14 | 3.713 | 1.176 | 5.75 | |
| **296** | 33 | 7 | 2009 | 8 | 0.514 | 3 | 0.26 | 0.19 | 0.006 | 0.008 | 3.114 | 1.204 | 5.76 | -0.672 |
| **297** | 33 | 7 | 2010 | 9 | 0.478 | 3 | 0.51 | 0.47 | 0.075 | 0.097 | 3.618 | 1.23 | 5.79 | 0.026 |
| **298** | 34 | 7 | 2002 | 1 | 0.747 | 6 | 0.13 | 0.11 | 0.006 | 0.013 | 2.52 | 1.146 | 5.39 | -0.767 |
| **299** | 34 | 7 | 2003 | 2 | 0.469 | 3 | -0.1 | -0.2 | -0.007 | -0.01 | 2.479 | 1.176 | 5.42 | -1.138 |
| **300** | 34 | 7 | 2004 | 3 | 0.226 | 1 | 0.27 | 0.24 | 0.01 | 0.011 | 2.7 | 1.204 | 5.64 | -0.614 |
| **301** | 34 | 7 | 2005 | 4 | 0.534 | 3 | 0.43 | 0.31 | 0.02 | 0.028 | 3.688 | 1.23 | 5.8 | -0.42 |
| **302** | 34 | 7 | 2006 | 5 | 0.552 | 4 | 0.26 | 0.16 | 0.008 | 0.012 | 3.535 | 1.255 | 5.79 | -0.667 |
| **303** | 34 | 7 | 2007 | 6 | 0.63 | 4 | -0 | -0.1 | -0.007 | -0.01 | 3.697 | 1.279 | 5.87 | -1.04 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **304** | 34 | 7 | 2008 | 7 | 0.787 | 7 | -0.3 | -0.3 | -0.013 | -0.03 | 3.4 | 1.301 | 6.28 | -1.363 |
| **305** | 34 | 7 | 2009 | 8 | 0.832 | 7 | 0.03 | 0.01 | 0.001 | 0.002 | 3.231 | 1.322 | 6.38 | -0.911 |
| **306** | 34 | 7 | 2010 | 9 | 0.842 | 8 | 0.02 | 0.01 | 0.001 | 0.003 | 3.322 | 1.342 | 6.4 | -0.913 |
| **307** | 35 | 7 | 2002 | 1 | 0.424 | 2 | | | -0.054 | -0.07 | 1.826 | 1 | 5.03 | |
| **308** | 35 | 7 | 2003 | 2 | 0.452 | 3 | | | -0.08 | -0.1 | | 1.041 | 5.02 | |
| **309** | 35 | 7 | 2004 | 3 | 0.512 | 3 | -1.1 | -1.1 | -0.033 | -0.04 | | 1.079 | 5.03 | -2.289 |
| **310** | 35 | 7 | 2005 | 4 | 0.62 | 4 | | | -0.044 | -0.07 | | 1.114 | 5.01 | |
| **311** | 35 | 7 | 2006 | 5 | 0.523 | 3 | | | -0.028 | -0.04 | | 1.146 | 5.15 | |
| **312** | 35 | 7 | 2007 | 6 | 0.407 | 2 | | | -0.092 | -0.11 | | 1.176 | 5.17 | |
| **313** | 35 | 7 | 2008 | 7 | 0.345 | 2 | | | -0.126 | -0.14 | 2.774 | 1.204 | 5.07 | |
| **314** | 35 | 7 | 2009 | 8 | 0.454 | 3 | | | -0.036 | -0.05 | 2.719 | 1.23 | 5.11 | |
| **315** | 35 | 7 | 2010 | 9 | 0.443 | 2 | | | -0.055 | -0.07 | 2.695 | 1.255 | 5.07 | |
| **316** | 36 | 8 | 2002 | 1 | 0.51 | 3 | 0.38 | 0.38 | 0.05 | 0.068 | | 1.204 | 6.21 | -0.229 |
| **317** | 36 | 8 | 2003 | 2 | 0.481 | 3 | 0.19 | 0.19 | 0.025 | 0.033 | 3.794 | 1.23 | 6.2 | -0.592 |
| **318** | 36 | 8 | 2004 | 3 | 0.432 | 2 | 0.27 | 0.27 | 0.034 | 0.042 | 4.184 | 1.255 | 6.28 | -0.463 |
| **319** | 36 | 8 | 2005 | 4 | 0.412 | 2 | 0.32 | 0.32 | 0.039 | 0.047 | 4.002 | 1.279 | 6.39 | -0.381 |
| **320** | 36 | 8 | 2006 | 5 | 0.412 | 2 | 0.33 | 0.33 | 0.044 | 0.053 | 4.134 | 1.301 | 6.38 | -0.337 |
| **321** | 36 | 8 | 2007 | 6 | 0.376 | 2 | 0.34 | 0.34 | 0.036 | 0.042 | 4.097 | 1.322 | 6.53 | -0.377 |
| **322** | 36 | 8 | 2008 | 7 | 0.521 | 3 | 0.33 | 0.33 | 0.066 | 0.091 | 4.057 | 1.342 | 6.29 | -0.188 |
| **323** | 36 | 8 | 2009 | 8 | 0.44 | 2 | 0.35 | 0.35 | 0.057 | 0.071 | 4.114 | 1.362 | 6.44 | -0.24 |
| **324** | 36 | 8 | 2010 | 9 | 0.38 | 2 | 0.34 | 0.34 | 0.051 | 0.06 | 4.165 | 1.38 | 6.54 | -0.287 |
| **325** | 37 | 8 | 2002 | 1 | 0.453 | 3 | 0.64 | 0.63 | 0.092 | 0.115 | 2.638 | 1.079 | 5.4 | 0.273 |
| **326** | 37 | 8 | 2003 | 2 | 0.357 | 2 | 0.76 | 0.74 | 0.126 | 0.144 | 2.816 | 1.114 | 5.43 | 0.562 |
| **327** | 37 | 8 | 2004 | 3 | 0.308 | 1 | 0.85 | 0.83 | 0.182 | 0.201 | 2.92 | 1.146 | 5.49 | 0.959 |
| **328** | 37 | 8 | 2005 | 4 | 0.27 | 1 | 0.93 | 0.9 | 0.311 | 0.335 | 3.664 | 1.176 | 5.62 | 1.744 |
| **329** | 37 | 8 | 2006 | 5 | 0.447 | 2 | 0.48 | 0.47 | 0.105 | 0.132 | 3.191 | 1.204 | 5.66 | 0.181 |
| **330** | 37 | 8 | 2007 | 6 | 0.341 | 2 | 0.87 | 0.86 | 0.16 | 0.182 | 2.968 | 1.23 | 5.7 | 0.874 |
| **331** | 37 | 8 | 2008 | 7 | 0.35 | 2 | 0.68 | 0.65 | 0.139 | 0.158 | 3.485 | 1.255 | 5.69 | 0.542 |
| **332** | 37 | 8 | 2009 | 8 | 0.327 | 2 | 0.76 | 0.71 | 0.089 | 0.1 | 3.529 | 1.279 | 5.71 | 0.339 |
| **333** | 37 | 8 | 2010 | 9 | 0.312 | 1 | 0.79 | 0.75 | 0.122 | 0.135 | 3.586 | 1.301 | 5.77 | 0.556 |
| **334** | 38 | 8 | 2002 | 1 | 0.47 | 3 | 0.44 | 0.41 | 0.07 | 0.09 | 2.795 | 1.041 | 4.99 | -0.076 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **335** | 38 | 8 | 2003 | 2 | 0.462 | 3 | 0.5 | 0.45 | 0.077 | 0.098 | 2.844 | 1.079 | 4.98 | 0.018 |
| **336** | 38 | 8 | 2004 | 3 | 0.463 | 3 | 0.48 | 0.42 | 0.072 | 0.092 | 2.936 | 1.114 | 4.97 | -0.036 |
| **337** | 38 | 8 | 2005 | 4 | 0.336 | 2 | 0.51 | 0.46 | 0.103 | 0.116 | 3.035 | 1.146 | 4.97 | 0.154 |
| **338** | 38 | 8 | 2006 | 5 | 0.581 | 4 | 0.63 | 0.58 | 0.103 | 0.156 | 3.046 | 1.176 | 5.08 | 0.362 |
| **339** | 38 | 8 | 2007 | 6 | 0.508 | 3 | 0.66 | 0.61 | 0.119 | 0.161 | 3.068 | 1.204 | 5.09 | 0.462 |
| **340** | 38 | 8 | 2008 | 7 | 0.554 | 4 | 0.69 | 0.63 | 0.126 | 0.182 | 3.191 | 1.23 | 5.14 | 0.551 |
| **341** | 38 | 8 | 2009 | 8 | 0.493 | 3 | 0.71 | 0.64 | 0.119 | 0.157 | 3.327 | 1.255 | 5.22 | 0.493 |
| **342** | 38 | 8 | 2010 | 9 | 0.469 | 3 | 0.65 | 0.59 | 0.115 | 0.147 | 3.339 | 1.279 | 5.27 | 0.4 |
| **343** | 39 | 8 | 2002 | 1 | 0.735 | 6 | -0.2 | -0.3 | -0.013 | -0.03 | 2.713 | 1.079 | 5.24 | -1.297 |
| **344** | 39 | 8 | 2003 | 2 | 0.716 | 6 | 0.26 | 0.21 | 0.018 | 0.037 | 2.857 | 1.114 | 5.23 | -0.557 |
| **345** | 39 | 8 | 2004 | 3 | 0.648 | 5 | 0.65 | 0.61 | 0.092 | 0.159 | 3.164 | 1.146 | 5.34 | 0.361 |
| **346** | 39 | 8 | 2005 | 4 | 0.598 | 4 | 0.63 | 0.57 | 0.085 | 0.132 | 3.285 | 1.176 | 5.36 | 0.247 |
| **347** | 39 | 8 | 2006 | 5 | 0.57 | 4 | 0.49 | 0.42 | 0.041 | 0.061 | 3.504 | 1.204 | 5.64 | -0.198 |
| **348** | 39 | 8 | 2007 | 6 | 0.548 | 3 | 0.39 | 0.32 | 0.046 | 0.065 | 3.671 | 1.23 | 5.66 | -0.281 |
| **349** | 39 | 8 | 2008 | 7 | 0.613 | 4 | 0.59 | 0.53 | 0.074 | 0.118 | 3.653 | 1.255 | 5.74 | 0.146 |
| **350** | 39 | 8 | 2009 | 8 | 0.536 | 3 | 0.43 | 0.34 | 0.032 | 0.045 | 3.617 | 1.279 | 5.68 | -0.33 |
| **351** | 39 | 8 | 2010 | 9 | 0.57 | 4 | 0.46 | 0.36 | 0.032 | 0.048 | 3.654 | 1.301 | 5.71 | -0.298 |
| **352** | 40 | 8 | 2002 | 1 | 0.695 | 5 | 0.59 | 0.55 | 0.078 | 0.151 | 3.818 | 1.477 | 6.06 | 0.235 |
| **353** | 40 | 8 | 2003 | 2 | 0.711 | 6 | 0.34 | 0.27 | 0.028 | 0.057 | 3.951 | 1.491 | 6.08 | -0.403 |
| **354** | 40 | 8 | 2004 | 3 | 0.73 | 6 | 0.08 | 0.02 | 0.001 | 0.003 | 3.724 | 1.505 | 6.1 | -0.879 |
| **355** | 40 | 8 | 2005 | 4 | 0.693 | 5 | 0.67 | 0.63 | 0.082 | 0.157 | 3.834 | 1.519 | 6.13 | 0.343 |
| **356** | 40 | 8 | 2006 | 5 | 0.647 | 5 | 0.68 | 0.65 | 0.102 | 0.175 | 3.914 | 1.531 | 6.16 | 0.465 |
| **357** | 40 | 8 | 2007 | 6 | 0.678 | 5 | 0.59 | 0.54 | 0.067 | 0.125 | 4.057 | 1.544 | 6.22 | 0.14 |
| **358** | 40 | 8 | 2008 | 7 | 0.677 | 5 | 0.78 | 0.74 | 0.099 | 0.183 | 4.057 | 1.556 | 6.31 | 0.578 |
| **359** | 40 | 8 | 2009 | 8 | 0.693 | 5 | 0.82 | 0.76 | 0.126 | 0.243 | 4.355 | 1.568 | 6.38 | 0.826 |
| **360** | 40 | 8 | 2010 | 9 | 0.644 | 5 | 0.83 | 0.79 | 0.131 | 0.224 | 4.188 | 1.58 | 6.36 | 0.819 |
| **361** | 41 | 8 | 2002 | 1 | 0.674 | 5 | 0.44 | 0.42 | 0.024 | 0.043 | 2.398 | 1.079 | 5.2 | -0.318 |
| **362** | 41 | 8 | 2003 | 2 | 0.514 | 3 | 0.45 | 0.42 | 0.032 | 0.044 | 2.48 | 1.114 | 5.06 | -0.284 |
| **363** | 41 | 8 | 2004 | 3 | 0.503 | 3 | 0.63 | 0.61 | 0.065 | 0.087 | 2.489 | 1.146 | 5.11 | 0.109 |
| **364** | 41 | 8 | 2005 | 4 | 0.357 | 2 | 0.85 | 0.83 | 0.212 | 0.242 | 2.912 | 1.176 | 5.18 | 1.147 |
| **365** | 41 | 8 | 2006 | 5 | 0.528 | 3 | 0.71 | 0.63 | 0.073 | 0.101 | 3.155 | 1.204 | 5.21 | 0.217 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **366** | 41 | 8 | 2007 | 6 | 0.516 | 3 | 0.59 | 0.45 | 0.045 | 0.062 | 3.36 | 1.23 | 5.22 | -0.112 |
| **367** | 41 | 8 | 2008 | 7 | 0.439 | 2 | 0.51 | 0.43 | 0.097 | 0.12 | 3.433 | 1.255 | 5.17 | 0.128 |
| **368** | 41 | 8 | 2009 | 8 | 0.445 | 2 | -1 | -1.7 | -0.043 | -0.05 | 3.363 | 1.279 | 5.11 | -2.624 |
| **369** | 41 | 8 | 2010 | 9 | 0.34 | 2 | 0.47 | 0.27 | 0.025 | 0.028 | 3.368 | 1.301 | 5.08 | -0.411 |
| **370** | 42 | 9 | 2002 | 1 | 0.589 | 4 | 0.24 | 0.22 | 0.027 | 0.042 | 3.179 | 1.398 | 5.75 | -0.526 |
| **371** | 42 | 9 | 2003 | 2 | 0.518 | 3 | 0.43 | 0.41 | 0.081 | 0.111 | 3.329 | 1.415 | 5.73 | -0.004 |
| **372** | 42 | 9 | 2004 | 3 | 0.496 | 3 | 0.61 | 0.6 | 0.171 | 0.227 | 3.333 | 1.431 | 5.8 | 0.734 |
| **373** | 42 | 9 | 2005 | 4 | 0.593 | 4 | 0.5 | 0.5 | 0.108 | 0.166 | 3.144 | 1.447 | 5.89 | 0.291 |
| **374** | 42 | 9 | 2006 | 5 | 0.684 | 5 | 0.51 | 0.49 | 0.091 | 0.171 | 3.488 | 1.462 | 6.01 | 0.248 |
| **375** | 42 | 9 | 2007 | 6 | 0.723 | 6 | 0.54 | 0.53 | 0.099 | 0.208 | 3.519 | 1.477 | 6.11 | 0.394 |
| **376** | 42 | 9 | 2008 | 7 | 0.733 | 6 | 0.56 | 0.53 | 0.114 | 0.246 | 3.846 | 1.491 | 6.19 | 0.532 |
| **377** | 42 | 9 | 2009 | 8 | 0.719 | 6 | 0.55 | 0.54 | 0.111 | 0.23 | 3.477 | 1.505 | 6.25 | 0.488 |
| **378** | 42 | 9 | 2010 | 9 | 0.694 | 5 | 0.56 | 0.54 | 0.114 | 0.22 | 3.799 | 1.519 | 6.29 | 0.481 |
| **379** | 43 | 9 | 2002 | 1 | 0.498 | 3 | 0.88 | 0.86 | 0.216 | 0.288 | 3.316 | 1.633 | 5.57 | 1.293 |
| **380** | 43 | 9 | 2003 | 2 | 0.535 | 3 | 0.9 | 0.87 | 0.214 | 0.3 | 3.401 | 1.643 | 5.61 | 1.327 |
| **381** | 43 | 9 | 2004 | 3 | 0.521 | 3 | 0.89 | 0.87 | 0.241 | 0.331 | 3.445 | 1.653 | 5.65 | 1.475 |
| **382** | 43 | 9 | 2005 | 4 | 0.505 | 3 | 0.91 | 0.89 | 0.269 | 0.361 | 3.529 | 1.663 | 5.69 | 1.655 |
| **383** | 43 | 9 | 2006 | 5 | 0.492 | 3 | 0.92 | 0.89 | 0.234 | 0.308 | 3.52 | 1.672 | 5.74 | 1.428 |
| **384** | 43 | 9 | 2007 | 6 | 0.501 | 3 | 0.9 | 0.88 | 0.159 | 0.212 | 3.39 | 1.681 | 5.78 | 0.961 |
| **385** | 43 | 9 | 2008 | 7 | 0.49 | 3 | 0.92 | 0.89 | 0.187 | 0.245 | 3.482 | 1.69 | 5.78 | 1.141 |
| **386** | 43 | 9 | 2009 | 8 | 0.495 | 3 | 0.9 | 0.86 | 0.141 | 0.187 | 3.602 | 1.699 | 5.8 | 0.846 |
| **387** | 43 | 9 | 2010 | 9 | 0.473 | 3 | 0.84 | 0.79 | 0.088 | 0.114 | 3.537 | 1.708 | 5.78 | 0.45 |
| **388** | 44 | 9 | 2002 | 1 | 0.814 | 7 | -0.5 | -0.5 | -0.067 | -0.2 | 3.252 | 1.431 | 6.05 | -2.09 |
| **389** | 44 | 9 | 2003 | 2 | 0.821 | 7 | -1 | -1.1 | -0.082 | -0.25 | 3.449 | 1.447 | 6.04 | -2.871 |
| **390** | 44 | 9 | 2004 | 3 | 0.758 | 6 | 0.13 | 0.11 | 0.017 | 0.039 | 3.398 | 1.462 | 6.09 | -0.675 |
| **391** | 44 | 9 | 2005 | 4 | 0.77 | 6 | 0.01 | 0 | 0 | 0 | 3.398 | 1.477 | 6.13 | -0.932 |
| **392** | 44 | 9 | 2006 | 5 | 0.805 | 7 | 0.34 | 0.32 | 0.049 | 0.139 | 3.827 | 1.491 | 6.31 | -0.134 |
| **393** | 44 | 9 | 2007 | 6 | 0.781 | 7 | 0.5 | 0.42 | 0.106 | 0.271 | 4.753 | 1.505 | 6.43 | 0.474 |
| **394** | 44 | 9 | 2008 | 7 | 0.832 | 7 | 0.37 | 0.3 | 0.062 | 0.202 | 4.674 | 1.519 | 6.53 | 0.055 |
| **395** | 44 | 9 | 2009 | 8 | 0.78 | 7 | 0.27 | 0.22 | 0.031 | 0.08 | 4.337 | 1.531 | 6.52 | -0.407 |
| **396** | 44 | 9 | 2010 | 9 | 0.819 | 7 | -0.3 | -0.4 | -0.024 | -0.07 | 4.022 | 1.544 | 6.56 | -1.532 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **397** | 45 | 9 | 2002 | 1 | 0.729 | 6 | -0.4 | -0.4 | -0.059 | -0.13 | 3.321 | 1 | 5.83 | -1.848 |
| **398** | 45 | 9 | 2003 | 2 | 0.755 | 6 | -0.1 | -0.1 | -0.01 | -0.02 | 3.381 | 1.041 | 5.86 | -1.123 |
| **399** | 45 | 9 | 2004 | 3 | 0.727 | 6 | 0.06 | 0.02 | 0.003 | 0.006 | 3.499 | 1.079 | 5.82 | -0.876 |
| **400** | 45 | 9 | 2005 | 4 | 0.83 | 7 | -0.5 | -0.5 | -0.044 | -0.14 | 3.321 | 1.114 | 5.82 | -1.915 |
| **401** | 45 | 9 | 2006 | 5 | 0.814 | 7 | -0.2 | -0.3 | -0.03 | -0.09 | 3.663 | 1.146 | 5.8 | -1.498 |
| **402** | 45 | 9 | 2007 | 6 | 0.643 | 5 | 0.18 | 0.15 | 0.019 | 0.032 | 3.334 | 1.176 | 5.79 | -0.633 |
| **403** | 45 | 9 | 2008 | 7 | 0.715 | 6 | -0.1 | -0.1 | -0.012 | -0.02 | 3.323 | 1.204 | 5.68 | -1.121 |
| **404** | 45 | 9 | 2009 | 8 | 0.651 | 5 | 0.01 | -0.1 | -0.007 | -0.01 | 3.583 | 1.23 | 5.7 | -1.019 |
| **405** | 45 | 9 | 2010 | 9 | 0.609 | 4 | 0.61 | 0.58 | 0.192 | 0.306 | 3.725 | 1.255 | 5.69 | 0.964 |
| **406** | 46 | 9 | 2002 | 1 | 0.828 | 7 | 0.32 | 0.3 | 0.043 | 0.136 | 3.798 | 1.531 | 6.39 | -0.183 |
| **407** | 46 | 9 | 2003 | 2 | 0.859 | 8 | 0.19 | 0.18 | 0.025 | 0.095 | 3.74 | 1.544 | 6.5 | -0.457 |
| **408** | 46 | 9 | 2004 | 3 | 0.878 | 8 | -0.1 | -0.1 | -0.015 | -0.07 | 3.905 | 1.556 | 6.54 | -1.275 |
| **409** | 46 | 9 | 2005 | 4 | 0.821 | 7 | 0 | -0 | -0.002 | -0.01 | 4.009 | 1.568 | 6.56 | -0.974 |
| **410** | 46 | 9 | 2006 | 5 | 0.821 | 7 | 0.07 | 0.04 | 0.006 | 0.017 | 4.071 | 1.58 | 6.56 | -0.826 |
| **411** | 46 | 9 | 2007 | 6 | 0.822 | 7 | 0.12 | 0.09 | 0.016 | 0.049 | 4.255 | 1.591 | 6.61 | -0.672 |
| **412** | 46 | 9 | 2008 | 7 | 0.818 | 7 | 0.29 | 0.25 | 0.052 | 0.158 | 4.562 | 1.602 | 6.65 | -0.14 |
| **413** | 46 | 9 | 2009 | 8 | 0.77 | 6 | 0.27 | 0.23 | 0.05 | 0.123 | 4.496 | 1.613 | 6.61 | -0.248 |
| **414** | 46 | 9 | 2010 | 9 | 0.766 | 6 | 0.34 | 0.23 | 0.041 | 0.098 | 4.923 | 1.623 | 6.61 | -0.296 |
| **415** | 47 | 9 | 2002 | 1 | 0.744 | 6 | 0.12 | 0.12 | 0.01 | 0.021 | 1.908 | 1.041 | 5.46 | -0.736 |
| **416** | 47 | 9 | 2003 | 2 | 0.782 | 7 | 0.18 | 0.18 | 0.009 | 0.023 | 2.009 | 1.079 | 5.6 | -0.672 |
| **417** | 47 | 9 | 2004 | 3 | 0.602 | 4 | 0.68 | 0.66 | 0.061 | 0.095 | 2.921 | 1.114 | 5.76 | 0.164 |
| **418** | 47 | 9 | 2005 | 4 | 0.736 | 6 | 0.72 | 0.7 | 0.081 | 0.176 | 3.328 | 1.146 | 5.98 | 0.454 |
| **419** | 47 | 9 | 2006 | 5 | 0.769 | 6 | 0.59 | 0.57 | 0.06 | 0.146 | 3.267 | 1.176 | 6.1 | 0.177 |
| **420** | 47 | 9 | 2007 | 6 | 0.751 | 6 | 0.65 | 0.63 | 0.085 | 0.196 | 3.479 | 1.204 | 6.17 | 0.432 |
| **421** | 47 | 9 | 2008 | 7 | 0.751 | 6 | 0.52 | 0.51 | 0.072 | 0.165 | 3.615 | 1.23 | 6.21 | 0.19 |
| **422** | 47 | 9 | 2009 | 8 | 0.686 | 5 | 0.24 | 0.21 | 0.018 | 0.034 | 3.562 | 1.255 | 6.14 | -0.577 |
| **423** | 47 | 9 | 2010 | 9 | 0.662 | 5 | 0.09 | -0.1 | -0.003 | -0.01 | 3.882 | 1.279 | 6.12 | -0.952 |
| **424** | 48 | 9 | 2002 | 1 | 0.815 | 7 | 0.16 | 0.14 | 0.036 | 0.107 | 3.733 | 0.602 | 6.1 | -0.432 |
| **425** | 48 | 9 | 2003 | 2 | 0.833 | 7 | 0.16 | 0.14 | 0.035 | 0.115 | 3.78 | 0.699 | 6.15 | -0.417 |
| **426** | 48 | 9 | 2004 | 3 | 0.861 | 8 | 0.18 | 0.16 | 0.037 | 0.142 | 3.826 | 0.778 | 6.28 | -0.332 |
| **427** | 48 | 9 | 2005 | 4 | 0.857 | 8 | 0.23 | 0.2 | 0.048 | 0.181 | 4.08 | 0.845 | 6.35 | -0.166 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **428** | 48 | 9 | 2006 | 5 | 0.865 | 8 | 0.3 | 0.28 | 0.065 | 0.258 | 4.148 | 0.903 | 6.47 | 0.133 |
| **429** | 48 | 9 | 2007 | 6 | 0.88 | 8 | 0.28 | 0.27 | 0.052 | 0.231 | 4.154 | 0.954 | 6.6 | 0.021 |
| **430** | 48 | 9 | 2008 | 7 | 0.899 | 8 | 0.24 | 0.22 | 0.042 | 0.219 | 4.2 | 1 | 6.73 | -0.084 |
| **431** | 48 | 9 | 2009 | 8 | 0.862 | 8 | 0.27 | 0.24 | 0.049 | 0.193 | 4.494 | 1.041 | 6.67 | -0.095 |
| **432** | 48 | 9 | 2010 | 9 | 0.859 | 8 | 0.23 | 0.21 | 0.043 | 0.164 | 4.398 | 1.079 | 6.69 | -0.216 |
| **433** | 49 | 10 | 2002 | 1 | 0.362 | 2 | 0.97 | 0.94 | 0.044 | 0.051 | 3.319 | 1.415 | 6.15 | 0.315 |
| **434** | 49 | 10 | 2003 | 2 | 0.376 | 2 | 0.92 | 0.9 | 0.084 | 0.097 | 3.57 | 1.431 | 6.16 | 0.497 |
| **435** | 49 | 10 | 2004 | 3 | 0.368 | 2 | 0.91 | 0.89 | 0.096 | 0.111 | 3.532 | 1.447 | 6.18 | 0.551 |
| **436** | 49 | 10 | 2005 | 4 | 0.315 | 1 | 0.78 | 0.76 | 0.089 | 0.099 | 3.487 | 1.462 | 6.19 | 0.366 |
| **437** | 49 | 10 | 2006 | 5 | 0.253 | 1 | 0.91 | 0.89 | 0.037 | 0.039 | 3.473 | 1.477 | 6.49 | 0.21 |
| **438** | 49 | 10 | 2007 | 6 | 0.213 | 1 | 0.92 | 0.85 | 0.053 | 0.055 | 4.139 | 1.491 | 6.51 | 0.283 |
| **439** | 49 | 10 | 2008 | 7 | 0.178 | 1 | 0.79 | 0.67 | 0.037 | 0.038 | 4.303 | 1.505 | 6.5 | 0.029 |
| **440** | 49 | 10 | 2009 | 8 | 0.23 | 1 | 0.87 | 0.74 | 0.029 | 0.03 | 4.196 | 1.519 | 6.51 | 0.063 |
| **441** | 49 | 10 | 2010 | 9 | 0.282 | 1 | 0.77 | 0.66 | 0.053 | 0.057 | 4.479 | 1.531 | 6.54 | 0.103 |
| **442** | 50 | 10 | 2002 | 1 | 0.384 | 2 | 0.65 | 0.63 | 0.036 | 0.042 | 3.102 | 1.146 | 6.12 | -0.06 |
| **443** | 50 | 10 | 2003 | 2 | 0.336 | 2 | 0.78 | 0.77 | 0.06 | 0.068 | 3.084 | 1.176 | 6.11 | 0.215 |
| **444** | 50 | 10 | 2004 | 3 | 0.437 | 2 | 0.71 | 0.68 | 0.044 | 0.055 | 3.364 | 1.204 | 6.15 | 0.051 |
| **445** | 50 | 10 | 2005 | 4 | 0.457 | 3 | 0.79 | 0.76 | 0.09 | 0.114 | 3.673 | 1.23 | 6.18 | 0.412 |
| **446** | 50 | 10 | 2006 | 5 | 0.241 | 1 | 0.7 | 0.68 | 0.034 | 0.036 | 3.598 | 1.255 | 6.49 | -0.027 |
| **447** | 50 | 10 | 2007 | 6 | 0.424 | 2 | 0.85 | 0.82 | 0.108 | 0.132 | 4.107 | 1.279 | 6.56 | 0.571 |
| **448** | 50 | 10 | 2008 | 7 | 0.437 | 2 | 0.77 | 0.69 | 0.045 | 0.055 | 4.283 | 1.301 | 6.55 | 0.095 |
| **449** | 50 | 10 | 2009 | 8 | 0.454 | 3 | 0.54 | 0.45 | 0.019 | 0.025 | 4.128 | 1.322 | 6.55 | -0.301 |
| **450** | 50 | 10 | 2010 | 9 | 0.456 | 3 | 0.56 | 0.51 | 0.025 | 0.032 | 4.009 | 1.342 | 6.56 | -0.228 |
| **451** | 51 | 10 | 2002 | 1 | 0.469 | 3 | 0.83 | 0.81 | 0.042 | 0.054 | 3.264 | 1.146 | 6.16 | 0.176 |
| **452** | 51 | 10 | 2003 | 2 | 0.37 | 2 | 0.93 | 0.91 | 0.079 | 0.092 | 3.185 | 1.176 | 6.16 | 0.48 |
| **453** | 51 | 10 | 2004 | 3 | 0.371 | 2 | 0.82 | 0.77 | 0.029 | 0.033 | 3.487 | 1.204 | 6.17 | 0.061 |
| **454** | 51 | 10 | 2005 | 4 | 0.363 | 2 | 0.85 | 0.77 | 0.04 | 0.046 | 3.795 | 1.23 | 6.19 | 0.139 |
| **455** | 51 | 10 | 2006 | 5 | 0.343 | 2 | 0.85 | 0.77 | 0.041 | 0.046 | 3.805 | 1.255 | 6.19 | 0.148 |
| **456** | 51 | 10 | 2007 | 6 | 0.357 | 2 | 0.85 | 0.83 | 0.045 | 0.051 | 3.328 | 1.279 | 6.2 | 0.199 |
| **457** | 51 | 10 | 2008 | 7 | 0.344 | 2 | 0.86 | 0.83 | 0.05 | 0.056 | 3.416 | 1.301 | 6.2 | 0.23 |
| **458** | 51 | 10 | 2009 | 8 | 0.325 | 2 | 0.89 | 0.86 | 0.058 | 0.065 | 3.463 | 1.322 | 6.2 | 0.308 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **459** | 51 | 10 | 2010 | 9 | 0.327 | 2 | 0.89 | 0.83 | 0.059 | 0.066 | 3.854 | 1.342 | 6.22 | 0.301 |
| **460** | 52 | 11 | 2002 | 1 | 0.764 | 6 | 0.19 | 0.18 | 0.019 | 0.045 | 3.855 | 1.362 | 6.64 | -0.588 |
| **461** | 52 | 11 | 2003 | 2 | 0.749 | 6 | 0.34 | 0.27 | 0.037 | 0.083 | 4.607 | 1.38 | 6.63 | -0.322 |
| **462** | 52 | 11 | 2004 | 3 | 0.724 | 6 | 0.57 | 0.54 | 0.096 | 0.201 | 4.301 | 1.398 | 6.65 | 0.385 |
| **463** | 52 | 11 | 2005 | 4 | 0.68 | 5 | 0.56 | 0.54 | 0.091 | 0.168 | 4.271 | 1.415 | 6.68 | 0.293 |
| **464** | 52 | 11 | 2006 | 5 | 0.706 | 5 | 0.54 | 0.51 | 0.074 | 0.147 | 4.286 | 1.431 | 6.78 | 0.167 |
| **465** | 52 | 11 | 2007 | 6 | 0.634 | 5 | 0.5 | 0.48 | 0.054 | 0.091 | 4.265 | 1.447 | 6.89 | -0.054 |
| **466** | 52 | 11 | 2008 | 7 | 0.694 | 5 | 0.62 | 0.58 | 0.076 | 0.147 | 4.736 | 1.462 | 6.99 | 0.258 |
| **467** | 52 | 11 | 2009 | 8 | 0.719 | 6 | 0.45 | 0.41 | 0.036 | 0.074 | 4.539 | 1.477 | 7.01 | -0.212 |
| **468** | 52 | 11 | 2010 | 9 | 0.7 | 5 | 0.47 | 0.44 | 0.042 | 0.082 | 4.561 | 1.491 | 7 | -0.15 |
| **469** | 53 | 11 | 2002 | 1 | 0.553 | 4 | 0.3 | 0.28 | 0.041 | 0.059 | 3.66 | 1.362 | 6.2 | -0.379 |
| **470** | 53 | 11 | 2003 | 2 | 0.535 | 3 | 0.23 | 0.23 | 0.034 | 0.048 | 3.215 | 1.38 | 6.19 | -0.485 |
| **471** | 53 | 11 | 2004 | 3 | 0.491 | 3 | 0.27 | 0.25 | 0.044 | 0.058 | 3.708 | 1.398 | 6.14 | -0.398 |
| **472** | 53 | 11 | 2005 | 4 | 0.493 | 3 | 0.44 | 0.43 | 0.086 | 0.113 | 3.556 | 1.415 | 6.17 | 0.036 |
| **473** | 53 | 11 | 2006 | 5 | 0.463 | 3 | 0.64 | 0.63 | 0.182 | 0.231 | 3.798 | 1.431 | 6.24 | 0.81 |
| **474** | 53 | 11 | 2007 | 6 | 0.47 | 3 | 0.38 | 0.34 | 0.053 | 0.068 | 4.14 | 1.447 | 6.28 | -0.246 |
| **475** | 53 | 11 | 2008 | 7 | 0.457 | 3 | 0.14 | 0.1 | 0.017 | 0.021 | 3.968 | 1.462 | 6.25 | -0.715 |
| **476** | 53 | 11 | 2009 | 8 | 0.486 | 3 | 0.13 | 0.12 | 0.018 | 0.023 | 3.231 | 1.477 | 6.26 | -0.704 |
| **477** | 53 | 11 | 2010 | 9 | 0.441 | 2 | 0.18 | 0.18 | 0.028 | 0.035 | 3.303 | 1.491 | 6.25 | -0.588 |
| **478** | 54 | 11 | 2002 | 1 | 0.399 | 2 | 0.66 | 0.62 | 0.06 | 0.071 | 2.985 | 1.255 | 5.34 | 0.08 |
| **479** | 54 | 11 | 2003 | 2 | 0.469 | 3 | 0.85 | 0.81 | 0.213 | 0.274 | 3.404 | 1.279 | 5.47 | 1.209 |
| **480** | 54 | 11 | 2004 | 3 | 0.447 | 2 | 0.76 | 0.69 | 0.135 | 0.169 | 3.651 | 1.301 | 5.51 | 0.618 |
| **481** | 54 | 11 | 2005 | 4 | 0.39 | 2 | 0.73 | 0.69 | 0.04 | 0.048 | 2.936 | 1.322 | 5.53 | 0.043 |
| **482** | 54 | 11 | 2006 | 5 | 0.428 | 2 | -1.1 | -1.2 | -0.038 | -0.05 | 2.787 | 1.342 | 5.29 | -2.358 |
| **483** | 54 | 11 | 2007 | 6 | 0.377 | 2 | 0.85 | 0.82 | 0.061 | 0.072 | 2.708 | 1.362 | 5.34 | 0.286 |
| **484** | 54 | 11 | 2008 | 7 | 0.512 | 3 | 0.78 | 0.76 | 0.05 | 0.067 | 2.521 | 1.38 | 5.35 | 0.176 |
| **485** | 54 | 11 | 2009 | 8 | 0.474 | 3 | 0.61 | 0.53 | 0.024 | 0.031 | 2.899 | 1.398 | 5.34 | -0.199 |
| **486** | 54 | 11 | 2010 | 9 | 0.426 | 2 | -1.1 | -1.3 | -0.036 | -0.04 | 3.046 | 1.415 | 5.3 | -2.393 |
| **487** | 55 | 12 | 2002 | 1 | 0.666 | 5 | 0.07 | 0.05 | 0.008 | 0.015 | 3.719 | 1.146 | 6.13 | -0.82 |
| **488** | 55 | 12 | 2003 | 2 | 0.67 | 5 | 0.09 | 0.06 | 0.01 | 0.019 | 3.82 | 1.176 | 6.15 | -0.789 |
| **489** | 55 | 12 | 2004 | 3 | 0.627 | 4 | 0.18 | 0.16 | 0.036 | 0.059 | 3.742 | 1.204 | 6.12 | -0.516 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **490** | 55 | 12 | 2005 | 4 | 0.581 | 4 | 0.47 | 0.44 | 0.13 | 0.196 | 4.027 | 1.23 | 6.15 | 0.378 |
| **491** | 55 | 12 | 2006 | 5 | 0.575 | 4 | 0.52 | 0.5 | 0.147 | 0.219 | 4.125 | 1.255 | 6.25 | 0.538 |
| **492** | 55 | 12 | 2007 | 6 | 0.6 | 4 | 0.58 | 0.54 | 0.168 | 0.262 | 4.414 | 1.279 | 6.34 | 0.757 |
| **493** | 55 | 12 | 2008 | 7 | 0.625 | 4 | 0.42 | 0.39 | 0.099 | 0.163 | 4.231 | 1.301 | 6.35 | 0.154 |
| **494** | 55 | 12 | 2009 | 8 | 0.643 | 5 | 0.15 | 0.12 | 0.021 | 0.036 | 4.047 | 1.322 | 6.33 | -0.656 |
| **495** | 55 | 12 | 2010 | 9 | 0.623 | 4 | 0.26 | 0.24 | 0.041 | 0.067 | 3.823 | 1.342 | 6.33 | -0.398 |
| **496** | 56 | 13 | 2002 | 1 | 0.684 | 5 | 0.61 | 0.41 | 0.02 | 0.037 | 4.137 | 1.415 | 6.14 | -0.262 |
| **497** | 56 | 13 | 2003 | 2 | 0.683 | 5 | 0.4 | 0.4 | 0.022 | 0.041 | 2.549 | 1.431 | 6.14 | -0.362 |
| **498** | 56 | 13 | 2004 | 3 | 0.682 | 5 | 0.44 | 0.44 | 0.029 | 0.054 | 2.61 | 1.447 | 6.15 | -0.27 |
| **499** | 56 | 13 | 2005 | 4 | 0.683 | 5 | 0.47 | 0.47 | 0.053 | 0.1 | 2.713 | 1.462 | 6.18 | -0.061 |
| **500** | 56 | 13 | 2006 | 5 | 0.68 | 5 | 0.6 | 0.6 | 0.029 | 0.053 | 2.336 | 1.477 | 6.16 | -0.102 |
| **501** | 56 | 13 | 2007 | 6 | 0.682 | 5 | 0.49 | 0.48 | 0.051 | 0.095 | 2.805 | 1.491 | 6.19 | -0.064 |
| **502** | 56 | 13 | 2008 | 7 | 0.556 | 4 | 0.83 | 0.81 | 0.063 | 0.091 | 3.582 | 1.505 | 6.29 | 0.322 |
| **503** | 56 | 13 | 2009 | 8 | 0.341 | 2 | 0.94 | 0.92 | 0.207 | 0.234 | 3.976 | 1.519 | 6.27 | 1.21 |
| **504** | 56 | 13 | 2010 | 9 | 0.344 | 2 | 0.84 | 0.82 | 0.065 | 0.074 | 3.392 | 1.531 | 6.28 | 0.299 |
| **505** | 57 | 13 | 2002 | 1 | 0.52 | 3 | -0.3 | -0.4 | -0.027 | -0.04 | 2.382 | 1.041 | 5.07 | -1.486 |
| **506** | 57 | 13 | 2003 | 2 | 0.493 | 3 | -0.3 | -0.3 | -0.018 | -0.02 | 2.52 | 1.079 | 5.03 | -1.367 |
| **507** | 57 | 13 | 2004 | 3 | 0.461 | 3 | 0.15 | 0.09 | 0.005 | 0.007 | 2.607 | 1.114 | 5.02 | -0.78 |
| **508** | 57 | 13 | 2005 | 4 | 0.412 | 2 | -0.1 | -0.2 | -0.011 | -0.01 | 2.911 | 1.146 | 4.99 | -1.151 |
| **509** | 57 | 13 | 2006 | 5 | 0.438 | 2 | | | -0.094 | -0.12 | 2.943 | 1.176 | 4.95 | |
| **510** | 57 | 13 | 2007 | 6 | 0.288 | 1 | 0.28 | 0.22 | 0.027 | 0.029 | 2.78 | 1.204 | 4.9 | -0.529 |
| **511** | 57 | 13 | 2008 | 7 | 0.273 | 1 | 0.1 | 0.02 | 0.002 | 0.002 | 2.807 | 1.23 | 4.9 | -0.865 |
| **512** | 57 | 13 | 2009 | 8 | 0.253 | 1 | -0.6 | -0.7 | -0.046 | -0.05 | 2.775 | 1.255 | 4.87 | -1.841 |
| **513** | 57 | 13 | 2010 | 9 | 0.24 | 1 | 0.22 | 0.16 | 0.021 | 0.022 | 2.831 | 1.279 | 4.88 | -0.623 |

# Appendix 5: Terms and Abbreviations

| Term or Abbreviation | Definition |
|---|---|
| **AAOIFI** | Accounting and Auditing Organization for Islamic Financial Institutions. |
| ***Al Gard*** | A loan. |
| ***Al Gard Alhasan*** | Literally means a 'goodly loan'. In Islamic economics, it refers to a loan without any return. |
| **CCC** | Cash conversion cycle. |
| **CMA** | Capital Market Authority. |
| **CML** | Capital Market Law. |
| **COGS** | Cost of goods sold. |
| **Common stock** | An ownership certificate in a corporation. |
| **Convertible bond** | A bond that can be converted into a prearranged amount of the company's equity at certain times during its life, at the decision of bondholder. |
| **Debt ratios** | A ratio that indicates what percentage of debt a company has relative to its assets. This measurement gives an idea of the leverage of the company, along with the potential risks the company faces in terms of its debt load. |
| **DZIT** | Department of Zakat and Income Tax. |
| **Equity** | The amount of money a stockholder has for the amount of stock shares he or she holds. |
| ***gharar*** | Speculation or gambling. |
| ***Ijarah*** | Leasing. |
| **IPO** | Initial public offering. |
| **LBO** | Leveraged buyout. |
| **Leveraged buyout** | Using loan or bonds to meet the cost of acquisition of another company. |

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|---|---|
| ***Mudarabah*** | Profit and loss sharing agreement. One party provides capital and the other manages the enterprise. If there is loss, the provider of capital bears the financial loss, while the worker loses labour. If there is profit, both parties share this in accordance to the proportions agreed upon at the time of the contract. |
| ***Murabahah (tawarooq)*** | A contract of sale in which payment is made some time after delivery of the goods transacted. It is mostly used as the basis of contemporary Islamic banking when giving a loan. |
| ***Musharakah*** | Profit and loss sharing agreement. This refers to a partnership. It is similar to a joint-venture agreement that requires the conditions of a partnership. Both parties should participate in profits and losses, not only in profits. |
| ***Nisab*** | Minimum amount liable to *zakat.* |
| **PPE** | Private placement of equity. |
| **Preferred stock** | An ownership certificate in a corporation that has a higher claim on the assets and earnings than common stock. It generally has a dividend that must be paid out before dividends to common stockholders, and the shares usually do not have voting rights. |
| **QDP** | Quinquennial Development Plan. |
| ***Riba*** | Interest or usury. More specifically, it refers to any pre-agreed excess paid or received over and above the principal in a loan contract. |
| ***Riba al-fadl*** | Refers to interest in exchanging goods and commodities of the same kind. *Riba* is not |

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|---|---|
| | only for exchanging cash, but can be involved in any barter. |
| ***Riba al-qard* (*al-Nasi'ah*)** | Refers to interest in debt. Can be associated with any credit transaction in which a loan is advanced to a person on a payment of interest over and above the principal for the time of the debt. |
| **ROA** | Return on assets. |
| **ROE** | Return on equity. |
| **SAGIA** | Saudi Arabian General Investment Authority. |
| **SAMA** | Saudi Arabian Monetary Agency. |
| **SEC** | Supreme Economic Council. |
| **SOEs** | State-owned enterprises. |
| ***Sukuk*** | Bonds compatible with Islamic law. |
| **Tadawul** | Saudi Arabian stock market. |
| ***Zakat*** | Refers to the compulsory tax that must be paid by each Muslim who has wealth that is equal to or more than a minimum called *nisab*. |