

**GOVERNANCE AND PERFORMANCE:
AN EMPIRICAL STUDY OF
AUSTRALIAN UNIVERSITIES**

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DECLARATION

I, Chitra Sriyani De Silva Lokuwaduge, declare that the PhD thesis entitled *Governance and Performance: An Empirical Study of Australian Universities* is no more than 100,000 words in length, exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been accepted for the award of any other degree or diploma in any university or institution. To the best of my knowledge, this thesis contains no material 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.

Chitra Sriyani De Silva Lokuwaduge

Date

ABSTRACT

Governance structures have become one of the most debated aspects of the public sector and during the last decade good corporate governance practices have come to be regarded as important in enhancing the performance of all government- funded institutions. The purpose of this study was to examine the relationship between governance structures, practices and the performance of the university sector in Australia. During the period investigated in this study, the universities were undergoing significant governance reforms.

Agency theory, which focuses on separation of ownership and control, and stewardship theory, which assumes the governing boards and managers both act in the best interests of their principals provided the theoretical basis for this study.

The conceptual framework describes how the university council structures, processes and practices of the Australian universities could impact on their performance. In this framework, internal governance variables were council composition, council independence, committee structures, council process and transparency in reporting, and external governance mechanisms were represented by the influence of major stakeholders and the regulatory authority. The research explored the relationship of these variables to the performance of the universities in Australia. The dependent variable, university performance, was assessed by measures of research performance, teaching performance and the financial viability of universities.

The sample for the study was 37 of the 39 publicly-funded universities in Australia. Two universities were omitted due to the special nature of these universities. Data were obtained from annual reports of the universities and the Department of Higher Education, Department of Innovation and Science and National University Data archives. The data were collated and indices developed for each of the variables. The data were analyzed using quantitative methods: descriptive statistics, factor and correlation analyses, analysis of variance and regression.

Descriptive statistics from the study showed a significant increase in governance practices between 2005 and 2007 for council size, composition, council committees and transparency in reporting. This evidence confirms that Australian universities have complied with the National Governance Protocols for Higher Education and implies that Australian universities comply with governance best practice requirements.

However, according to the regression results, external governance mechanisms of Australian Universities did not report any statistically significant relationship to performance or with the internal governance mechanisms within the period from 2005 to 2007. Hence, the results did not support the argument that regulatory authority and external stakeholders can positively influence the performance of universities.

This study provides evidence in support of a positive relationship between establishment of council committees and overall performance, and strong positive correlations with research and financial performance. The findings supported the agency theory argument that independent committees influence better performance through close monitoring.

Both council size and the number of council meetings did not show any statistically significant relationship with performance and rejected the arguments drawn from both agency and the stewardship theories. However, the negative correlation of the relationship between council independence and performance agreed with the argument of the stewardship theory which suggests that insider dominated boards lead to higher performance.

This study did not find evidence of a statistically significant relationship between transparency in reporting and performance during the period under study. This may have been due to the fact that all the universities have very similar reporting practices.

In this study, the positive relationship between size of the university and the research performance and the negative relationship between size and teaching suggests that bigger universities are more research oriented while the smaller universities highly emphasize teaching quality.

The results for the governance structures, council size, council independence and council committees together, did not show any statistically significant relationship with teaching,

research and financial performance. The conclusions drawn from this study were that good governance practices were important to the performance of any institution. However, for governance practices to have full impact on performance in university sector councils should consider the strategies that are in the interest of all stakeholders and relevant to the sector. This further gave the implication that performance measures of universities are complex due to the nature of the concept and the potential conflicts in their objectives of delivering high quality research and high quality teaching while promoting financial viability.

This appears to be the first study to analyze the relationships between the governance and performance of universities anywhere in the world. In illustrating the relationship between governance and performance of universities, it especially emphasized the relationship with different forms of performance: research performance teaching performance and financial performance (viability) of universities in Australia. As a result, this study, with its emphasis on higher educational reforms and policy changes, makes a significant contribution to the body of knowledge on governance in the universities.

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LIST OF ACRONYMS

AAUP	American University Professors Association
AGS	Australian Graduate Survey
ANAO	Australian National Audit Office
AQUA	Australian Quality Agency for Universities
ASX	Australian Securities Exchange
ATN	Australian Technology Network
AVCC	Australian Vice-Chancellors Committee
CEO	Chief Executive Officer
CEQ	Course Experience Questionnaire
DEET	Department of Employment Education and Training
DEEWR	Department of Education, Employment and Workplace Relations
DEST	Department of Education Science and Training
DET	Department of Education and Training
DETYA	Department of Education, Training and Youth Affairs
ECPR	European Consortium for Political Research
G08	Group of Eight
GCA	Graduate Careers Australia
GCCA	Graduate Careers Council Australia
GDS	Graduate Destination Survey
HECS	Higher Education Contribution Scheme
HELP	Higher education Loan Program
HESA	Higher Education Support Act
IRUA	Innovative Research Universities Australia
LTPF	Learning and Teaching Performance Fund
OECD	Organisation for Economic Co-operation and Development
ROA	Return On assets
ROE	Return On equity
RTS	Research Training Scheme
TEQSA	Tertiary Education Quality Standards Agency
UA	Universities Australia
VIF	Variance Inflation Factor

CHAPTER 1

INTRODUCTION

1.1 Background

Corporate governance issues in both the private and public sectors have become a popular discussion topic in the last two decades (Edwards 2003).. There have been some legislative changes and provisions imposed by governments on public and private organizations around the world to improve on their governance arrangements (Edwards 2000). Universities have been one of the ‘interests caught up in the international surge in governance of organizations’ (Dixon & Coy 2007, p. 267). Particularly in Australia, governance issues such as size and composition of university councils/ governing bodies and their roles, responsibilities and relationships have been discussed in several Commonwealth Government higher education policy reports for more than a decade (Dixon & Coy 2007; Edwards 2000, 2003).

This study examined the literature on the relationship between governance and performance to determine the reasons for effectiveness of governance in the context of Australian universities. It further examined the accountability to the major stakeholders (stakeholder theory and stewardship theory) (Donaldson, T & Preston 1995; Freeman, Wicks & Parmar 2004; Heath & Norman 2004) through external and internal corporate governance mechanisms (Weir, Laing & McKnight 2002). Institutional theory provides explanations about the external and internal governance structures.. Institutional theory analyses more resilient aspects of social structure which consider the processes by which structures, including schemas, rules, norms, and routines, become established as authoritative guidelines and how these elements are created, diffused, adopted and adapted over space and time. Finally how the structures fall into decline and disuse as operations of organizations (Scott 2005, p. 2), including corporate reporting mechanisms (Coaldrake, 2000; Coaldrake, Stedman & Little 2003; Dixon & Coy 2007), is discussed in conventional financial accounting theory. According to this theory, the governing body is responsible for the corporate reporting of an organization (Dixon & Coy 2007), as do university councils as the university governing bodies.

In order to provide a basis for the current investigation, the structure of this chapter is organized as follows: Section 1.2 presents the overview of the context of the study; Section 1.3 explains the relationship of governance practices with performance. Section 1.4 provides the aims of the study, Section 1.5 presents the conceptual framework developed to conduct the study, Section 1.6 presents the methodology adopted in the study, Section 1.7 discusses the limitation of existing literature, Section 1.8 explains the contribution to knowledge and significance of the study in Section 1.9, Section 1.10 discusses the limitations of the thesis and Section 1.11 describes the structure of the thesis.

1.2 Context of the Study

Australian universities have been legally structured as companies or corporations (Harman, K & Treadgold 2007) under State or Commonwealth law. The traditional (collegial) model of governance embodied the philosophy of self-governance with little or no direct government interference, except for the indirect influence of ministerial appointees on council (which is not an practice or a requirement of the current context) (Harman, K & Treadgold 2007, p. 13). During the 1980s and 1990s, Australian and overseas universities moved away from the self-governance model of university governance to a model more closely aligned with business corporations (Buckland 2004; Shattock 2004, 2008a).

According to the recent literature on university governance, governance of universities involves following the governing trends of public companies (Dixon & Coy 2007; Shattock 2004). Formal responsibility of all the activities in a university is vested in a governing body, the board or the council of a university which comprises elected, appointed and ex-officio members, the majority of them in non-executive roles (Bennett 2002; Shattock 2004). According to Buckland (2004) and Shattock (2004, 2008a), a university governing body is expected to shoulder a corporate responsibility (Barrett 2004; Fielden 2007), rather than only representing the interests of particular constituencies, such as staff, students and funding bodies, as done historically. Vice-Chancellors are appointed as and referred to as chief executives (Nelson 2003b, 2004), and have always wielded power, but this has become more 'managerial' (Dixon & Coy 2007), which (Bennett 2002) refers to as the third official power base in the governance structure. The Vice-Chancellor as the CEO, sometimes chairs the academic board, and is usually a member of it, as well as of the governing body (Coaldrake, Stedman & Little 2003; Edwards 2003).

The Australian university sector has gone through policy changes during the last three decades, including the move towards appreciation of performance of universities in the late 1970s (Coaldrake, Stedman & Little 2003).. A national review of higher education took place in 1987 and 1988. The White Paper *Higher Education: A Policy Statement* by Dawkins (1988) replaced the existing binary system by a unified national system, and in the year 1991 the funding of higher education became the responsibility of the Commonwealth Government. The first significant review of university governance and management the *Higher Education Management Review* by David Hoare was conducted in 1995. The Hoare Review identified certain shortcomings in governance arrangements of universities in Australia and recommendations were made for the clarification of the role of the governing bodies, and changes to the size, composition and methods of appointments of members to the governing bodies. Following the recommendations in the Hoare Review, the Australian Government announced the *Our Universities: Backing Australia's Future* package (Nelson 2003b) of reforms to the higher education sector as part of the 2003-04 budget. The reforms gave access to increased funding for universities to deliver world-class higher education, with a focus on quality learning outcomes (Nelson 2003b). These reforms included significant changes to the governance arrangements of universities: council size, council structure, roles and responsibilities of the council members and separation of VC/CEO and chair of the council (Nelson 2002a, 2003b).

The responsibility for the governance and management of a university is typically vested in a governing body such as the Council or the Senate through State legislation, which may delegate some of its powers. Almost every university's enabling legislation provides power for the governing body to exercise overall control and management of the university (Nelson 2004). The Australian Government has the legitimate power through the *Higher Education Support Act 2003* (Commonwealth of Australia 2003) to exercises influence over governance structures and accountability requirements by using its funding mechanism.

The latest higher education policy review, the Bradley Review (Bradley et al. 2009) mainly focused on performance measures and the funding arrangements of the higher education sector. In line with the recommendations of this report, the Higher Education Base Funding Review Committee (DEEWR 2010) was appointed by the Commonwealth Government of Australia in October 2010 and this report will be due in October 2011.

1.3 Governance Practices and Performance

The relationship between corporate governance and performance is important in formulating efficient corporate management and public regulatory policies. According to the literature (Beiner & Schmid 2005; Bhagat & Black 2001; Gompers, Ishii & Metrick 2003; Klapper & Love 2004), corporate governance plays an important role in improving the performance of a firm, and there is a direct relationship between governance and performance.

In- depth analysis of the universal corporate governance practices is an important aspect of understanding the governance practices referred to in this study, and analysing the impact of governance on performance is also essential.

1.3.1 Governance Practices

Corporate governance has been defined in a variety of ways (Tierney 2006; Waring & Pierce 2005). In general terms, corporate governance is concerned with the organizational structures and processes for decision-making, accountability, control and behaviour at the top of organisations (Armstrong, Jia & Totikidis 2005; Spiller 2002) Dahya et al. (2002) defined corporate governance as the mechanism used to discipline organisations. According to Morin and Jarrell (2000, 2001), corporate governance is the framework that controls and safeguards the interests of the relevant stakeholders. The Cadbury Report (Cadbury 1992, p. 15) defined corporate governance as “the system by which companies are directed and controlled”. This is the widely used definition in the governance context. The Cadbury report further explained that the responsibilities of the board include setting the strategic aims and implementing the strategies, providing the leadership, supervising the management and reporting to shareholders on their stewardship, (Cadbury 1992).

Corporate governance is considered as enhancing the reliability and quality of public financial information, and thereby enhancing integrity and efficiency (Rezaee 2009). The literature on corporate governance suggests that the role of a regulatory authority is important in improving an entity’s performance Rashid, Islam & Anderson 2008. Good corporate governance is focused on the protection of the rights of stakeholders and their interests (Bhagat & Black 1998, 2002; Kahan & Rock 2003). Governance researchers Bhagat & Black (1998) and Kahan and Rock (2003) highlighted the role of different instruments in implementing corporate governance. These instruments included the board of directors, board

size, independent directors, CEO, managers, government, political regime, judiciary and regulatory authority. They further argued that independent directors, CEO, board of directors and managers can improve the performance of the institute through the performance of their fiduciaries (Kahan & Rock 2003). The role of the regulatory authority is important to safeguard the stakeholder rights and implement corporate governance policies.

In contrast to the private sector, corporate governance public sector governance has been defined as:

... the set of responsibilities and practices, policies and procedures, exercised by an agency's executive, to provide strategic direction, ensure objectives are achieved, manage risks and use resources responsibly and with accountability. (ANAO 2006, p. 6)

1.3.2 University Governance

Universities, as multimillion dollar enterprises, have become one of the main focuses of governance among public sector organizations (Coaldrake, Stedman & Little 2003; Dixon & Coy 2007; Edwards 2000). Issues discussed in the literature include size of governing bodies and their roles, responsibilities, relationships, and the composition of governing bodies (Coaldrake, Stedman & Little 2003; Dixon & Coy 2007; Edwards 2003).

According to Schimank (2005), there are five mechanisms that operate in university governance regimes:

- the state regulation, a 'government prescription model' guided by external stakeholders, though advice from government, parliamentary, industry, union, and other bodies;
- the 'academic self-governance' model;
- the 'collegial peer-review based decision making of tradition' model;
- the 'managerial self-governance' model; and
- the formal hierarchical organization of universities with Vice-Chancellors, Deputy Vice-Chancellors, Deans, etc., and competition for scarce resources both within and between universities.

The influence of any one of the regimes can be very much in relation to the influence of other mechanisms (Swansson, Mow & Bartos 2004).

The current study mainly focuses on the external stakeholder /regulatory model as the external governance mechanisms, and the internal organizational self governing model as the internal governance mechanisms.

Council/Board Structure and Process

There is no globally accepted set of corporate governance principles that can be applied to board structures (Edwards & Clough 2005), as they depend on the organisational practices and the legal, political and economic environment. However, the Cadbury Committee (Cadbury 1992) followed by Dedman (2002), Jones and Pollitt (2003) and Khanchel (2007), also considered the structure of the governing body as an important corporate governance mechanism. Board structures included size, representation of non-executive directors, board committees, and the roles and responsibilities of the board including leadership structures. These were also addressed in the best practice governance of the Australian higher education sector proposed in the *Our Universities: Backing Australia's Future* policy paper (Nelson 2003b), following on from the White Paper by Dawkins (1988) and *Higher Education Management Review* (Hoare 1995). In addition, Khanchel (2007) followed by Jones and Pollitt (2003), emphasized the board processes and transparency in reporting practices as other important issues addressed in the context of good governance in universities.

1.3.3 The Performance of the Universities

Performance can be defined in many ways. It has been defined as the amount of utility or benefits derived from the firm or the organization by its stakeholders (Rashid, Islam & Anderson 2008). In contrast to for-profit firms, there are no market prices for university inputs and outputs. Hence, performance criteria such as profit return on assets or return on investment are inadequate and cannot be used as the principle measures to evaluate university performance (Warning 2007; Worthington & Lee 2005). Universities have competing priorities as set out in their acts; need to be reconciled to these and achieve different things at once; therefore, university performance is multidimensional (Neumann & Guthrie 2006; Warning 2004). An appropriate performance measure is how well an institution transforms its input into outputs. Warning (2007) and Worthington and Lee (2005, 2008) used teaching quality or teaching performance and research quality or research performance as performance measures for universities. In addition to the above measures, financial performance, indicated

by financial viability of universities (Nelson 2009) as a performance measure for this study was also used followed by the *Higher Education Reports* of 2005, 2006 and 2007 (DEEWR 2008b, 2008c; DEST 2007).

1.3.4 The Relationship between Corporate Governance and Performance

Several previous studies have found that corporate governance has a positive relationship with the performance of an institution (Rashid, Islam & Anderson 2008; Weir, Laing & McKnight 2002). This relationship could be expressed as follows:

$$\text{Performance} = f (\text{Internal corporate governance variables} + \text{External corporate governance variables}) + \text{Error Term}$$

The model shows that the internal and external variables have a positive relationship with the performance. Other studies such as Bhagat and Black (2002), argued that there was no correlation between governance and performance. However, the limitations of the existing literature on university governance and its influence on performance justify the need for further studies in this area, so that accurate definitions of performance of universities and a model of the influence of governance on performance can be formulated. Consequently, this study is specifically aimed at addressing some of these limitations in the literature.

1.4 The Aims of the Study

The introduction of the Australian National Governance Protocols for higher education in the report, *Our Universities: Backing Australia's Future*, aimed to provide a mechanism to improve the accountability, controls and the performance of the higher education industry as it moved towards commercialization (Henkel 1997; Marginson & Considine 2000) and massive expansions (Edwards 2000). However, the efficiency of the governance structures and practices, and their influence on the performance of universities has not been empirically investigated.

Therefore, in order to understand the governance practices that contribute to enhance the teaching, research and financial performance of the universities in Australia, this study aimed to explore the efficacy of governance practices, which affect the sector's performance and accountability to stakeholders and to determine the relationship between the governance

mechanisms (external and internal) and the performance of government- funded universities in Australia. The specific objectives of the study were:

- to investigate the extent to which universities have adopted good governance practices;
- to investigate and compare the role of governance in influencing the performance of universities both conceptually and empirically;
- to develop a new multifactor model to explain the role of governance in affecting institutional performance;
- to develop concepts and measurements of governance and performance in the university sector;
- to discuss the relevance of different management and financial theories in explaining the nature and operation of publicly funded universities; and
- to recommend governance and performance measures on the basis of the results of this study.

1.5 Conceptual Framework

This research investigated governance practices and performance in the context of publicly-funded universities in Australia. Based on the review of relevant literature, this Section introduced a theoretical framework suited for the study. The main corporate governance theories on which this study was based were agency theory, stewardship theory and stakeholder theory. In addition, institutional theory and resource dependency theory were also considered.

The conceptual framework of the study was designed to address the relationships between governance practices and performance of Australian universities. The propositions formulated in this study were based on the important factors affecting the relationship between corporate governance and the performance of institutions and were developed using the theoretical framework. In the conceptual framework, external governance mechanisms (influence of the regulatory authority and stakeholder influence) were derived from institutional theory. The internal governance mechanisms (council structure, council composition, council committees and council process) (Khanchel 2007) appear as monitoring mechanisms of the council, and the accountability to stakeholders was assessed through the

reporting practices (transparency in reporting) (Khanchel 2007; Kolk 2008; Ryan & Ng 2000). Though CEO duality as the leadership structure is an important factor according to the available literature (Khanchel 2007; Rechner & Dalton 1991), this variable was excluded from the model as it is mandatory by law for all Australian universities to appoint a Vice-Chancellor as the CEO and the Chancellor as the chair of the governing board (Nelson 2005). The variables used to measure these internal governance mechanisms were council size, council independence, council committees, council meetings and transparency in reporting. Performance was measured in terms of teaching, research and financial performance. The four teaching performance measures used in this study were overall satisfaction, full-time employment rate, progression rate and staff to student ratio (Abbott & Doucouliagos 2003a; Warning 2004; Worthington & Lee 2005). The three research performance variables used in this study were research income per academic, research and publications per academic and research degree completion per academic (Abbott & Doucouliagos 2003a, 2003b; Warning 2004; Williams, R & Van Dyke 2004; Worthington & Lee 2005). The three financial performance measures used here were return on equity (ROE), assets turnover (AT) and current ratio (Epps & Cereola 2008; Leng 2004).

The corporate governance framework used here was similar to the framework used in studies conducted by Kyereboah-Coleman and Biekpe (2005), Chen, Elder and Hsieh (2005) and Weir, Laing and McKnight (2002). It used internal corporate governance variables and external corporate governance variables. The performance variables were constructed similarly to the frameworks used in previous studies of university performance (Abbott & Doucouliagos 2003a, 2003b; Warning 2007; Worthington & Lee 2005). The relationship between these variables and the performance were constructed using the measures in studies conducted by Khanchel (2007) and Kyereboah-Coleman and Biekpe (2005).

1.6 The Methodology of the Study

The research was carried out through the construction of a positive empirical model. Secondary data were used for the study. Data were collected from different web sites and annual reports of all the government-funded universities in Australia. There are 39 universities in Australia, out of which 37 are government-funded (Universities Australia 2010). Data were collected for the period 2005 to 2007 from all 37 government-funded universities. The data concerning internal and external corporate governance mechanisms

were gathered from different sources such as web sites of the universities, annual reports of the universities, the Australian National University data archives Graduate Careers Council Australia and websites of Australian Universities Quality Agency, Department of Education Employment and Workplace Relations, Department of Innovation and Research and Australian National Audit Office.

The data were converted into measures of the various components of the framework of the study. The external corporate governance mechanisms (Daily, Dalton & Cannella Jr 2003) captured the influence of the regulatory authority using compliance with the 2003 National Governance Protocols for universities, and dependency on government funds was used as the proxy for the influence of stakeholders. This measure was calculated as a percentage of government funds including the ratios of HECS and HELP to total revenue of the university.

Internal corporate governance mechanisms were measured by constructing indices. Council size was measured by counting the number of appointed, elected and ex- officio members in a council (Chaganti, Mahajan & Sharma 2007; Eisenberg, Sundgren & Wells 1998); council independence was calculated as the percentage of external members to the total number of members in the council (Bhagat & Black 2001); and a council committee index was constructed by using the board committee index measures used in the existing literature (Callen, Klein & Tinkelman 2003; Khanchel 2007; Klein, April 1998). Existence of an audit committee, a nomination committee and a remuneration committee, the independence of these committees (CEO involvement) and the process of these committees (Khanchel 2007) were used to calculate the index (Appendix 2). Council meetings were measured by counting the number of meetings held during the year 2007 (Petra 2007; Vafeas, N. 1999) and a transparency in reporting index for Australian universities was calculated by using the depth and the extent of disclosure of information in annual reports (Healy & Palepu 2001; Verrecchia 1990) (Appendix 3).

Three performance indices used in this study, teaching performance, research performance and financial performance were measured by using the criteria found in the literature (Beiner & Schmid 2005; Gompers, Ishii & Metrick 2003; Joh 2003; Kim, Black & Jang 2005; Warning 2007; Worthington & Lee 2005). Four teaching performance measures drawn from these studies used in the study were: overall satisfaction, full-time employment rate, progression rate (for these 3, the data processed and published by the Graduate Careers

Council Australia were used), whilst the staff to student ratio was calculated by dividing the full-time equivalent student load (EFTSL) by the full time equivalent academic staff (EFT) load, (Abbott & Doucouliagos 2003a; Warning 2004; Worthington & Lee 2005). The three research performance variables used in the study were research income per academic, research and publications per academic and research degree completion per academic (Abbott & Doucouliagos 2003a, 2003b; Warning 2004; Williams, R & Van Dyke 2004; Worthington & Lee 2005). These measures were calculated by dividing the research income, research and publications and the research degree completion of the year by the full-time equivalent academic staff load (EFT) of the year. The three financial performance measures used in the study were return on equity (ROE), assets turn over) and current ratio (Epps & Cereola 2008; Leng 2004).

1.6.1 Statistical Analysis

The relationship between governance and performance of universities in this study was tested by a multifactor model. Different statistical analyses were used to test the relationship between the performance of the university, internal corporate governance mechanisms and external corporate governance mechanism variables. The data used for these tests were obtained through a combination of time series and cross sectional observations. Econometric tests (Field 2009) were used to accept or reject the alternative propositions including *t* and *f* statistics. The value of significance level of a test ($p < .10$) was also used to accept or reject the alternative proposition which established the relationship between governance and performance of universities. Furthermore, heteroscedasticity, multicollinearity and autocorrelation tests of data (Field 2009; Hair et al. 2006) were also carried out to render the results of the study more robust. These tests were imperative, because of the fact that the success of a model is always dependent on the accuracy of the derived results. Econometric tests were performed to check whether the instruments were substitutes or complements (Rashid, Islam & Anderson 2008), and to test the relationship of these instruments with the performance of universities. Finally, incremental tests were also performed to analyse the importance of individual variables in all the models of this study.

1.7 Limitations of the Existing Literature

Though corporate governance issues in organizations has been a major focus of research during the last two decades, the literature on university governance practices were limited,

and there were hardly any research findings on the relationship between governance and performance of universities. There was a diversity of results in the findings of the existing literature on governance due to the different theoretical perspectives and methodologies applied and variables used to analyse the governance of universities. University performance measures and the measurement criteria used also varied from country to country and the purpose of measurement gave conflicting views of university performance (Carrington, Coelli & Rao 2005; Guthrie, J & Neumann 2006; Neumann & Guthrie 2006; Williams, R & Van Dyke 2004). Warning (2004) also confirmed that performance measures and indicators were influenced by the selection of methodologies, and funding and regulatory mechanisms of university systems. However, there is very limited research on governance practices and the influence of governance on the performance of universities, especially in the Australian context.

1.8 Contribution to the Knowledge

This study makes an original contribution to the literature, since it is the first comprehensive investigation into the comparative roles of governance in affecting the teaching, research and financial performance of universities in Australia and elsewhere in the world. Past researchers have studied governance mechanisms of universities and the performance measures of universities separately. Further, this is the only study that considers governance as an important factor in affecting the performance of universities, and which explicitly considers the differences which took place after the introduction of the 2003 university governance protocols as a best practice guideline for the Australian university sector. In addition, this research examined the relevance of different management theories in explaining the differences in these relationships.

This study is important as it provides new insights into governance and performance of universities as a service sector organisation. Furthermore, propositions relevant to the factors affecting the performance of universities are discussed. This study also reveals the role of various governance instruments in affecting the performance of a publicly- funded organization. Finally, tests on the complements and substitutes of different corporate governance instruments are undertaken to analyse the role of instruments in affecting performance in combination rather than in isolation.

The results related to the individual variables and complementarities in corporate governance mechanism variables further explained the process by which the performance of the institution was affected when a single instrument was used and also when the instruments were used in combination.

1.9 Significance of the Study

This study adds a significant practical importance, because its econometric results support the application of appropriate regulatory, financial and corporate governance policies. The funding system proposed by the 2008 Bradley Review (Bradley et al. 2009) emphasized that an appropriate public accountability framework is an important factor to ensure that governments and the community have confidence in higher education and to ensure the efficient and effective use of public funding. According to Swansson, Mow and Bartos (2004), the nature and cost of accountability requirements among universities have been increasing over the years. Furthermore the changes to the Commonwealth Grant Scheme in the 2007-08 Budget addressed earlier concerns by relaxing caps on student numbers (Birrell & Edwards 2009; Bradley et al. 2009), which encourages universities to be more competitive. Teaching and research performance is important for the quality of the university, (Abbott & Doucouliagos 2003a; Warning 2004; Worthington & Lee 2005) and financial performance is important for economic development and sustainability (Abbott & Doucouliagos 2003a; DEEWR 2008c; Duckett 2004). Good corporate governance can make a substantial contribution to economic development in these institutions through the sound financial management (Heath & Norman 2004; Marginson 1999; Nelson 2004). The performance of universities could be improved by using the final recommendations presented in the chapter 8 of this study which were previously lacking in the existing literature.

The international higher education sector is also moving towards a more competitive environment (Warning 2007). The Australian higher education sector includes 39 publicly-funded universities. Amongst these, only five institutions have annual incomes less than \$100 million, while 25 of Australia's universities are amongst The Bulletin's Top 1000 enterprises in Australia and New Zealand (Swansson, Mow & Bartos 2004). The Australian government, and governments in a number of countries, including the United Kingdom, the United States and Germany, have recently taken steps to reform and strengthen their university systems. These reforms are particularly relevant for publicly-funded universities in Australia as the

government is moving towards a performance driven funding system (Bradley et al. 2009; Nelson 2003b, 2009).

When the literature was examined, it was clear that there is a lack of both theoretical and empirical research on public university governance and the influence of governance on the performance of universities in Australia. This research aims to fill the gap by analysing the relationship between governance and performance (De Silva 2010) of universities, giving special reference to Australia. While the empirical analysis is based on Australian data, the results offer important insights for all countries where publicly- funded universities play an important role in providing higher education.

In the context of analyzing the performance of universities, the international comparison of universities has gained more and more attention during the last two decades (Fielden 2007). In the Times world ranking of higher education institutions, universities from the United States such as Harvard, Yale, Chicago, Princeton, and MIT, and from the United Kingdom, Cambridge and Oxford are among the top 10 in international comparisons. The Australian National University is the only Australian university among the top twenty universities in the world ranking for 2009 (Times Higher Education 2009). Australian Universities have a lot to achieve to survive in the highly competitive global higher educational environment. Furthermore, the Australian higher education sector is an important service export income source in Australia and according to Birrell and Smith (2009). By 2008, the Australian overseas student industry had contributed \$15.0 billion in export income to the Australian economy from spending on fees and goods and services by overseas students in Australia. This study provides implications and new insights into the competitive behaviour of public universities in general and the structure and conduct of Australian universities for the policy makers in particular.

1.10 Limitations of the Thesis

This thesis does not dwell on public sector literature on governance, but on corporate governance and university governance.

According to the governance literature , many different variables were used to measure governance and performance. Variables selected for the study were limited to the variables

presented in Section 1.5, with size of the university as the only controlling variable used in this study.

1.11 Structure of the Thesis

The thesis comprises eight chapters. Chapter 1 presents the background of the study, definitions of corporate governance, university governance, policies and performance of universities. In addition, the existence of a gap in the literature is also discussed.

Chapter 2 provides a literature review on corporate governance, and university governance and performance. This chapter also discusses the relationships between council structure, council processes and performance of universities. Following this, definitions and theories of corporate governance, the effect of governance variables on performance and the relationship between these two variables are reviewed.

Chapter 3 addresses the context of the study, the Australian university sector. Policy reviews, governance and performance issues in the Australian higher education sector are also addressed in this chapter.

Chapter 4 presents the theoretical framework and the conceptual framework of governance and performance developed from the literature, models for the study and development of propositions of the study. The governance models and propositions are based on different governance variables consisting of council structure and council processes, which are important in affecting the performance of universities, giving special reference to universities in Australia.

Chapter 5 explains the methodology of the study and includes the discussion of the variables used in the model for corporate governance and the performance of universities. This also includes the data collection methods, measurement used and the conceptualisation and operationalisation of the propositions. The discussion of the statistical techniques employed to analyse the data used for the study and analytical problems related to the data is also presented.

Chapter 6 consists of the results of the descriptive analyses and the testing of propositions developed on the relationship between governance and the performance of universities in Australia. Descriptive statistics compare the compliance of good governance practices in the university sector in Australia between the years 2005 and 2007, including both years. Correlation then measures the strength of the association, and an analysis of variance tests the propositions developed in the study and explains the interaction between the governance variables and the performance variables. Similarly, the importance of individual governance variables in affecting institutional performance and the tests of complementarities of governance instruments are also discussed.

Chapter 7 discusses the implications of the statistical analyses of the results concerning the relationship of governance variables and the performance variables of universities. This discussion will further incorporate theoretical and empirical evidence from the literature on governance and performance, and in addition, the governance results on the role of individual variables in affecting the performance of universities and the role of a combination of variables in improving the performance of universities are also discussed. This chapter further provides the empirical evidence to accept or reject the propositions presented in the study.

Chapter 8 of the thesis finally summarises the findings of the governance and performance of Australian university sector and presents the conclusions of the study. In particular, the chapter provides an overview of the findings, implications, limitations and suggestions for future research directions.

CHAPTER 2

LITERATURE REVIEW: THEORY, PRACTICE AND PERFORMANCE

2.1 Introduction

The purpose of this chapter is to critically analyse the theory of corporate governance and its application to contemporary universities. According to Coady (2000) universities have come under increasing pressure from economic and political sources for lapsed governance and performance standards (Coady 2000; Readings 1996). Assumed efficacies of market processes, coupled with complementary neo-liberalist reform agendas, have resulted in a “fundamental re-appraisal of university traditions and practices” (Coaldrake 2000, p. 21). From the perspective of the former Howard Government, the conflux of market forces and political impetus meant that:

... we now have a unique opportunity to achieve fundamental reform [in the university sector]
... Australia’s competitors are already moving ... to develop significantly more diverse higher education systems that respond to the widening demands of a globalised, interconnected world. (Nelson 2003b, p. 7)

The fundamental assumption of these reforms has been that:

... the governance arrangements of some institutions do not provide the appropriate balance of capability, experience and business acumen needed to manage a large and complex organisation with oversight of budgets of millions of dollars. (Nelson 2003b, p. 7).

This chapter examines the literature of the notion of ‘corporate governance’ and its theoretical underpinnings. The chapter further explores how corporate governance has been reflected in policies and practices in universities globally, but with particular focus on Australia. Finally the chapter critically analyses the implications of corporate governance on university performance. It is demonstrated that current reforms in university governance are fundamentally aimed at improving performance.

2.2 The Concept of ‘Corporate Governance’

Corporate governance involves a number of inter-related and mutually supportive components. These components centre on creating transparency and accountability (Shore & Wright 2004) and to reinforce these aspects through appropriate governance mechanisms. Furthermore, these intended outcomes are, aimed at mitigating principal-agent problems and promoting the long term interests of stakeholders (Gibaldi 2001). Corporate governance is a multifaceted concept that centres on notions of organisational accountability and responsibility (Williamson 1998, 2005). Governance implies that institutional structures (i.e. norms, values and assumptions) whether formal (e.g. laws and regulations) or informal (e.g. cultural values) create constraints on the behaviour of a given party (Gayle, Tewarie & White 2003). Such constraints are implied to be in the interests not just of the party under direct governance, but of the parties who, by virtue of their imposition of governance mechanisms, have an interest in the governed party. Governance necessitates the formulation, monitoring and enforcement of institutional structures by third parties, as well as the adherence to such institutional structures by individuals purported, subject to such institutional structures (Rutherford, BA 1983).

The issue of corporate governance is thereby replete with complicated issues concerning ideal institutional mechanisms, effective monitoring and the balancing of competing interests of stakeholders (both internal and external to the corporate governance structure) (Williamson 2005). Today, “corporate governance is complex and mosaic, consisting of laws, regulations, politics, public institutions, professional associations and code of ethics” (Babic 2003, p. 1). Governance explains more than the board processes and procedures which includes relationships between the boards, management, shareholders and other stakeholders such as employees and the community (Bain & Band 1996; Chowdary 2003). Corporate governance comprises several elements including government, capital structures, labour market, organisation along with their regulatory mechanisms and the processes that connect the structures with agents, including management control and accountability, rules, regulations, laws and institutionalized procedures, self regulatory arrangements and norms (Alawattage & Wickramasinghe 2004; OECD 2004).

According to Sir Adrian Cadbury (2000) the corporate governance framework is there to encourage the efficient use of resources and equally to require accountability for the stewardship of those resources to stakeholders. The aim is to align as nearly as possible the

interests of individuals, corporations and society. “The corporate governance framework should be developed with a view to its impact on overall economic performance” (OECD 2004, p. 17). The OECD guidelines further emphasized that “The corporate governance framework should recognise the rights of stakeholders established by law or through mutual agreements and encourage active co-operation between corporations and stakeholders” (OECD 2004, p. 21).

2.2.1 Definitions of Corporate Governance

Corporate governance definitions vary according to their context (Armstrong & Sweeney 2002) and the perspectives of different researchers (Roche 2005). It is not easy to define corporate governance due to the perpetually expanding boundaries of the subject (Roche 2005). ‘Corporate governance’ has no single accepted definition. It is generally understood to “encompass how an organisation is managed, its corporate and other structures, its culture, its policies and strategies, and the ways in which it deals with its various stakeholders” (Barrett 2002, p. 2). Some definitions addressed corporate governance as a system while others focus on the framework.

According to the definition of the OECD, corporate governance is the system by which business corporations are directed and controlled (OECD 1999, 2004, 2006). The *OECD Principles of Corporate Governance* states that:

Corporate governance involves a set of relationships between a company’s management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined. (OECD 2004, p. 11)

ASX Corporate Governance Council has defined corporate governance as:

... the framework of rules, relationships, systems and processes within and by which authority is exercised and controlled in corporations’. It encompasses the mechanisms by which companies, and those in control, are held to account. Corporate governance influences how the objectives of the company are set and achieved, how risk is monitored and assessed, and how the performance is optimized. (ASX Corporate Governance Council 2007, p. 3)

A broader definition of the corporate governance which focused on the stakeholder approach: was presented by the ‘corporate governance *guru*’, Sir Adrian Cadbury:

Corporate governance is concerned with holding the balance between economic and social goals, and between individual and communal goals. The governance framework is there to encourage efficient use of resources and equally to require accountability for the stewardship of those resources. The aim is to align nearly as possible the interest of individuals, corporations and society. The incentive to corporations is to achieve their corporate aims and to attract investment. The incentive for the state is to strengthen their economies and discourage fraud and mismanagement. (Cadbury 2000, p. 7)

Similarly, Clarke (2007) defined corporate governance as “balancing complex interests in the pursuit of value creation for the benefit of a wide constituency”, which also implied that focusing on the wider stakeholder interest leading to the ultimate goal of business is socially and environmentally sustainable.

The ASX Corporate Governance Council states that “effective corporate governance structures encourage ... to create value, through entrepreneurialism, innovation, development and exploration, and provide accountability and control systems commensurate with the risks involved” (ASX Corporate Governance Council 2007, p. 3). Although universities are statutory bodies their operations involve budgets larger than many listed corporations and, as introduction of the Protocols, indicates definitions and practices of corporate governance apply to universities.

2.2.2 Emergence of Governance in the Public Sector

Corporate governance emerged in the private sector. Adoption in public institutions in Australia followed in the 1990s (Barrett 2002) and rest of the world. The term governance has gained great usage in contemporary public administration. Many theorists in the field believe that the term governance is a concept that guides administrators as administrative practices shift from the bureaucratic state to what is called the “hollow state” (United Nations Economic and Social Council 2006, p. 2), whilst Osborne and Gaebler (1992) and Osborne (2006) called “third-party government”. According to Frederickson and Smith (2003):

Governance refers to the inter-institutional relations in the context of the decline of sovereignty, the decreasing importance of jurisdictional borders and a general institutional fragmentation and with governance approach the public sector became less bureaucratic, less hierarchical and less reliant on central authority to mandate action. Accountability for

conducting the public's business is increasingly about performance rather than discharging a specific policy goal within the confines of the law. (United Nations Economic and Social Council 2006, p. 2)

Governance in the public sector, same as the private sector (Barrett 2004), involves three inter-related conceptual issues and components: the structure of the oversight committees or governing bodies, ownership composition in private sector and the funding agencies in the public sector and accountability mechanisms (Furubotn & Richter 1991). University governance issues also focus on the structure of the governing board of the university, 'university council' (Dawkins, JS 1988; Edwards 2000; Nelson 2003b), funding agencies as principals and regulatory bodies (Fielden 2007) and accountability mechanisms (Coaldrake, Stedman & Little 2003). While these conceptual issues and components are analysed discretely, it is important to recognise that effective corporate governance necessitates not just adoption of each component, but their effective integration (Barrett 2002). In other words, effective corporate governance necessitates governing bodies that are not just transparently structured, but which have appropriate accountability mechanisms aligned with the expectations of principals (Barrett 2002), which results in governing boards to act in the best interests of stakeholders (Barrett 2002; Furubotn & Richter 1991), and so as in university councils.

The structure of oversight committees refers to the composition and organisation of units charged with managing an organisation. Oversight committees is a broad generic term (Furubotn & Richter 1991) and incorporates managerial bodies, such as board of directors in the private sector, and the council as the governing board in the university sector (Nelson 2003b). The function of an oversight committee is to exercise defined authority in the interests of stakeholders. As the Australian National Audit Office (Barrett 2002, 2004) observes, oversight committees in the context of corporate governance are responsible for how the organisation is managed and its corporate structures, culture, policies and strategies and the way the organization deals with its various stakeholders. The concept of governance of universities as public sector agencies, encompasses the manner in which they acquit their responsibilities of stewardship by being open, accountable and prudent in decision-making, in providing policy advice, and in managing (Barrett 2004; Dawkins, JS 1988; Duckett 2004; Frederickson & Smith 2003; Meek & Wood 1997; Nelson 2003b) and in delivering programs.

The authority of oversight committees could be derived either from delegation or assumption. Delegated authority occurs when a party with recognised and formalised power, typically the power defined by civil law, such as those university councils which derive their power under the 'Act' of the each university (Nelson 2009; Swansson, Mow & Bartos 2004; Young, I 2004), provides another party with the right to act on the original party. The significance of delegated authority is that it implies, but does not guarantee, that the delegated authority will be utilised in the best interests of the original party (Williamson 1998). Delegated authority may also be used to provide other parties (whether intended or not) with supplementary powers (Barrett 2002) in accordance with the delegated authority. This typically occurs when a party that receives delegated authority is incapable, due to bounded rationality, to assume all of responsibilities consequent from that authority (Simon, HA 1964). For example, the university council may delegate strategic issues to a selected group of executive management or to a sub-committee accountable to the council such as audit committees, academic boards (Swansson, Mow & Bartos 2004), etc. The consequence of such delegated authority is that it creates an additional body within the organisation that requires governance in order to avoid abuse of authority (Deakin & Hughes 1997b; Slaughter & Leslie 1997). This means that governance mechanisms need to ensure that appropriate oversight or governance mechanisms are implemented not just too originally delegated authority, but to parties subject to such authority.

The concept of delegated authority is accompanied by assumed authority (Slaughter & Leslie 1997). Assumed authority occurs when bounded rationality prevents parties from considering how authority (and the circumstances within which such authority is exercised) may be used in all circumstances. The inability to define all possible scenarios in which authority may be exercised, means that bodies with defined authority may assume additional authority (Simon, HA 1964; Slaughter & Leslie 1997) that is necessary to achieve, or consequent to, the responsibilities granted by such authority. For example, government legislation frequently defines powers of statutory entities, yet such definitions may be deliberately vague in order to provide functional flexibility to the statutory entity as circumstances change (Slaughter & Leslie 1997). While there is an intuitive economic appeal to such logic (the transaction costs of near-completely defined authority are high), the difficulty is that authority may be assumed that is not intended by the original granters of the authority. Assumed authority may thereby undermine the interests of principles in the long term (Vickers & Yarrow 1988).The

significance of the structure of oversight committees is that it indicates the fundamental importance of defined accountability and delegation (Barrett 2004; Vickers & Yarrow 1988). In this context, defined accountability and delegation need to be supported by appropriate incentive structures, as well as by transparency in the authority's exercise. University councils as oversight committees are, by definition, intended to provide *oversight* of how authority is exercised. The difficulty, however, is that such oversight is inhibited by principal-agent problems (Vickers & Yarrow 1988).

The ownership composition or the principals of an organisation is an essential component of corporate governance (Vickers & Yarrow 1988). Ownership composition refers to the equity rights held by parties in a given organisational unit. The importance of ownership composition to governance is that ownership rights define who possesses authority over an organisation. In the absence of defined ownership rights, individuals are unable to exercise authority over an organization (Deakin & Hughes 1997b), even though the government legislation is in place, dependent on the owners of organisations obeying the law, with threats of nationalisation for non-compliance relying on a transfer of ownership from private to public hands and so on. Ownership consequently defines what authority the governance councils or oversight committees have (Hansmann 2000). Furthermore, it is the interests of principals how accountability structure and incentive mechanisms are defined and managed (Fielden 2007). Oversight committees, after all, are implemented on the assumption that they provide transaction costs advantages to owners (i.e. such committees can monitor and enforce the desired authority structure of owners at lower cost than if the owners did so themselves). The composition of oversight committees (i.e. who and how many) affects the effectiveness of corporate governance (Hansmann 2000).

2.3 Corporate Governance Principles and Best Practice

The nuances and complexities of corporate governance mean that effective or 'best practice' assumptions are difficult to apply universally. Nevertheless, there are a number of reasons and antecedents as to why best practice assumptions have arisen in the management and corporate finance literature, as well as in the corporate world.

The issue of effective corporate governance has become increasingly acute in the context of highly publicised corporate failures and scandals such as Enron, HIH Insurance and OneTel

(Harford, Mansi & Maxwell 2008; Lipton, P 2003; Steane & Christie 2001). At the centre of these failures and scandals has been a realisation by politicians and corporate regulators that espoused corporate governance systems do not necessarily reflect the actual policies, practices, structures and mechanisms adopted by organizations (Dedman 2002; Jones, I & Pollitt 2003). In other words, corporate governance mechanisms fail and there are characteristics of 'poor' corporate governance (Cadbury 1992; Deakin & Hughes 1997a) that can be gleaned from such failure. What is merely required is a closer examination of the actual functioning of corporate governance mechanisms within organizations, including government agencies (Barrett 2002).

As Botterill (2007) observed, corporate ethics and the conduct of the board are clearly disclosed in the annual reports of the corporations which collapsed in 1980s. Further given is the implication that the governing board was committed to clearly promoting and demonstrating that their business affairs and operations were being conducted legally, ethically and in accordance with the highest standards of integrity and propriety at all times. But this was a common statement in annual reports in the case of HIH Insurance. Corporate governance best practice has become increasingly important (Lipton, P 2003), because firms have an incentive to lie about the efficacy of their governance structures and it is only through the development of a clearly defined 'best way' of implementing firm governance that corporate failures and scandals may be avoided. Those major corporate failures in the 1980s resulted in the emergence of the Cadbury Code (Cadbury 1992), which recommended changes to the structures and procedures of the board in order to make the governing bodies of organizations more accountable and transparent to its stakeholders. The Cadbury Report (1992) suggested increasing the number of independent directors on the board, separation of the chairman and CEO, and the introduction of board committees such as audit, remuneration and nomination committees as best governance requirements (Chowdary 2002; Dahya, McConnell & Travlos 2002; Shivdasani, A. & Zenner 2004).

The best practice corporate governance in the education sector has become increasingly important due to political pressure (Arimoto 2004; Jongbloed, Maassen & Neave 1999). Such pressure has developed not just from social and investor anxiety arising from corporate failures and scandals, but as a consequence of economic pressures for improved operational efficiencies (Edwards & Clough 2005). This applies to public organisations which incur high social welfare transfers in the form of taxation created subsidies like universities. Political

pressure has arisen for the identification and adoption of corporate governance best practice because of the widespread acceptance of neo classical efficiencies associated with market libertarianism (Davies 2001) and the belief that social welfare outcomes can be maximised through corporate governance systems that promote the interests of stakeholders. In other words, the socio-economic context has increasingly emphasised market principles (Yang 1997) and the adoption of corporate governance mechanisms intended (or believed to) maximise the supposed benefits that the market can bring (Henkel 1997; Marginson & Considine 2000; Winter, Taylor & Sarros 2000). Partly as a consequence of this shift to neo-classical economic approaches, there has been increased incentive (Bradley et al. 2009; Winter, Taylor & Sarros 2000) on the part of agents to adopt best practice corporate governance systems (Balderston & Balderston 1995; DEEWR 2008c; Tierney 2004; Tierney & Minor 2003). This may appear contradictory in that agents would not logically wish to increase oversight over their own activities (with probable implications for required work output). However, the increased incidence of private or class action law suits against organisations (and the individuals delegated the responsibility for their management) creates an incentive for agents to improve their accountability (Tierney 2006) (i.e. the costs associated with potential legal action premised on lapse corporate governance mechanism are higher than the costs associated with governance reform) (Fama 1980; Fama & Jensen 1983a, 1983b).

Best practice corporate governance systems have been necessary in order to promote investment in the higher education sector (Nelson 2003b). The risks associated with investment, coupled with the typically large sunk costs, means that investors are wary of downside risk that is escalated by poor oversight and accountability within an organisation (Fama & Jensen 1983a, 1983b; Gietzmann & Ireland 2005). Furthermore, the failure of corporate governance will create limitations to the firm's earnings report, as well as to the frequency and content of such report (as both types depend on transparent information flow within organisations and effective accountability mechanisms (Nelson 2004, 2009; Wild 1994). As investors in private sector/funding agencies are reluctant to invest in institutions that have poor governance system (vis-à-vis comparable firms in a given industry), institutions have sought to copy perceived best practice in order to secure necessary investment. In turn, funding agencies have exercised greater monitoring of organisations that have sought to improve their governance (Nelson 2009), thus creating even more incentives

for the firm to improve governance processes so that they are in-line with universal expectations.

Further, best practice corporate governance has been necessary in order for the institution (firm) to identify appropriate governance mechanisms (Wild 1994), both within particular industries and across the economy as a whole. The development of best practice governance has thereby been essentially to promoting adoption of such governance standards by individual institutions (ANAO 2003).

Best practice assumptions have arisen in the management and corporate finance literatures due to the above reasons and characteristics of best practice corporate governance are as follows.

2.3.1 Composition of Best Practice Corporate Governance Systems

Best practice corporate governance systems have been defined by a number of international agencies. The OECD (Gordon 2001; OECD 2004, 2006) and Australian Stock Exchange (ASX Corporate Governance Council 2003, 2007), outlined a number of guidelines and principles for corporate governance, including:

- an effective board composition and size, including a majority of board members being independent with no one person concurrently holding the roles of chairperson and chief executive;
- recognise and publish the respective roles and responsibilities of board and management;
- establishment of a code of conduct applicable to all members of the organisation, but centred on the board of directors and executive management;
- ensure independent verification and assessment of financial reports and earnings forecasts;
- public reporting should be timely and balanced;
- design and disclose a communications strategy to promote effective communication with stakeholders;
- establish sound risk management principles;
- review and actively encourage enhanced board and executive management performance, linked to disclosure and reporting requirements;

- remunerate fairly and responsibly; and
- recognise the legitimate interests of stakeholders.

An analysis of sources indicates that the above components integrated and holistically managed, comprise best practice corporate governance systems.

Effective corporate governance requires the clearly formalised separation of executive and accountability functions within the organisation (Baliga, Moyer & Rao 1996). Both organisations consider this separation necessary as executive authority cannot be effectively accountable unless the reporting requirements of the executive are to an independent body. This body needs to be comprised of multiple individuals who are, at the majority, not responsible for the executive functions of the organization. The consequence is that organisations should comprise oversight committees with individuals who are separate from the executive and who are accountable to principals (appointment of ‘independent’ directors and separation of audit committees from the board) (Bhagat & Black 2001).

Separation of executive authority and accountability is necessary in order to ensure that the principal-agent problem associated with the appointment of executive authority is not extensive (Westphal 1998). In other words, there needs to be robust accountability of both executive authority and of the individuals responsible for accounting for this authority (Becht et al. 2008). This point has been noted in the context of university governance (Johnson 1981). The ultimate responsibility for the university rests in its council as the governing board. Councils cannot delegate their fiduciary responsibility for the academic integrity and financial viability of the institution (Bastedo 2006). Traditionally, and for practical reasons, boards delegate some kinds of authority to other stakeholders with the implicit and sometime explicit condition that the board reserves the right to question, challenge and occasionally override decisions or proposals it judges to be inconsistent with the mission, integrity or financial position of the institution.(Payette 2001). For example, the delegation of authority to the administration and faculty in adding, reducing or discontinuing academic programs is made with the understanding that the governing body still retains the ultimate responsibility of the decision (Payette 2001). Furthermore, the size of the university council was reduced from 35 members to a maximum of 22 members, and the majority of them should be independent (Dawkins, JS 1988; Duckett 2004; Nelson 2003b; Osborne, M & Bell 2009).

The best practice governance systems rely on the appointment and management of individuals who are independent in terms of their accountability. This independence is necessary in order to establish, monitor and reward or sanction individual performance. In the absence of independence, transparency in performance is diminished (Holm & Schoeler 2010; Price, Roman & Rountree 2009), and hence accountability of individuals is compromised. It is only through accurate measurement of individual performance that individual responsibility to principals may be meaningfully assessed and reward/punished (Aitkin 1998; O'Meara & Petzall 2005). Failure to implement accurate measures also means that appropriate incentive mechanisms cannot be identified (Australian Vice-Chancellors' Committee 2003). The consequence is that institutions need to ensure that accountability systems are transparent, best practice is observed (Higgs 2002) and the right mix of personalities and expertise are presented. The fundamental requirement of every board is access to good information (Roberts, McNulty & Stiles 2005). According to the National Governance Protocols for higher education (2003b) and the legislative framework of the university (Act of the individual university), the Vice-Chancellor should be appointed as the CEO and the university council should evaluate the performance of the VC and the Chancellor of the university should chair the university council (Duckett 2004; Nelson 2003b).

Transparency centres on clearly defined roles and responsibilities (Barrett 2002), particularly of executive management. These roles and responsibilities should be linked to clearly defined performance management systems (i.e. rewards and sanctions) (Ingraham, Selden & Moynihan 2000) which should be geared toward inducing agents to maximise their behaviour in the best interests of principals (as well as wider stakeholders). Transparency in roles and responsibilities is necessary to ensure agents are appropriately accountable. Heath and Norman (2004) explain this in the context of corporatized firms: the ambiguity of objectives provides the managers further discretion to pursue their own interests. Transparency depends, however, on principals (and delegated agents) being able (and willing) to overcome the transaction costs associated with developing such robust systems (Heath & Norman 2004). Effective corporate governance requires regular and transparent reporting by agents. This reporting should occur not just to principals, but within the organisation itself (e.g. accountability of managers to committees or sub-committees) (Bushman & Smith 2001).

While this criterion appears relatively straightforward, meaningful reporting involves a number of aspects: regularity, transparency, content stipulations, links to performance management systems, and approvals. Regularity in reporting by agents is necessary as such mandated regulatory promotes responsibility and accountability (Bushman & Smith 2001, 2003). Transparency refers to report content that is easily understood, is not hampered by frivolous or irrelevant data, and provides full-disclosure of all known information used to compile report content and which may affect future organisational performance (Braadbaart 2007). Transparency thereby goes hand-in-hand with effective governance. Regular and transparent corporate reporting must also be supported by stipulated content. In other words, the structure of reports needs to be known, and unchangeable (Bushman & Smith 2001). This is necessary in order to ensure that necessary details are known by principals, which in turn promotes accountability and desired performance. Content stipulations should also be linked to performance management systems (Medori & Steeple 2000) (e.g. key performance benchmarks should be compared against actual performance). The intention is to clearly articulate and formulate the link between responsibility and accountability, with rewards being closely linked to actual performance (Kaplan 1994) (hence providing incentives on the part of agents to work in the interests of principals). Finally, reports need to be subject to scrutiny and approval before being accepted as true and factual (Braadbaart 2007). Universities as statutory bodies have to obey the public sector reporting practices and other transparency measures required by the State or Territories they operate (Considine, D 2004; Fielden 2007; Osborne, M & Bell 2009)

The best practice governance systems require organisations to ensure that policies and practices that promote desired behaviour are implemented (Braadbaart 2007). This component centres on the development and implementation of guidelines and practice manuals within organizations. The intention of such guidelines and practice manuals is to promote values, norms and assumptions, as well as behaviours, within the organisation that promote responsibility, accountability and transparency (Braadbaart 2007). Furthermore, guidelines and practice manuals should assist the organisation to foster a culture that eschews avoidance of responsibility, accountability and transparency. This point is noted by the Australian Stock Exchange and its adoption of Australian Standard 8000 Section 2.4.2, which states that:

The board and senior management should strive to achieve a culture of good governance within the entity and resist the temptation to merely meet legal requirements. The entity's

governance policies and practices should be publicised in such a way as to be widely understood by everyone in the entity and become a normal part of everyday organisational practice. The existence of good governance principles will enhance the public reputation of an entity. (Australian Standards 2003, p. 12)

Effective corporate governance requires organisations to appropriately consider and manage their risks (Standards Australia 2003). Risk refers to the variability of potential outcomes and is typically associated with the exercise of one option over another (an approach neatly encapsulated within option pricing theory). If organisations do not implement systems that promote accountability and transparency, then they will not be able to identify and appropriately manage their risk profiles. Inappropriate management of risk (particularly in the absence of effective reporting) means that there is a disjoint between the expectations of principals with the costs they may incur as a consequence of pursuing those expectations. The significance is that firms need to ensure that they have implemented internal structures to ensure that risks are being identified and managed (ASX Corporate Governance Council 2003, 2007; Nelson 2004; Ryan & Ng 2000). This requirement was emphasised in the National Governance Protocols (Nelson 2003b).

Further, best practice governance systems require institutions to ensure that accountability systems promote their own financial viability (DEEWR 2008b; Nelson 2009). This ability is necessary to best practice corporate governance because corporate governance is not an end but a means to promoting principal interests (Fama 1980). Principal interests cannot be met unless the institution is financially viable (Bradley et al. 2009; CalPERS 2009; DEEWR 2008c). In turn financial viability depends on the organisation formulating and implementing strategies that are reasonably expected to maximise income and minimise expenditure (with expenditure focused on investments that will maximise income in the long term). Financial viability is thereby both a consequence of transparency and accountability and a necessity to ensuring transparency and accountability over time. This requirement is emphasised in the National Governance Protocols (Nelson 2003b) which state that every university should have a clear mission statement and a strategic plan to achieve the clearly stated objectives in the respective university's Act (Duckett 2004; Fielden 2007; Osborne, M & Bell 2009).

Finally, best practice governance systems require organisations to ensure that they (including the individuals who comprise the membership of an organisation) are aware of, and comply

with, the legal obligations placed upon them. This is in many ways an axiomatic point but, as Lipton's (2003) observation indicates, legal compliance may be difficult to ensure. Legal compliance requires governing bodies to be dedicated (Tomasic, Pentony & Bottomley 2003) and committed to ensuring such compliance throughout the organisation (through guidelines and practice manuals) (Australian Vice-Chancellors' Committee 2003; Gayle, Tewarie & White 2003). Lipton (2003) observes in regard to the recent collapse of HHH, that there is a danger that corporate governance will be recited as a mantra, without regard to its real importance. If that happens, the tendency will be for those who pay regard to it to develop a 'tick in the box' mentality (Barrett 2002). The expression 'corporate governance' embraces not only the models or systems themselves but also the practices by which that exercise and control is in fact effected (Barrett 2002; Salter & Tapper 2002). According to the national governance protocols (Nelson 2003b), council members should be given the opportunity for proper and continued professional development and if they require any legal assistance and advice in exercising their fiduciary duty as council members, the university has the legislative obligation to provide or arrange these services (Considine, D 2004; Osborne, M & Bell 2009).

2.4 Theories of Corporate Governance

Theoretical perspectives relevant to the study of governance and performance of universities are based on the governance structures, processes and practices that affect the performance of universities.

The following Section reviews the theoretical perspectives of a university council's accountability that is relevant for this study, drawn on agency theory, stewardship theory and stakeholder theory as main corporate governance theories and institutional theory, legitimacy theory, resource dependency theory and neoclassical theory as organisational and economic theories.

2.4.1 Agency Theory

Much of the research into corporate governance derives from agency theory, which posits that corporate governance is necessary in order to ensure that the principal-agent problem is mitigated (Berle & Means 1932; Donaldson, L. & Davis 1991; Eisenhardt 1989). An 'agent' is someone who performs work on behalf of another individual (i.e. the principal). The

difficulty that arises from the principal-agent relationship is that it is not possible for principals to contractually define everything that the agent should do in every conceivable situation (ANAO 2006; Donaldson, L. & Davis 1991). The 'ideal' or 'complete' contract is impossible due to bounded rationality. The problems arising from the principal-agent relationship may be exacerbated by three factors: hidden information, sunk costs and opportunism (Fama & Jensen 1983b).

Hidden information occurs when agents possess knowledge that the principal is unaware of (Fama et al. 1969), and the agent has an incentive to conceal this knowledge from the principal, *ceteris paribus*. The significance of hidden information is that the agent will be able to 'shirk' (i.e. minimise) efforts to the detriment of the principal (Fama 1980). Overcoming such hidden information necessitates both the promotion of transparency (which in itself incurs transaction costs) and the development of incentive mechanisms that encourage the agent to reveal their hidden knowledge.

Sunk cost refers to the interests of agents to maximise their own benefits at the expense of principals. The notion is that humans are self interested and not willing to sacrifice their personal interests for the best interests of the others (Daily, Dalton & Cannella Jr 2003). Overcoming opportunism is difficult (Fama & Jensen 1983a) as it is premised on the very same conception of human behaviour that guides assumptions of organisational performance and the benefits of market guided corporate governance systems: the self-interested behaviour of individuals. Nevertheless, opportunism can be minimised through transparent reporting and observation (i.e. accountability) (Fama & Jensen 1983a). The implications of agency theory for why corporate governance best practice systems may provide productivity gains and competitive advantages to organisations are thus centred on the assumption that corporate governance is necessary to ensure agent behaviour is geared toward the interests of principals (Fama & Jensen 1983a, 1983b).

The role of the governing board and the agency problem has been examined in a large body of literature (Baysinger & Butler 1985; Baysinger & Hoskisson 1990; Daily & Dalton 1994; de Andrés-Alonso, Azofra-Palenzuela & Romero-Merino 2009; Fama & Jensen 1983a; Kiel & Nicholson 2003), and those researchers examined the impact of board structure as the monitoring mechanism to mitigate the principal agent problem which is the main focus of agency theory.

2.4.2 Stewardship Theory

In contrast to agency theory, stewardship theory assumes managers are good stewards who will act in the best interest of the owners. Donaldson and Davis (1991) and Davis, Schoorman and Donaldson (1997) present a different model of governance. The fundamentals of stewardship theory are based on social psychology, which focuses on the behaviour of executives who believe their duty is to safeguard the interest of the principal (Davis, Schoorman & Donaldson 1997). In a similar vein to the agency approach, stewardship theory posits that the corporate governance of an organisation is necessary to ensure that the interests of stakeholders and the long term survival of the organization (Davis, Schoorman & Donaldson 1997; Donaldson, L. & Davis 1991). The steward's behaviour is pro-organizational and collectivistic, and has higher utility than individualistic self-serving behaviour. According to Davis, Schoorman and Donaldson, (1997) the steward's behaviour will not deviate from the interest of the organization because the steward seeks to optimise the objectives of the organization where steward's utilities are also maximised as organisational success is very important to achieve the mission of the stewards (Smallman 2004).

According to stewardship theory, corporate governance is necessary to ensuring that the organisation is headed in 'the right direction, with this direction referring to the interests of stakeholders,(Donaldson, T & Preston 1995). As Saltman et al. (2000) argued, stewardship theory revolves around the notion that leaders can instil a common set of values and understanding within an organization and that stewardship has the capacity to subsume and incorporate concerns about efficiency into a more socially responsible, normative framework. Stewardship theory finds a strong relationship between stewards and the success or the performance of the firm and therefore the stewards protect the organization and maximise the performance (Davis, Schoorman & Donaldson 1997), and try to satisfy most of the stakeholder groups in an organization.

Stewardship theory makes three key assumptions in regard to corporate governance and organisational survival. According to Davis et al. (1997), corporate governance should revolve around the capacity of leading individuals within the organisation to manage the organisation in a manner that secures its long term viability. This leadership role necessitates acceptance of management by members of an organisation (Davis, Schoorman & Donaldson 1997). Further, they argued that the leadership of an organisation should be a function of the

interests of principals, with principals defined more loosely to include (internal and external) stakeholders. The implication of this contention is that principals, who may not possess direct ownership rights over a firm (Donaldson, L. & Davis 1991), are those who have a direct interest in the organisation (e.g. such as employees of the organisation who rely on the organisation for regular wages). Finally, the long term viability of the organisation requires its leaders to implement strategies and practices that provide value-added benefits to the organisation.

These three assumptions have been duly noted in regard to university governance. The governing board of an institution of higher education, entrusts the conduct of administration to the administration officers - the president and the deans - and the conduct of teaching and research to the faculty (Johns 1981) while maintaining a general overview. The council plays a central role in relating the likely needs of the future to predictable resources, has the responsibility for husbanding the endowment (Marginson & Considine 2000), is responsible for obtaining needed capital and operating funds, and in the broadest sense of the term paying attention to personnel policy (Marginson & Considine 2000; Swansson, Mow & Bartos 2004). The board should undertake appropriate self-limitation. In order to fulfil these duties, the board should be aided by, and even may insist upon, the development of long term planning by the administration and faculty (Lazerson 1997).

When ignorance or ill will threatens the whole institution or any part of the institution, it is the responsibility of the governing board to provide the support. In grave crises it will be expected to serve as a champion. (AAUP 1977, p. 32)

Although the action to be taken by it will usually be on behalf of the president, the faculty or the student body, the board should make clear that the protection it offers to an individual or a group is, in fact, a fundamental defence of the vested interests of society in the educational institution (Lazerson 1997).

According to stewardship theory, the position of the CEO and Chairman is held by a single person and the power to determine strategy and the future of the organization is the responsibility of a single person. According to Davis, Schoorman and Donaldson (1997), the focus of stewardship theory is on structures that facilitate and empower rather than monitor and control, and thus this theory has a relaxed view of the separation of the role of chairman and CEO which supports appointment of the CEO as the chair of the governing board with

dual leadership and a majority of specialist executive directors rather than non-executive directors (Clarke 2004, 2007). The Council structure of the Australian universities does not agree with the view of the stewardship theory, as it has the split roles of CEO and the chair of the council and the majority of independent members in the council (Nelson 2003b; O'Meara & Petzall 2007; Trakman 2008).

2.4.3 Stakeholder Theory

The consequence is that corporate governance should be long term in focus and concerned with underlying value creation, rather than comparatively short-term financial accountability indicators. Stakeholder theory endeavours to incorporate elements of agency and stewardship theories (Donaldson, L. & Davis 1991). The theory represents recognition by management scholars that “current approaches to understanding the business environment fail to take account of a wide range of groups who can affect or are affected by the corporation, its stakeholders” (Freeman, 1984, p. 1). The contention of stakeholder theory is that the long term commercial and strategic performance of organisations, particularly corporatized firms, is dependent on its relationship with stakeholders. “... to maximise share holders value you should pay attention to key stakeholders”(Freeman, 1999, p. 233). ‘Stakeholders’ is a broad term that generally refers to ‘any group or individual who can affect or is affected by the accomplishment of that organization’s goals’ (Davis, Schoorman & Donaldson 1997; Donaldson, L. & Davis 1991; Fama 1980; Freeman, 1984). However, stakeholders must be parties that have (in)direct interests in the activities and performance of an organisation (e.g. employees, communities in which the organisation operates and shareholders) (Donaldson, T & Preston 1995). As Donaldson and Preston (1995) contended, the ‘stake’ denoted by the term ‘stakeholder’ is understood to impose normative obligations and hence a stake is identified as ‘an interest’ for which a valid normative claim can be advanced (Donaldson, T & Preston 1995). In other words, stakeholders have an obligation from, and on, the organisation that may be identifiable, justified and reasonably measured. It can be seen that stakeholder theory is an extension of the agency perspective, where responsibility of the governing body is increased from shareholders to other stakeholders’ interests (Smallman 2004).

The significance of stakeholder theory is that it recognises that organisations are not controlled or affected purely by those that exercise ownership rights in the organisation. As

Davis, Schoorman and Donaldson (1995) and Freeman et al. (2004) argued: the notion that shareholders govern the corporation is largely a fiction; typically, executives have the greatest power'. In this sense, Donaldson, T & Preston (1995) contend that the conventional model of the corporation, in both legal and managerial forms, has failed to discipline 'self-serving' managerial behaviour (Agrawal & Knoeber 1996; Gunasekerage & Reed 2008). The fundamental consequence of stakeholder theory for corporate governance is that it necessitates governance structures that promote alignment not just between agents and principals, but between agents, principals and parties who have broader, but reasonable, interests in the organisation. It is precisely because of this multifaceted approach to understanding corporate governance: that corporate governance should be responsive to multiple, competing interests, which provide intellectual rigour to a stakeholder framework. For stakeholder theory, corporate governance is an intuitive and managerially rationale requirement for robust organisational performance (Donaldson, T & Preston 1995). This point is succinctly noted by Freeman, Wicks and Parmar (2004, p. 365):

... stakeholder theory does a better job of explaining and directing managerial behaviour in markets. Stakeholder theory claims that whatever the ultimate aim of the corporation or other form of business activity, managers and entrepreneurs must take into account the legitimate interests of those groups and individuals who can affect (or be affected by) their activities.

It is quite natural to suggest that the very idea of value creation and trade is intimately connected to the idea of creating value for stakeholders. Business is about putting together a deal so that suppliers, customers, employees, communities, managers and shareholders all win continuously over time. In short, at some level, stakeholder interests have to be joint – they must be travelling in the same direction – or else there will be exist, and a new collaboration formed (Freeman, 1984). Stakeholder theory is inherently managerial (Freeman, Wicks & Parmar 2004). This very same consequence has, nevertheless, resulted in stakeholder approaches to corporate governance that are diverse and complicated, with such diversity and complication arising out of the need to develop theoretical frameworks that account for varying stakeholder interests and consequent governance approaches.

Despite this diversity and complication, stakeholder theory relies on three central assumptions. Assumptions about stakeholder behaviours are important because they influence the types of governance structures adopted (particularly incentive mechanisms) (Freeman, Wicks & Parmar 2004). First, stakeholders are fundamental to the long term viability of

organisations. The consequence of this assumption is that corporate governance needs to emphasise performance outcomes that are beneficial to all stakeholder groups, which tends to result in incentive structures and reporting requirements that promote non-financial outcomes, such as ‘triple bottom line accounting.’ Second, stakeholder theory recognises that meeting stakeholder interests is difficult because there are a wide variety of stakeholders who hold different values and expectations in regard to the organisation. Underlying stakeholder approaches are thus important assumptions about stakeholder behaviour (Donaldson, T & Preston 1995), particularly managerial behaviour. Behaviours may be characterised as being normative (i.e. value driven), instrumental (i.e. output driven) or somewhat unpredictable (Donaldson, T & Preston 1995; Freeman, 2010; Freeman, Wicks & Parmar 2004). Third, Stakeholder theory assumes that stakeholder exercise different degrees and types of power. Differences in stakeholder power arise from varying forms of legitimacy such as formalized authority in the form of laws granted to particular stakeholders.

According to Mintzberg (1985), power is derived through the control of resources, technical skill, body of knowledge, legal prerogatives and access to those who can rely on the previous sources of power. Stakeholders who thus have control over greater resources, vis-à-vis other stakeholders, may thus be able to exercise disproportionate influence and power over an organisation and hence its corporate governance structure. However, just power needs to be legitimate if stakeholders are to effectively or appropriately be considered by organisational processes (e.g. guidelines and practice manuals). As Mintzberg and Waters (1985) recognise, legitimacy is a “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed systems of norms, values, beliefs, and definitions”, and such legitimacy needs to be validated and sustained over time for stakeholders to have influence over corporate governance (Donaldson, L 1990). According to Gomes & Novaes (2005), the implication of legitimacy is that stakeholders may be broadly classified into two key groups: Primary stakeholders are those who have formal and economical relationships with the organization. Secondary stakeholders are those agents that are not directly related to the organization despite being able to influence and be influenced by its operation and outcomes.

According to Smallman (2004), the main criticism of stakeholder theory is focusing on identifying the problem of who constitutes genuine stakeholders. Another argument is that

meeting stakeholders' interests also leads to corruption, as it offers agents the opportunity to divert the wealth away from shareholders to others (Smallman 2004).

The three central theories to corporate governance (i.e. agency, stewardship and stakeholder theories) subsequently recognise that corporate governance involves a number of inter-related and mutually supportive components. While differences exist between the theories, it is apparent that all three emphasise the need for corporate governance to centre on creating transparency, responsibility and accountability (Barrett 2002; Clarke 2004; Kiel & Nicholson 2003). All these theories are fundamentally concerned with ensuring that corporate governance promotes the long term viability of organisations through the enforcement of perceived 'best practice' methods (Clarke 2004; Nelson 2009; Osborne, M & Bell 2009).

2.4.4 Neoclassical Theory

According to Jacobson and Andréosso-O'Callaghan (1996), neoclassical theory suggests that firms/organizations operate in the perfect market with no market imperfection and the main objective of the firm is to maximize profits. According to this theory, the cost incurred by the firm is only limited to the production process and the firms try to equalise the marginal revenue and marginal cost to maximise profits, and demand and supply determines (Williamson 2000, 2005) the requirement and distribution of resources. According to Chizema and Buck (2006), market-based theorists argue that organizations select their management structures and strategies according to a rational economic cost-benefit calculus, and they believe that it is the technically and economically optimal way of measuring costs. Williamson (2000, p. 597) asserts as an economic institutionalist that "...insular societies often take measures to protect themselves against 'alien values'...", isolated examples of the survival of "alien" governance reforms have been found. Williamson further observed that:

... occupations (following World War II), perceived threats (the Meiji Restoration), breakdowns (Eastern Europe and the former Soviet Union), a military coup (Chile) or a financial crisis (New Zealand) – will, however, occasionally produce a sharp break from established procedures. Rare windows of opportunity to effect broad reforms are thereby opened. (2005, p. 598).

2.4.5 Institutional Theory

Applications of institutional theory in governance have been advocated in business literature (Aldridge 2004; Greenwood & Hinings 1996; Kondra & Hinings 1998). According to Weir and McKnight (2002), institutional corporate governance consists of external governance mechanisms and internal governance mechanisms and linked this concept with institutional theory. Institutional theory has usually been associated with path dependence and inertia. In international corporate governance, it has been used as an explanation for the supposed continued divergence of national systems (Chizema & Buck 2006; Chizema & Kim 2010; Weir, Laing & McKnight 2002). Recent developments in institutional theory, however, identify the circumstances in which change is likely to occur (Chizema & Buck 2006). According to Ritzer (2004), institutional theory attends to explain the deeper and more resilient aspects of social structure. This theory considers the “processes by which structures, including schemas, rules, norms and routines, become established as authoritative guidelines for social behaviour” (Ritzer 2004, p. 408). It inquires into how these elements are created, diffused, adopted and adapted over space and time, and how they fall into decline and disuse. Accounting scholars using institutional theories challenge ‘economics-inclined colleagues’ beliefs that organisations are bounded, relatively autonomous and economically rational (Aldridge 2004). Basically, institutional theory asserts that organisational structures and procedures are adopted because important external institutions prefer them. Institutional networks are not merely control and co-ordinating mechanisms for economic transactions, they socially construct rules and beliefs, exert social pressures for conformity, and are founts of legitimacy and hence rewards (Major & Hopper 2004, p. 3). Although the ostensible subject is stability and order in social life, (stakeholders)” ... of institutions must perforce attend not just to consensus and conformity but to conflict and change in social structures” (Ritzer 2004, p. 409). Early researchers (Dacin, Goodstein & Scott 2002; Powell 2003; Scott 2005; Scott & Christensen 1995) resolved the conundrum between institutional and market forces by restricting its claims to governmental and non-for profit organizations and they argued that organisations were dichotomised as facing either institutional or technical (efficiency) demands (Powell 2003; Scott & Meyer 1994).

2.4.6 Resource Dependency Theory

According to the resource dependency theory, directors bring resources such as information, skills, key constituents (suppliers, buyers, public policy decision makers, social groups) and

legitimacy that will reduce uncertainty which in turn reduces the transaction cost (Kesner & Johnson 1990; Lorsch & MacIver 1989; Pfeffer & Salancik 2003) and the potential of linking the organization with the external networks. This provides opportunity to gather more information and even skills in various specialities (Pfeffer & Salancik 2003). Lawrence and Lorsch (1967) linked the resource dependency theory as an environmental influence on corporate governance and they argued that successful organizations possess internal structures that match external environmental demand. Pfeffer (1972) confirmed this argument and explained that board size and its composition is a rational organisational response to the conditions of the external environment and he further argued that external independent directors may serve to connect the external resources with the firm to overcome uncertainty, which is very important for long term sustainability. This was emphasised in the university governance which explains that a majority of external members could bring the most needed business skill into university governance (Department of Education and Training (State of Victoria) 2002; Marginson 2006; Nelson 2003b). Further resource dependency theory was supported through appointment of external members to the council as a way of obtaining multiple skills and because of their opportunities to gather information and networking in various ways.

2.4.7 Legitimacy Theory

According to Deegan (2004), legitimacy theory is based on the notion that there is a contract between the society and an organisation. The organization is given permission by the society to carry out its operations and in return the organization is accountable to the society for how, what and when to operate. As stated by Suchman (1995, p. 574):

Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions.

The emphasis of legitimacy theory is that an organization must consider the rights of the public at large, not merely the rights of the investors. Failure to comply with societal expectations may result in sanctions being imposed in the form of restrictions on operations, resources and demand for its products (Deegan 2004). Although we can describe a firm as being legitimate, and conceive of 'amounts' of legitimacy, it becomes a very subjective exercise to try and directly measure legitimacy (Tilling 2004). Hybels (1995) argued that

good models in legitimacy theory must examine the relevant stakeholders, and how “Each influences the flow of resources crucial to the organizations’ establishment, growth and survival, either through direct control or by the communication of good will” (Hybels 1995, p. 244). Hybels (1995) identified the state, the public, the financial community and the media as stakeholders, and the state controls or influences the organization through contracts, grants, legislation and tax, whilst the public, as customers and labour providers, can influence the organization. The financial community provides investments and the media sustainably influences the decisions of stakeholders (Tilling 2004). There may be a point where an organisation enters in to new markets or changes its strategic focus relating to its current market. This can give rise to a need to extend legitimacy which is “apt to be intense and proactive as management attempts to win the confidence and support of wary potential constituents” (Ashforth & Gibbs 1990, p. 180). Universities as statutory agencies funded by the Government through tax payers’ money (Osborne, M & Bell 2009), have the legitimate responsibility to fulfil the expectations of the society (Ashforth & Gibbs 1990; Austin 1998; Gibbs 2001). Legitimacy theory influences corporate disclosures within the accounting literature (Tilling 2004), which is useful to obtain information necessary for an informed - decision making by stakeholders (Bradley et al. 2009; Universities Australia 2008) in addition to fulfilling the statutory reporting requirements (Nelson 2003b; Osborne, M & Bell 2009). Hence, this provides the insight of the influence of regulatory agencies and external stakeholders influence on the internal governance mechanisms (Weir, Laing & McKnight 2002).

The chapter now turns to exploring how corporate governance has been reflected in policies and practices in universities globally, but with particular focus on Australia. This is followed by a critical analysis of the implications of corporate governance on university performance (both internationally and within Australia).

2.5 University Governance: Policies and Practices

Despite the traditional appeal of the collegial approach, universities have increasingly shifted toward adoption of a managerial approach to corporate governance (Middlehurst 2004; Reed 2002; Shattock 2008a). Corporate governance in general, as well as its specific application to the university sector, has been the subject of extended academic examination (Dawkins, JS 1988; Edwards 2003; Nelson 2003a; Reed 2002; Steane 2001). More contentious is the

manner and form of corporate governance necessary to make a university not just functional, but internationally competitive. This matter of contention has only increased in significance as universities have been subject to increasing restrictions on public funding (Marginson & Considine 2000) and escalating competition from domestic and international higher education providers (Leontiades 2007; Tierney 2004). The issue of university governance is thus neither self-evident nor limited to the reform-minded experiments occurring in Australia (Coaldrake, Stedman & Little 2003; Maassen & Olsen 2007; Nelson 2004).

The corporate governance definition given in the Uhrig Report is the most suitable definition to use for university governance as it addressed the direction and control of entities:

Corporate governance encompasses the arrangements by which the power of those in control of the strategy and direction of an entity is both delegated and limited to enhance prospects for the entity's long term success, taking into account risk and the environment in which it is operating. While this definition is employed for the review it is noted that there is no universally accepted definition of corporate governance, or agreement on the structures and practices that are required to achieve good governance. (Uhrig 2003, p. 2)

University governance is complex and incorporates a range of components. As Considine et al. (2001) observed, university governance refers to the university's structure, delegation and decision-making, planning, organisational coherence and direction. This implies the embedded organisational values and ethics, financial and administrative responsibility, and more importantly, the relationship among all these components. University governance may be classified according to two broad archetypes. On the one hand, governance may be collegial (Considine, D 2004), by which decision-making and accountability are delegated to the faculty level, decision-making is largely consensual, and faculty leaders are merely "first among equals" (Moore & Langknecht 1986). On the other hand, university governance may be managerial (Marginson & Considine 2000) (i.e. corporate) in which authority is concentrated at the university council level and faculties are accountable to executive bodies throughout the university. Such an approach is "characterised by strong executive control" and is likely to promote "the emergence of a managerial culture which is said to be at odds with traditional academic values" (Considine, D 2004; Reed 2002).

The governing body of the university has received increased external criticism from principals, mainly from governments and policy makers, which has resulted in the adoption

of an enhanced executive function for university councils (Nelson 2003b). University councils have become more focused in their management of universities, with such focus being centred on the need for universities to produce output that is in-line with government expectations (Bradley et al. 2009). This point has been succinctly noted by Shattock (2003, 2008a) in the context of United Kingdom:

Increasingly, Government has seen the governing body as the guardian of propriety in the management of university affairs and, while the responsibilities imposed do not extend the general responsibilities implied in universities' statutes or articles, the identification of governing bodies with explicit responsibilities in this way has inevitably affected the behaviour of lay governors ... and the relationship between governing bodies and the institution as a whole. (Shattock 2003, p. 238)

The shifting role of the university council has resulted in widespread adoption of particular governance policies and practices: a decreased number of external or independent members, reduction in council membership and composition, and increased accountability of council members (Reed 2002; Shattock 2003, 2008b). Universities have experienced decreasing numbers of external or independent members in their governing councils. This decline is somewhat counter-intuitive as the theoretical discussion suggests that independent or external board appointments are more likely to promote transparency, accountability and performance (Gallagher, J 1988). The decline in independent board composition may be explained by two inter-related factors. On the one hand, universities implemented greater decreases in council sizes (Considine, D 2004; Gallagher, M 2000; Reed 2002), implying that external or independent appointments continue to be made on a consistent basis, albeit approximately (see Table 2.1). On the other hand, universities have an incentive to appoint individuals who possess knowledge, skills and abilities that are directly related to the operations of the particular university (i.e. an internal appointment). Gallagher (2000) observed that universities exercising high degree of autonomy have the necessary capabilities for professional governance and competent management practices. If universities cannot themselves initiate and carry through the necessary reforms to their organisation and operations, either they will not survive in their current forms or outsiders may make decisions for them through very restrictive administrative prescriptions which may not be suitable to the autonomy of the sector. Both these factors suggest that universities have sought to balance the shift toward a managerial approach by reducing council sizes and retaining proportional

external appointments (Gallagher, M 2000). This point was noted by Peter, Lawrence & Peter (2003b) in the context of Australian universities.

Table 2.1
Australian University Council Size and Internal/External Composition (1994 and 2003)

University	Council Size		Per Cent External	
	1994	2003	1994	2003
Charles Sturt University	20	19	55	58
Macquarie University	19	19	63	63
The Australian Catholic University	29	16	62	50
Southern Cross University	18	18	67	61
University of New England	19	19	63	63
University of New South Wales	21	21	57	57
University of Newcastle	18	19	67	63
University of Sydney	22	22	59	59
University of Technology Sydney	21	21	67	62
University of Western Sydney	26	18	77	61
University of Wollongong	18	18	67	67
Central Queensland University	22	22	64	64
Griffith University	25	25	60	60
James Cook University	35	26	66	58
Queensland University of Technology	23	22	61	64
The University of Queensland	35	35	77	69
University of Southern Queensland	13	22	46	55
Australian National University	22	22	59	59
University of Canberra	22	22	68	50
Northern Territory University	21	20	67	60
University of Tasmania	24	17	54	53
La Trobe University	35	21	71	62
Deakin University	24	21	63	52
Monash University	39	21	59	67
RMIT University	34	22	71	64
Swinburne University of Technology	30	22	67	64
University of Melbourne	40	21	58	67
University of Ballarat	23	22	70	55
Victoria University	24	22	63	68
Flinders University	35	21	49	57
The University of Adelaide	35	21	54	57
University of South Australia	24	21	54	57
Curtin University of Technology	14	20	57	65
Edith Cowan University	21	21	71	71
Murdoch University	25	25	64	60
The University of Western Australia	25	21	68	57
National Average	25	21	63	60

Source: Coaldrake, Stedman, and Little (2003).

Another implication toward a managerial approach is that university governance has sought to emphasis transparency and accountability. This has occurred in two respects. In the first instance, universities have increasingly adopted practice manuals and guidelines intended to

promote accountability (Coaldrake, Stedman & Little 2003; Marginson & Considine 2000). These manuals and guidelines have, in turn, encouraged the articulation of clearly defined job roles and responsibilities (Nelson 2004), with these characteristics being necessary if accountability is to be meaningful and measurable. Universities have also sought to structure greater separation in their accountability and oversight functions, (Marginson & Considine 2000; Swansson, Mow & Bartos 2004). This separation is necessary in order to ensure that conflicts of interests are identified and that oversight committees are in themselves subject to account from various council committees.

As demonstrated in Table 2.2, universities throughout Australia have largely adopted separation of audit and financial functions, (Nelson 2003b) as well as separation of activities that manage the intangible components of university performance and product offerings such as honorary awards. This separation has been fundamental in minimizing, but not entirely eliminating (Considine, D 2004), the capacity of empowered bodies to exercise authority beyond their specified limits. Nevertheless, the data presented in Table 2.2 suggested that greater transparency and accountability is being emphasised for financial matters, with less regard for transparency and accountability for human resource issues (particularly nominations) (Considine, D 2004). According to Considine (2004), this is problematic as only 31% of universities had nomination committees in the year 2004, which might provide the capacity for nepotism and cronyism to pervade university systems – the consequence being that seemingly transparent financial or audit committees may be largely comprised of individuals who share inter-dependencies across committees and are thus unlikely to rigorously apply accountability mechanisms (Considine, D 2004).

Table 2.2
Council Committees

Council Committee	Number of Universities	Per Cent of Universities
Audit	38	97
Finance	37	95
Honorary Awards	29	74
Remuneration	18	46
Buildings and Grounds	14	36
Executive	13	33
Legislation	12	31
Nominations	12	31

Source: Considine, D (2004, p. 4).

Another implication of the shift toward a managerial approach for university governance policies and practices (Marginson & Considine 2000) is the improved diversity in senior

appointments. This has been noted by Considine (2001) in regard to council committees. Carrington et al. (2005) have cited that the Australian Vice-Chancellors Committee (2003) found that there is a wide diversity in the composition and background of Council members.

2.6 External Governance Mechanisms

External governance mechanisms refer to the components by which actors external to the direct administration or management of a university (Weir, Laing & McKnight 2002) exercise control over the performance of the university. In other words, external governance mechanisms are concerned with the elements by which principals ensure compliance of agents (Beiner & Schmid 2005; Weir, Laing & McKnight 2002) to the stated and implied objectives of principals. External governance mechanisms thereby represent obligations on the part of agents that underpin the intended objectives and performance of principals (Salter & Tapper 2002). External governance mechanisms are thus concerned with the controls and transparency imposed by parties outside the university (i.e. Commonwealth and State Government agencies (Osborne, SP 2006), (principals and stakeholders) and the implications for governance and performance of universities. According to Fielden (2007), governments as the main funding agency for publicly- funded universities try to monitor and hold institutions accountable for results, outputs and outcomes (DEEWR 2008c; Nelson 2004), whilst maintaining the autonomy and academic freedom of universities (Fielden 2007). This issue is at the heart of most recent reforms all over the world including Australia.

However, while direct controls were being relaxed, governments in return have developed more complex supervisory and reporting regimes and retained direct controls over institutions (Winter, Taylor & Sarros 2000), such as setting a cap on the total student numbers overall funded by the state and the totals in selected high cost areas (e.g., medical and veterinary students) (Duckett 2004; Nelson 2003a, 2004). Further, the government adopted a funding approach in which funds are awarded by formulas or as a lump sum (or block grant) (Higginson & Corner 1996; Johnes & Johnes 1995; Tauer, Fried & Fry 2007), where an institution is not subject to any detailed “line item control” and has total freedom to decide how the lump sum shall be spent (Fielden 2007). Universities were encouraged through mandatory protocols, and if universities have good governance they gained extra funding (Nelson 2002a, 2003b, 2009).

2.6.1 Regulatory Authority

Weir, Laing and Mcknight (2002) investigated the influence of the role of external governance mechanisms and internal governance mechanisms and the influence of the regulatory authority in disciplining the governing boards (Rashid, Islam & Anderson 2008). The number and type of principals involved is important and it should be recalled that 'principal' is a broad generic term that represent who delegates authority to another such that the other performs tasks ostensibly to achieve specified objectives of the delegating authority (Williamson 2005) According to the traditional principal-agent theory, principals are those individuals who possess direct ownership (La Porta et al. 1997, 1998) over a university. In this respect, principals represent the states and Commonwealth governments who use the funding mechanisms (Fielden 2007) to regulate the universities.

Another factor in regard to external governance mechanisms is the extent to which the university is accountable to public bodies for performance (Guthrie, J & Neumann 2006; Rutherford, BA 1983). This factor refers specifically to the degree and frequency of reporting to (Guthrie, J & Neumann 2006; Rutherford, BA 1983; Worthington & Lee 2008), and oral hearings before, public agents or stakeholders (Price, Roman & Rountree 2009; Swansson, Mow & Bartos 2004; West 1998). In broad terms, the greater the degree (i.e. extent) of information required and the frequency of reporting (Rutherford, BA 1983) the regulating authority, the more robust the corporate governance mechanisms are likely to be. More substantively, consideration needs to be given to the individuals who are responsible for such reports. It is axiomatic to note that senior personnel of the university should be responsible for reporting and performance (Marginson & Considine 2000; West 1998).

Australian universities as statutory bodies are subject to a wide range of State and Territory legislation in addition to their enabling legislation such as financial administration and audit Acts of the State governments which apply to the statutory bodies and various regulations and Ministerial guidelines (Osborne, M & Bell 2009). As publicly- funded institutions, Australian universities are accountable to the Commonwealth and the State governmental regulatory authorities (Fielden 2007; Osborne, M & Bell 2009).

2.6.2 Influence of Wider Stakeholders

The second external governance factor is concerned with the extent to which university governance adopts the consideration of wider stakeholders which was represented by the sources and types of funding. This marks a distinction from the preceding factor in that stakeholders are not necessarily direct principals in a university. For example, stakeholders may incorporate students, employees, benefactors and the wider community in which the university is located. This point has been noted by Storey (1997, p. 11) in that “University councils are different from company boards. They must act in the interests of a broad range of clients, not just in the interests of shareholders”.

The significance of this point is that university governance needs to consider the objectives and interests of stakeholders (Nelson 2004; Swansson, Mow & Bartos 2004) if the university is to be regarded as successful in the long term. An important consideration for effective corporate governance is thus the extent to which stakeholder concerns are addressed (Freeman, Wicks & Parmar 2004) in the management of the university. This involves three key issues. The power of stakeholder involvement, stakeholder views and interests, and intentions need to be meaningfully considered within university governance structures (Nelson 2003b), or else their involvement is largely rhetorical. For example, stakeholder representatives need to be provided with voting power on university governing bodies. It is proposed that the more power stakeholder exercise (Bovaird 2005) within university governance structures, the more likely that (university) performance will be positive (Marginson & Considine 2000). Such pressure is more likely to promote transparency (Holm & Schoeler 2010) and accountability (Van Houtven 2002) of university governance and performance.

The funding of a university is a complex (Bradley et al. 2009; Nelson 2002a, 2003b) and difficult issue, with these characteristics arising from the difficulties in financially quantifying the value-added outputs of universities (Coaldrake, Stedman & Little 2003), as well as the political objectives connected to funding. There are three broad types of funding that are of significance to university governance: government funding (including grants), private sector grants, and university generated cash-flows (Cunningham et al. 2000; Nelson 2004). While these types of funding are conceptually discrete, there is some degree of inter-dependence between them. For example, private sector grants are frequently conditional on

associated government funding, with both tending to result in university generated cash-flow projects.

Government funding refers to direct public sector injection of liquidity to universities (Fielden 2007). This liquidity is generally provided by the Commonwealth government and determined annually through Treasury budget estimates (Nelson 2003b, 2009). Private sector funding is concerned with fee payments made by students including overseas students (Abbott & Doucouliagos 2003a; Birrell & Smith 2009) and liquidity investments made by private sector agents in the university (De Silva 2010) (whether or not equity ownership is provided as a result). Free payment for university services represents the privatisation of expenditure by the university, such that services should be more closely aligned with the marginal costs of providing the service (Henkel 1997; Marginson & Considine 2000) (i.e. the notion that costs should be efficiently priced). The importance of fee payment is twofold. In the first instance, fee payment creates an incentive on the part of payers to ensure that they receive the services that they expect at defined standard levels (McBurnie & Ziguras 2001). As such, fee payment will promote greater accountability and transparency of services (Cornell & Shapiro 1987) within the university over time. In the second instance, fee payment creates an incentive on the part of the university to become more efficient as cost efficiencies will result in a greater percentage of revenue being capable of being reinvested or reattributed by the university (i.e. the university can 'keep' some of the earnings it acquires from fees by virtue of the fact that it can lower costs associated with providing services through making such services more efficient). The implication of private sector funding is that it creates an incentive and impetus for robust corporate governance systems to emerge. In particular, private sector funding will place greater incentive for transparency (McBurnie & Ziguras 2001) and positive performance (particularly efficiencies in financial measures).

University generated cash-flows refer to the income and revenue streams that are derived from the university's projects and operations, which may not necessarily be attributable to the objectives of the university. For example, universities can derive income from on-campus vehicle parking fees. Income derived from university projects are particularly important as they can provide very substantial and long term positive cash-flows (Worthington & Lee 2008), which are directly controlled by the university. For example, patents and trademarks on intellectual property or designs can provide potentially lucrative income streams for the university. Another prominent source of cash-flow is university businesses (e.g. Melbourne

University of Technology), which essentially represent private sector firms (Osborne, M & Bell 2009) that are controlled through university governance systems. The significance of university cash-flows is that they provide a source of income that is directly managed by the university (Bradley et al. 2009), and as such, may detract from governance and accountability of financial expenditure. This is because university cash-flows are not necessarily subject to external party auditing nor are they subject to assessment by Treasury funding projections (Worthington & Lee 2008). This suggests that the greater the extent of university expenditure drawn from university generated cash-flows, the greater the potential detriment to corporate governance and performance.

2.7 Internal Governance Mechanisms

Internal governance mechanisms refer to the structural components that are utilised to manage performance. The theoretical discussion demonstrated that performance is susceptible to the principal-agent problem. As such, internal structural components that serve to mitigate the principal-agent problem (Kiel & Nicholson 2003; Slaughter & Leslie 1997; Uhrig 2003) should promote positive university performance in the long term. The internal governance mechanisms (Daily & Dalton 1992; Middlehurst 2004; Weir, Laing & McKnight 2002) such as governance structure thereby incorporate five variables. (i) size of the governing body; (ii) board independence and oversight committees as structural composition of the governing body; (iii) board meetings and transparency of reporting as board process and responsibilities; and (iv) the board leadership structure (Khanchel 2007). Internal governance mechanisms refer to the extent to which particular internal governance mechanisms are thereby concerned with the systems and practices adopted by the university. Furthermore, these mechanisms are largely inter-dependent in that the success depends on the holistic adoption of all those factors (Chen, Elder & Hsieh 2005). Internal governance mechanisms are, nevertheless, only one component of effective and robust university corporate governance. As such internal governance mechanisms need to be aligned with, and complementary to, external governance mechanisms (Rashid, Islam & Anderson 2008).

2.7.1 Size of the Governing Body

Size of the governing body refers to the number of members in the council (Nelson 2002a) as elected and appointed. Corporate literature of the board size in influencing performance is contradictory. Some studies found large boards are more effective (Coles, JL, Naveen &

Naveen 2008; Coles, JW, McWilliams & Sen 2007; Pathan, Skully & Wickramanayake 2007), while some (Conyon & Peck 1998; Dawkins, JS 1988; Eisenberg, Sundgren & Wells 1998; Pathan, Skully & Wickramanayake 2007; Yermack, D 1996) found small boards are considered effective and value additive because of their nimbleness and cohesiveness. Some investigations found the size of the board has no relationship with the performance (Corbetta & Salvato 2004; Dwivedi & Jain 2005; Mak & Kusnadi 2005). Further understanding of the above findings were that smaller boards require less communication which leads to less costs spent on coordination (Pathan, Skully & Wickramanayake 2007), whilst smaller boards attract a lower degree of 'free-riding' directors problems (Coles, JW, McWilliams & Sen 2007; Jensen, M.C. & Meckling 1976; Lipton, P 2003). Members in large boards may face greater difficulties in expressing their ideas and opinions (Lipton, M & Lorsch 1992; Lipton, P 2003) in the "limited time available at board meetings" (Lipton, M & Lorsch 1992, p. 65). Further, since an individual board member's incentive to acquire information and to exert effort in monitoring managers is low in large boards (Goodstein, Gautam & Boeker 1994), "CEOs may find large boards easier to control" (Jensen, M.C 1993, p. 865).

The Nelson Review of the Australian university governance (Nelson 2002a) followed by the White Paper by Dawkins (1988) proposed to reduce the council size. The *Our Universities: Backing Australia's Future* policy paper in 2003 (Nelson 2003b) proposed a maximum council size of 22 members. This 2003 policy paper emphasized that the board or the council of a University with 35 members and on average of 21 members were not conducive to sound decision making, and Universities Australia (2007) further endorsed this statement. According to Larsson (2006), the governing bodies (councils) of universities in Australia have been reduced in size, where the most radical reduction was at the University of Melbourne, which went from 40 to 21. Still, the average council size of Australian universities was 21 members. In Oxford University the White Paper on Governance (University of Oxford 2006) suggested that the size of the council should be revised, and membership of the governing body should be reduced from twenty- five to fifteen and three co-opted members in order to act as an effective decision-making forum.

2.7.2 Board Independence

According to Dalton et al. (1998), there are many different measurements on the composition of the governing board, and these are varied as number of directors, number of outside

directors, number of independent directors in the board etc. The concept of board independence was grounded on agency theory (Daily et al. 1998; Fama 1980; Fama & Jensen 1983a; Shleifer & Vishny 1997). Independent board members provide potentially greater oversight and accountability of operations, as they are less likely to be subject to the principal-agent problem themselves (Fama 1980; Shleifer & Vishny 1997). This is because as independent members do not have inherent self-interests in the performance (Fama 1980) of the university *per se* and are instead guided by the interests of the stakeholders who appointed them (La Porta et al. 1999). For this reason, a greater percentage of independent members in the university governing body should promote positive performance.

The issue of public agents as independent board members of universities raises two concerns. In the first instance, public agents will have less incentive to promote university performance as they possess little or no direct personal investment in the institution. In the second instance, public agents will tend to pursue objectives that may be politically rather than economically justified, with the implication being that inappropriate appointments may be made to university governing bodies and oversight committees (Young, DR 2002).

According to the National Governance Protocols, capabilities of external appointees on university governing bodies and oversight committees is important and these are distinctly noted as knowledge, skills and abilities of agents (Fielden 2007), rather than their institutional affiliation. In this respect, appointment of agents to the governing body of the universities who possess the 'right' knowledge, skills, and abilities (Henkel 1997; Marginson & Considine 2000) are more likely to promote positive performance. The 'right' type of knowledge, skills and abilities is a nebulous concept, albeit with intuitive appeal to the notion that 'some people are better at managing than others.' More substantively, the 'right' type of knowledge, skills and abilities refers to detailed and extended work histories (Nelson 2002a) in regard to company management. In particular, evident histories of financial skills experience and strategic development (Henkel 1997; Nelson 2002a), coupled with management of large organisation based on intellectual property competitive competencies, are more likely to suggest that such agents will promote positive university performance. A similar rationale has been proposed by O'Meara and Petzall (2007).

2.7.3 Oversight Committees and their Structural Composition

The structural composition of the university's corporate governance refers to the number and independence of bodies and oversight committees within the university governing board. In this respect, the greater structural separation of oversight committees from the management of particular activities (such as remuneration of senior staff) (Khanchel 2007), the more robust university performance should be. Particular prominence is given to audit committees (Zhang, Zhou & Zhou 2007), remuneration committees and the nomination committees (Khanchel 2007; Klein 2002). Audit committees are charged with monitoring university expenditure (Klein, A. 1998), both at the macro-level of the university as a whole and at the departmental level. Remuneration committees are charged with monitoring and controlling executive remunerations, and the selection committees are charged in appointing (Khanchel 2007) council members and the executives including the president of the university (Khanchel 2007). Independence of oversight committees could be also conceptualised in terms of the breadth of responsibilities of these committees (Klein 2002; Zahra & Pearce 1989), as well as their compliance with 'best practice' corporate governance standards.

2.7.4 Board Meetings

Khanchel (2007) used board meetings as the proxy for the process of the board and argued that meetings acted as a monitoring mechanism. Vafeas (1999) used board meetings as a governance variable in his study and confirmed that if the board increases the frequency of meetings, the recovery from poor performance is faster and hence meetings are positively related with high performance and better monitoring. In previous studies, the number of board meetings held during the year was used to gauge the relationship between the level of board monitoring activity and firm performance (Khanchel 2007; Perry & Shivadasani 2001; Vafeas, N. 1999).

2.7.5 Transparency of Reporting

More universal and consistent reporting requirements should promote positive performance as it promotes transparency and mitigates capacity for opportunism on the part of both individual agent and units/departments (Mucciarone 2005; Ryan & Ng 2000; Zairi & Letza 1994). In a similar vein, the depth of reporting refers to the quantity of information required to be reported (Pendlebury, Jones & Karbhari 1994; Ryan & Ng 2000), as well as the

timeframe of reported data (Mucciarone 2005). The extent of reporting is related to the frequency with which reporting is required by the university's governing board, but also relates to the breadth of reporting in terms of the number of divisions reporting through a single channel. More frequent reporting, as well as the timeframe of reported data, is important (Rice 1992) because it provides the basis on which periodic and longitudinal data assessments may be made. Longitudinal data is important because it provides the basis on which meaningful comparisons of findings and performance can be made (Levitt 1998). That is, longitudinal data provides the mechanism by which comparisons of performance (i.e. the relativity of performance) can be deduced (Carrington, Coelli & Rao 2005). However, unless data reporting is periodic and consistent, then longitudinal assessments are somewhat meaningless. For example, variables that are redefined over a period of time will mean that it will not necessarily be possible to compare performance between two time periods (Brownell, Coopers & Lybrand 1995; Burns & Scapens 2000). Similarly, periodically reported data needs to cover consistent time periods (Burns & Scapens 2000; Simons, Dávila & Kaplan 2000) (e.g. consistent one-year financial periods) in order to identify cyclical effects, trends, and causal factors.

In terms of the objectives determined for universities, the more specific and quantifiable the objectives, the more transparent and accountable governing agents will be (Nelson 2009). This is because this not only provides clearer statement of objectives, but provides the basis on which incentives structures can be devised that link performance with these stated objectives. There have been few studies in the literature measuring performance indicators and their reporting by government departments /statutory agencies,(Glass, McKillop & Hyndman 1995; Jones, R & Pendlebury 2000; Pendlebury, Jones & Karbhari 1994), and it was concluded that entities subjected to a greater amount of scrutiny were more likely to disclose information than those subjected to less scrutiny, (Cuenin 1987; Glass, McKillop & Hyndman 1995; Hyndman & Eden 2000; Mucciarone 2005; Pendlebury, Jones & Karbhari 1994). Mucciarone's study (2005) on oversight bodies included the Office of the Auditor-General and the Treasury Department. The above study results indicated that the Office of the Auditor-General had a significant positive impact on the disclosure of both financial and non - financial performance indicators.

There have been limited studies in the literature measuring performance indicators and their reporting by Australian government departments (Pendlebury, Jones & Karbhari 1994). In

Australia, Mucciarone (2005) studied factors which may influence the disclosure of types of performance indicators in annual reports of Australian Federal and State government departments.

2.7.6 Board Leadership Structure

Board leadership structure is an important corporate governance mechanism (Khanchel 2007), which is reflected in the positions of chairman of the board and CEO. Both agency theory and stewardship theory have addressed the leadership structure of the board. Separation of the role of CEO and chairman of the board is largely grounded in the agency theory (Daily & Dalton 1993; Daily et al. 1998) which assumed that due to the agency problem, it is necessary to monitor the performance of the CEO and the board to protect the stakeholders rights including shareholders (Dalton & Kesner 1987; Fama 1980; Rechner & Dalton 1989). According to Lam and Lee (2008) combining the role of chair of the governing board and the CEO might result in CEO dominance, which will lead to ineffective monitoring of the management and monitoring by the board. CEO duality occurs when the CEO and chairman positions are held by the same person in an organisation (Rechner & Dalton 1991). Stewardship theory assumes managers are inherently trustworthy and are good stewards, consider it is their duty to safeguard the firm's resources, operate to attain a higher level of corporate profits (Davis, Schoorman & Donaldson 1997; Donaldson, L. & Davis 1991) and have a relaxed approach on CEO duality. Advocates of stewardship theory argue that combining the two roles strengthens, the leadership (Davis, Schoorman & Donaldson 1997), and empowers the leader to quick action especially on critical decisions (Berg & Smith 1978). Dehaene, De Vuyst and Ooghe (2001) found that combined leadership structure has a significant impact on financial performance and explained that the chair of the board, who is also active as CEO in the day to day activities of the firm, would try to make good use of resources and maximise the earnings, as this improves their personal status.

2.8 Control Variable

Mucciarone (2005) used size as a controlling variable and examined the effect of size on the types of performance indicators disclosed in Australian state government departments' annual reports. The above study measured the size of government departments by the number of employees. The results showed that all types of performance indicators showed a low and non-significant regression coefficient. Control variables play an important role in affecting

the relationship between independent and dependent variables (Rashid, Islam & Anderson 2008). Warning (2004, 2007) used size as a controlling variable in measuring the performance of German universities, and found that size is positively correlated with the performance of universities.

2.9 Performance

Public sector performance needs to measure economy, efficiency and effectiveness (Kloot 1999) Economy is defined as acquiring resources in appropriate quantities (Mucciarone 2005) and at least cost, whilst efficiency is defined as maximizing output for a given set of inputs, or minimizing inputs for a required output (Mucciarone 2005; Worthington & Lee 2005). Together, economy and efficiency are consistent with notions of financial accountability of both Federal and State governments. Descriptions of the various types of performance indicators are included in Table 2.3.

Table 2.3
Categories of Performance Indicators

Performance Indicator	Definition/Criteria Used
Efficiency	Ratio of inputs used to outputs achieved.
Effectiveness	Extent to which outputs or outcomes achieved meet pre-stated targets, objectives or policy directives
Objectives	Management's specifications of what they intend to achieve, expressed in terms of specific measurable outputs and outcomes from services or programs.
Strategies	Plans of action on how programs are to be executed or services generated and delivered.
Quality	Degree of excellence of a good/service.
Inputs	Resources used in providing a service. (financial, physical, man, or time)
Outputs	Actual goods or services produced or delivered by the programs or reporting units.
Results/Outcomes	Extent or quality of impact upon clients or situation arising from outputs.

Sauce: Hyndman and Anderson (1997, p. 160).

Effectiveness indicators measure how well or comprehensively the tasks have been completed and are consistent with notions of non - financial accountability of government departments to federal and state governments. Determining effectiveness is problematic (Hyndman & Anderson 1997; Hyndman & Eden 2000), given the inherent problem of the output of many Federal and State government services, such as education. The problems include the inability to accurately measure output, difficulties in isolating the effects of the service (the outcomes) from other factors, lack of quantifiability of the effects of services and

conflicting interpretations of results (Avkiran 2001; Johnes & Johnes 1993; Winter, Taylor & Sarros 2000). Examples of effectiveness indicators include reduction in complains, accidents, OHS claims and outputs of resources produced within a specified time frame (Norhayati & Siti-Nabiha 2009). An efficiency indicator is defined as maximizing output for a given set of inputs or minimizing inputs for a required output. Efficiency indicators are also expressed as a ratio of inputs to outputs. Efficiency indicators are designed to measure how efficiently the tasks are achieved by determining the inputs used to achieve the outputs produced (Norhayati & Siti-Nabiha 2009).

Public sector accounting research literature argues that performance indicators need to be increasingly linked to the concepts of accountability (Glass, McKillop & Hyndman 1995). There have been few studies in the literature measuring performance indicators and their reporting by Australian government departments in Australia (Glass, McKillop & Hyndman 1995; Hyndman & Eden 2000; Pendlebury, Jones & Karbhari 1994). Mucciarone (2005) studied factors which may influence the disclosure of types of performance indicators in annual reports of Australian Federal and State government departments. The factors identified in the study which may have an affect included agency theory related variables, such as political visibility (Glass, McKillop & Hyndman 1995; Mucciarone 2005) and control by oversight bodies. The extent of influence on the disclosure of financial and non - financial performance indicators significantly relate to the quality of output indicator (Parker, L et al. 2005).

2.10 Performance of Universities

According to Crowther (1996), performance is determined from the perspective of the stakeholder group by which that performance is considered. Therefore, analysis of the stakeholders of the organization is important, to identify the perspective of the performance evaluation (Crowther 1996). The use of performance indicators in tertiary institutions has been criticized (Linke 1995; Pollitt 1990). These criticisms arise from the inherent complexity of the institutions, necessitating the use of surrogate measures (Cave et al. 1997). Link (1995) argued that performance indicators should reflect the 'true purpose of higher education'. A further criticism focuses on the confusion over definition of measures (Neumann & Guthrie 2006). Another widely recognized argument about the performance indicators of universities is that the performance measures should ideally be developed from

within the institutions concerned, by those performing the activities (Abbott & Doucouliagos 2003a; Rutherford, BA 1983) and if performance measurement is to be effective, formal appraisal systems are necessary (Rutherford, BA 1983; Rutherford, M 1995). To evaluate performance, it is necessary to determine the constituents of good performance using performance indicators. According to Oakland (1989), to be useful, a performance indicator must be measurable, relevant and important to the performance of the organization, it must be meaningful and the cost of obtaining the information must not outweigh its value.

University performance may be assessed using a number of measures and aggregate measures of performance can be derived in terms of the connections between university outputs and/or inputs (Worthington & Lee 2005) and national competitiveness (Williams, R & Van Dyke 2004). In some respects this measure is highly insightful in that it serves to illustrate the connection between university performance and national socio-economic development potential. This type of analysis has been conducted by the World Economic Reform in their global competitive index (Porter et al. 2006) and the Times Global Universities Ranking (Times Higher Education 2009). University performance may be linked to global competitiveness as well as the extent of national innovation. However, the limitation to this approach is that it represents aggregated data, and determination of individual university performance is difficult (Johnes 1992; Neumann & Guthrie 2006; Warning 2004). Furthermore, the results can be swayed by outliers (Johnes 1992; Taylor, J & Highfield 2006). Comparisons of performance can be assessed in terms of quantified measures of university outputs (e.g. total graduations per year, patent results, PhDs completed etc.). These measures may then be combined with quantified measures of university inputs (e.g. extent of public funding, private sector investment, etc.) to obtain broad productivity measures (Balderston & Balderston 1995).

Universities should provide statistical information related to university staff, students, and finance and research statistics to the department of higher education as required by the Commonwealth for accountability, program administration and the development of public policy as performance outcomes. Further staff and student statistics are also made publicly available as part of the *Characteristics and Performance Indicators of Higher Education Institutions* and available online at the Department of Education (DEST 2002; Emmanuel & Reekie 2004).

Performance of universities could be measured through assessment of stakeholder perceptions of outcomes and processes such as the Graduate destination survey results (Guthrie, J & Neumann 2006), which is an example of student evaluations of the 'quality' of their degree and the satisfaction with the institutions which is conducted by the Graduate Careers Council Australia (Guthrie, J & Neumann 2006; Guthrie, J. & Neumann 2007; Neumann & Guthrie 2006). However, the numerous higher education inquiries did not provide comprehensive information on university performance (Carrington, Coelli & Rao 2005). Performance indicators need to be increasingly linked to the concepts of accountability (ANAO 2003; Glass, McKillop & Hyndman 1995). The Australian Auditor General (ANAO 2006) mentioned that service delivery of statutory agencies needs to reflect a whole of government perspective.

Performance denotes the outputs of the university relative to some predetermined benchmark and which is linked to the stated objectives of the university (Nelson 2003a, 2004). Quality in the service sector was a key management concern from the late 1940s (Deming 1982) and, defining quality and identifying quality outcomes is problematic across all fields of management has been recognised, as being so in the production of tangibles, it is all the more so in the production of the intangibles, which comprise most public goods (Laband & Lentz 2004) and include higher education as well. The quality examination of intangibles tends to focus more on processes than outcomes and this has been acknowledged in the discussions of outcomes in Australian higher education (Nelson 2002a). In examining quality of the output of universities, it has been argued that quality has a chameleon like nature (Currie & Vidovich 2000; Vidovich 2002; Vidovich & Slee 2001), changing to suit the background environment. Lindsay (1994) also outlined the problems of quality identification in Australian higher education:

Quality in higher education is a nebulous notion. Its attributes are complex and intangible. Despite vigorous efforts to define it in terms that are more susceptible to measurement, it remains highly resistant to assessment by means other than judgements that reflect personal values as much as professional standards. (Lindsay 1994, p. 56)

According to Hume & Beauchamp (2006) quality in this and other views is largely a subjective rather than objective view based mainly on processes rather than outcomes, as in the philosophy of Hume it exists in 'the mind that contemplates them' (Hume & Beauchamp 2006). It is expected that systematic management and assessment procedures are adopted by a

university to monitor performance (Alexander 2000) and to ensure achievement of quality outputs or improved quality (Brown 2004). Quality assurance aims to give stakeholders confidence (Hill 1995) about the management of quality and the outcomes achieved. Most commonly at the national level, quality assurance is the responsibility of a government agency, and less commonly, the responsibility of the governing bodies of universities (Nelson 2002a).

The number of student graduates (both undergraduate and postgraduate) refers to the number of students that graduate in a given time period. Measurement of student graduates is thus an important baseline measure of performance (Warning 2007) as an outcome of corporate governance effectiveness. In this context, university performance could also be assessed against broader measures of student satisfaction, degree completion rates, and academic to student outputs in terms of the ratio of graduate and post-graduate completions to academic staff (Abbott & Doucouliagos 2003a; Warning 2004; Worthington & Lee 2005).

Performance may also be assessed in terms of the quality of outputs generated by the university (Currie & Vidovich 2000; Warning 2007). Quality is a difficult concept to measure, particularly given that a substantial component of a university's output is tacit knowledge. Nevertheless, quality can be assessed in terms of student evaluations of subjects (DEST 2005b) and the courses offered through overall satisfaction and as a quality of output measure graduate full-time employment rate (Abbott & Doucouliagos 2003a; Warning 2004, 2007; Worthington & Lee 2005). Quality is important to corporate governance, as higher degrees of quality will require more effective incentive mechanisms for agents, as greater quality requires greater expenditure of effort, *ceteris paribus*. Thus, the more robust the corporate governance system, the more likely that quality will be higher at the university.

Performance may be assessed in regard to of the extent to which innovations and investments in research are taking place at the university Worthington & Lee 2005. This is useful to examining the effectiveness and research performance implications of corporate governance (Abbott & Doucouliagos 2003b; Warning 2007), as both innovation and investment require substantial time. The significance is that more robust corporate governance structures are likely to promote long term incentive mechanisms that further innovation and investment. Innovation may be measured by the extent to which trademarks, patents and research grants are acquired by the university (Abbott & Doucouliagos 2003b; Flegg et al. 2004) in any given

period and the research and publications of the staff during the year (Abbott & Doucouliagos 2003b; Avkiran 2001; Izadi et al. 2002).

2.10.1 Performance Measures for Australian Universities

Performance measurement in a publicly funded university system is difficult.(Warning 2007). Universities consume multiple inputs and multiple outputs. (Worthington & Lee 2005). Teaching and research are the main outputs of universities, and teaching and research capture various output dimensions (Abbott & Doucouliagos 2003b; Currie & Vidovich 2000; Department of Education Science and Training 2005; Johnes 1992; Warning 2004, 2007) and the Department of Education Science and Training (DEST) consider financial viability as a sustainability measure for Australian universities (DEST 2007; Nelson 2009). Further the Institutional Assessment Framework of the Australian Universities which was developed by (DEST 2007) measures the performance of universities (Osborne, M & Bell 2009) in four key areas:

- organisational sustainability – to verify that the provider is in a sound financial situation and is well governed and managed, so that it will be able to continue delivering programmes for the Australian Government;
- achievements in higher education provision – to measure the extent to which it has contributed to meeting the Australian Government’s higher education objectives;
- quality – to gain assurance that its educational provision is of a high standard; and
- meeting legislative requirements – to confirm that the provider has met its obligations under legislation and guidelines.

In 2005, an assessment portfolio was provided to each university covering the four areas of interest showing its own performance over a period of time, as well as comparisons with the sector average and with similar higher education providers (DEST 2007, p. 97). DEST produces raw and adjusted outcome indicators across universities in Australia, including financial, staff, research, student and outcome indicators. The Graduate Destination Survey (GDS), the Course Experience Questionnaire (CEQ) and enrolment data from the universities are used to calculate the progress rate, retention rate, graduate full-time employment, graduate full time study, graduate starting salary, overall satisfaction, good teaching and generic skills (DEST 2002, 2005b). These outcome measures are widely use as performance measures for Australian universities (Abbott & Doucouliagos 2003a; Avkiran 2001;

Carrington, Coelli & Rao 2005; Worthington & Lee 2005). According to the literature (Warning 2007; Worthington & Lee 2005), number of graduates in different fields is widely accepted as output of a university in the area of teaching, while the number of publications and the number and value of research grants measure the research output (Ramsden & Moses 1992; Warning 2007; Worthington & Lee 2005). Performance may be assessed in terms of the number of students that graduate in a given time period (undergraduate and postgraduate) (Agasisti & Salerno 2007; Warning 2007; Worthington & Lee 2005). This measure is important as it provides a quantitative measure of output that can be readily compared to other universities. Furthermore, graduate numbers may then be compared. Measurement of student graduates is thus an important baseline measure of corporate governance effectiveness. Universities usually use staff as the labour input factor (Agasisti & Salerno 2007; Worthington & Lee 2008) and expenditure on infrastructure such as library expenses as the capital input factor. Worthington and Lee (2005) suggested potential performance measures for Australian universities: student to staff ratio, graduate satisfaction, graduate outcome as teaching measures, research degree completion, research and publications, and research income as research performance.

There are many measures of financial performance used in empirical research on corporate governance literature which fit into accounting-based measures (Kiel & Nicholson 2003) and the most commonly used accounting based-measures are assets turnover(AT) (Kiel & Nicholson 2003; Zahra & Pearce 1989), return on equity (ROE) (Baysinger & Butler 1985; Zahra & Pearce 1989) and current ratio as a short term financial viability (Simons, Dávila & Kaplan 2000). There are criticisms about the accounting-based measures as they can be easily manipulated by management through changes to accounting methods or accruals, and are difficult to interpret across the organizations (Kiel & Nicholson 2003). Higher Education Report 2005 used current ration and operational surplus as financial performance measures for Australian universities (DEST 2007).

All of the potential measures of university performance and productivity have limitations (Worthington & Lee 2005). Empirical evidence of the relationship between measures of performance indicators and governance attributes is mixed, and there is much debate regarding the most reliable measures. However, in a meta-analytic review of corporate governance literature, there appears to be no consensus regarding the efficacy about reliability of one measure over another (Daily et al. 1998). The consequence is that any

robust examination of university performance needs to adopt multiple methods (Guthrie, J. & Neumann 2007) in order to develop clearer insight into not just the performance of universities, but the processes that promote superior university performance.

2.10.2 Financial and Non-financial Performance Reporting of Australian Universities

The Australian government has proposed monitoring and reporting requirements for Australian universities (Nelson 2009). These requirements are financial and non-financial and incorporate a number of corporate governance issues. The proposed requirements have arisen as a consequence of, and in response to, the difficulties of monitoring, measuring and managing public sector performance. In addition, the proposed requirements have also arisen as a result of mixed productivity improvements across universities in Australia. For example Worthington and Lee (2005) found that the largest productivity improvements have been found in smaller, newer universities rather than in larger, older universities. This suggests that smaller universities are in a better position to quickly exploit some of the primary sources of productivity gains: advances in the nature of the processes employed; improvements in the effectiveness in which operations are integrated; increases in the scale of production; advances in the quality of inputs; and changes in the scope of operations (Worthington and Lee 2005) .

There is a need to develop a balanced measurement approach that recognises that ‘performance’ of public sector organisations, including universities, needs to be assessed in both financial and non-financial terms (Aghion, Dewatripont & Stein 2008; Carrington, Coelli & Rao 2005). This distinction is important as it represent recognition that corporate governance of universities is concerned with promoting performance in a number of broadly defined ways.

The financial and non-financial reporting requirements of Australian universities proposed by the Australian government raise questions as to the efficacies of the reported data (Guthrie, J & Neumann 2006; McMillan & Chan 2006). The reporting requirements fail to propose adequate benchmarking of performance, a factor that is a consequence of both inconsistent reporting data and problems developing co-ordinated benchmarks that are agreed to be a multitude of oversight agencies.

2.11 University Governance and Performance

The evidence on university performance and corporate governance is frustratingly mixed as seen in van der Ploeg and Veugelersy (2008), and they further observed that there is relatively little hard data and analysis on the link between governance and performance and the evidence [is] not in favour of a unique optimal model in the context of European universities. While Australian universities have been driven by increased market demand pressures (Birrell & Edwards 2009) in the form of fee paying students, European universities have not been subject to such increased market pressures (Warning 2007). However, European universities are not confronted by the same structural limitations of Australian universities, namely the limited domestic market and concentrated urban population (Coaldrake, Stedman & Little 2003) and there is not enough evidence to confirm whether the factors promoting corporate governance reforms in European universities have translated into greater productivity and performance (van der Ploeg & Veugelersy 2008) There is also no evidence of the relationship between governance and performance of Australian universities in the literature. On the other hand, the fragmented nature and multiplicity of universities within Europe, coupled with the larger domestic market, may mean that there are sufficient competitive pressures (Warning 2004, 2007) between universities to prompt adoption of more effective (i.e. best practice) corporate governance mechanisms. There are further complications that arise from the different policy environments and national governments confronting Europe and the broader European Union. The above complications make meaningful comparisons between university performances, both within the European Union, and between European and Australian universities these may not be very realistic. The above mentioned reasons suggest that further empirical work is required on corporate governance structures of universities, as well as the link between the governance and performance of Australian universities

Performance denotes the outcomes of internal governance mechanisms and external governance mechanisms and these feedback implications may be observed at three cascading levels (Jones, I & Pollitt 2003): positive performance is likely to reinforce existing internal governance mechanisms and external governance mechanisms. The reason for this is that positive performance substantiates the *status quo* and limits incentives for change (with neither principals nor agents likely to promote changes to corporate governance if stated objectives are being achieved). It is thereby proposed that positive performance will tend to

reinforce internal governance mechanisms and external governance mechanisms (Weir, Laing & McKnight 2002), even if these components are demonstrated to be detrimental to long term performance.

Negative performance is likely to create impetus for change and reform of internal governance mechanisms and external governance mechanisms. However, this impetus for change and reform may not necessarily occur as agents may either lack the incentive or necessary information to promote change (McMillan & Chan 2006). This is where external governance mechanisms have such an important role in promoting robust corporate governance (Foley 2002) and university performance. If external governance mechanisms are relatively effective (albeit with the notion of 'relative' being difficult to quantify), then negative performance would likely translate into changed corporate governance systems. As such, there is a strong mediating effect of external governance mechanisms on the capacity of negative performance to promote corporate governance change (University of Oxford 2006; Williamson 1998). There are evident connections between internal and external governance mechanisms (Weir, Laing & McKnight 2002), but the two are nevertheless conceptually and empirically distinct. Correlations between explanatory factors are, however, to be expected as there are intuitive associations between external factors and internal factors. For example, the presence of greater fee payment for services (Marginson 2006) is more likely to promote frequent financial reporting and auditing transparency. According to Klapper and Love (2004) the role of a regulatory authority (external corporate governance mechanism) is also important to encourage the mix of the internal corporate governance mechanisms.

2.12 Conclusion

The chapter has critically analysed the theory of corporate governance and its application to contemporary universities. The notion of 'corporate governance' and its theoretical underpinnings were discussed. Corporate governance involves a number of inter-related and mutually supportive components. These components centre on creating transparency, responsibility, and accountability, and to reinforcing these aspects. The intended outcomes are, furthermore, aimed at mitigated principal-agent problems and promoting the long term interests of stakeholders. Then the chapter explored how corporate governance has been reflected in policies and practices in universities globally, but with particular focus on Australia. Despite the traditional appeal of the collegial approach, universities have

increasingly shifted toward adoption of a managerial approach to corporate governance. The literature suggests that analysing the performance of universities is complex and the performance measures varied according to the objective of the university. The performance measures used in the literature, and the implications and the relationship between the governance and the performance of universities were also discussed.

CHAPTER 3

HIGHER EDUCATION POLICY REFORMS, GOVERNANCE AND PERFORMANCE OF AUSTRALIAN UNIVERSITIES

3.1 Introduction

Over the last three decades the Australian university sector has progressively moved towards ensuring universities' performance. In the late 1970s, the Australian government first began to encourage universities to critically monitor their own performance (Harman, G 2003). In 1987 and 1988, national reviews of higher education took place. The White Paper of *Higher Education: Policy Statement* (Dawkins, 1988) replaced the existing binary system with a unified national system (Williams, B 1988). In 1991, the funding of higher education became a commonwealth responsibility. It has been suggested that the most far-reaching policy change was the growth in self-earned income by universities, which changed the operation of universities and their relationships with government (Harman, G 2003; Harman, GS, Harman & Meek 2000). Some of the consequences were: a massive growth in full fee paying international student numbers from the 1990s; fee paying post graduate degrees, the introduction of HECS and charging fees for undergraduate domestic students; diversification of revenue sources; rapid growth in commercial activities; the expansion of consultancy services; and the commercialisation of research (Nelson 2003a). Further, the impact of information and communication technologies also served to heighten the competition among universities (Harman, G 2003) and the drive for better performance.

This chapter is structured to describe the impetus for developments in governance of the university sector in Australia. Section 3.2 presents the overview of the Australian university system. Section 3.3 discusses an overview of the Australian higher education environment, which has a strong influence on the governance of universities in Australia. Section 3.4 discusses the policy changes and governance reforms which have taken place in the Australian higher education sector within the last two decades. Section 3.5 explains governance best practice and the National Governance Protocols for higher education in Australia, followed by Section 3.6 which describes the characteristics of the Australian university sector and the conclusion is in Section 3.7

3.2 The Overview of Australian Higher Education Environment

Australia is a federation of six relatively independent states and two territories. The 'Commonwealth of Australia' formed as a federation of the states in 1901. The Constitution largely defines the powers of the Commonwealth, which includes education, and everything not specifically assigned to the Commonwealth remains a state power (Osborne, M & Bell 2009, p. 20). University entrance is primarily based on a state wise end of school assessment system leading to a nationwide Tertiary Education Ranking (TER) system.

Australia's university system dates back to 1851, when first the University of Sydney and five other universities were established (Mikol 2002) by the Acts of the state parliaments: Sydney (1850), Melbourne (1853), Adelaide (1874), Tasmania (1890), Queensland (1909) and Western Australia (1912). The ongoing expansion of universities with the growing demand for higher education places paved the way for changes in the sector. In 1965, policy changes were initiated with the development of a broad and comprehensive system which recognised the existing university sector and established the colleges of advanced education tertiary education sector known as the binary system (Mikol 2002). This included central institutes of technology, regional colleges, metropolitan multi-purpose colleges, teacher education colleges and a mixture of other small institutions usually specialised in focus. While enrolments increased from 100,000 in 1968 to 159,500 in 1978, in some instances these increases were accompanied by changes occurring across the binary system (Mikol 2002). By the 1980s, the higher education sector encountered a complexity of factors which challenged the status quo of the existing binary system. Examples of such factors included the blurring of differences in the roles of the university and the colleges of advanced education, a depressed level of funding in a period of recession, the move to make the three formerly independent federal commissions responsible for universities, advanced education and technical and further education, "accountable to the newly created Tertiary Education Commission, and the growing democratisation of higher education" (Mikol 2002, p. 3).

Major structural changes in the higher education sector followed the release of the Dawkin's Green Paper in 1987 *The Challenge for Higher Education in Australia* and the Dawkin's White Paper *Higher Education: A Policy Statement* in 1988 (Williams, B 1988). "These policy papers proposed the abolishment of the binary system and the establishment of a Unified National System" (Mikol 2002, p. 3). The Australian Vice-Chancellors' Committee,

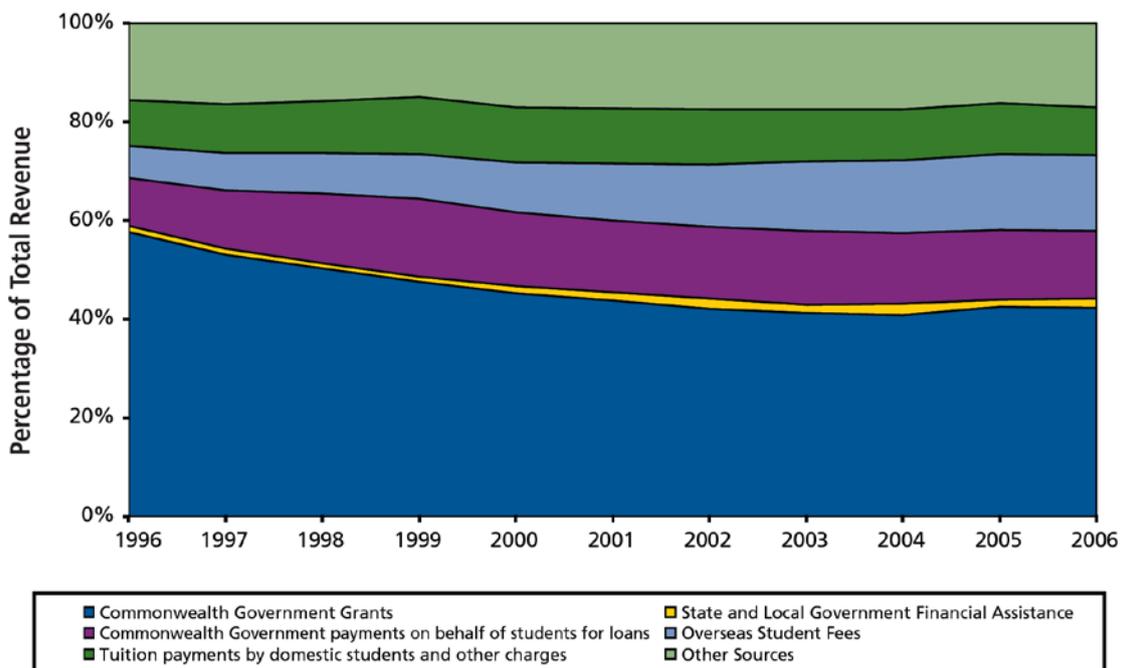
in their response to the abolishment of the binary system, suggested that new universities should have a significant student base load of a minimum of 5000 equivalent full-time students and at least four or five fields of study (Mikol 2002). This forced the colleges of advanced education, which did not meet the criteria, to search for ways to maintain their viability through mergers, amalgamations and partnerships. The overall objective was to reduce the number of small institutions and to create larger institutions which would be called universities. The binary system moved from having 19 universities and 49 colleges of advanced education (including non-government institutions) to 38 members of the unified national system and eight funded institutions (Mikol 2002; Mildred 2002). The unified national system of higher education came into existence by the end of the decade. Wide structural changes took place with new universities being formed, and different academic cultures forced to mix and merge together. The dramatic increase in the number of universities created an increase in competition among them (Mikol 2002). The newly established universities attempted to demonstrate their equivalence and the older universities tried to demonstrate their pre-eminence (Mikol 2002).

A number of major changes to the sector took place during the 1990s and as a consequence of changes in Federal Government policies and the growth in overseas student enrolments, universities in Australia have undergone profound changes over the past fifteen years, Population growth, demographic shifts and the government policies to encourage a better-educated community (Swansson, Mow & Bartos 2004) and exports of higher education have increased demand for university places, particularly over the last twenty years. “There was a massive expansion in student numbers from 534,510 student enrolments in 1991 to 929,952 in 2003. However, public funding per student declined dramatically in 2003” (Nelson 2004, p. 7). This decline placed pressure on universities (Carrington, Coelli & Rao 2005) to develop alternative sources of income to sustain core activities of teaching and research (Nelson 2004). As a consequence of the above outcomes, the problem of university funding has been a perennial issue in Australia.

The university funding predicament, its causes and potential solutions are well documented in several Commonwealth reviews and academic studies (DETYA 2001; Karmel 2003; Nelson 2002a; West 1998). University funding difficulties arose for several reasons, which include: the complex arrangements of Commonwealth and State Government regulations that entangled university operations; and the different interpretations by Commonwealth and State

Governments of respective responsibilities for university funding (Duckett 2004). Australian universities obtain funding from variety of sources. Some main sources are: allocations for teaching and research combined from the Commonwealth Government, research allocations or grants for research projects from a range of government sources, tuition and other fees from domestic and international students, income generated from research contracts, teaching contracts, consultancy services, or royalties, surpluses from on-campus services such as conference facilities offered to staff, students, and the general public, income from endowments, gifts, investments, etc. Figure 3.1 shows the higher education revenue sources as a percentage of total revenue.

Figure 3.1
Higher Education Revenue Sources as a Percentage of Total Revenue, 1996 to 2006

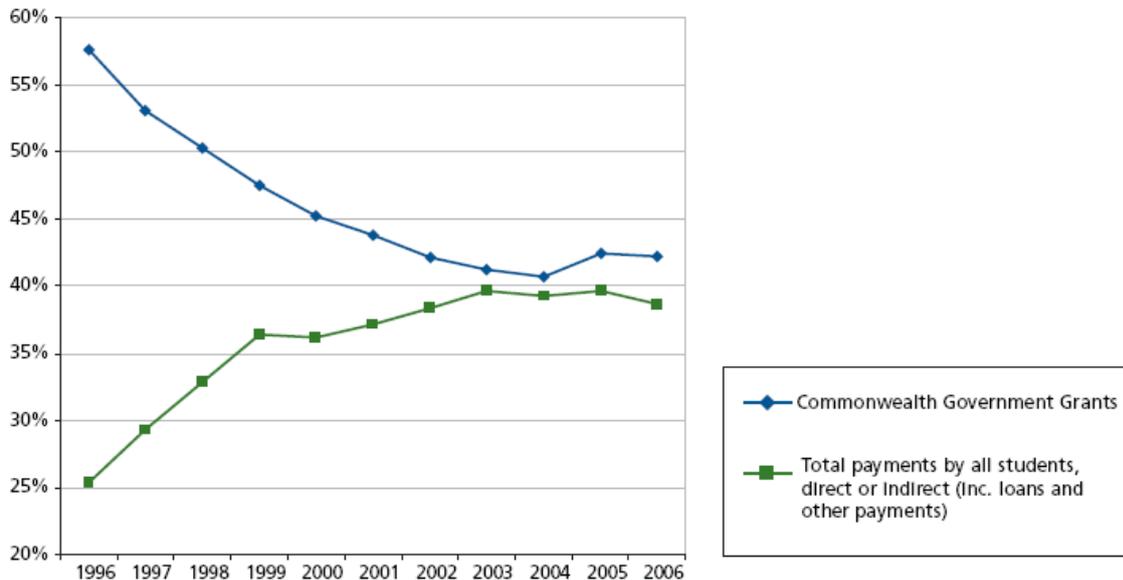


Source: Universities Australia (2008, p. 17).

Direct Commonwealth funding as a proportion of total revenue has declined drastically while the proportion of student contribution as HECS, loans and other payments of total revenue showed a sharp upward trend. This was one of the main issues considered in the *Review of Australian Higher Education* (DEEWR 2008d). Figure 3.2 shows the proportion of total revenue from direct commonwealth funding and from HECS loans and charges for the period from 1996 to 2006.

Figure 3.2

Proportion of total revenue from direct Commonwealth funding and from HECS, loans and charges, 1996-2006 (constant dollars)



Source: DEEWR (2008, p. 11).

The impetus for reforms in Australian universities since the early 1990s has been driven by a number of key factors. While these factors are discussed individually, it is important to note that there was no one single ‘magic bullet’ that gave rise to changing university governance. Rather, it was a confluence of related factors that caused a gradual build-up of political and economic pressures that necessitated governance reforms.

The patterns and composition of university income sources began to change in the 1990s (Arimoto 2002). Increasing costs in the provision of services, coupled with the escalating numbers of undergraduate enrolments (with concomitant pressures for capital investment in infrastructure), meant that universities needed to develop alternative revenue sources (Marginson 1997; Marginson & Considine 2000). This resulted in universities not only seeking revenue from private market sources (e.g. through the adoption of fee paying structures), but to demanding greater financial funding from public sources (at both the State and Commonwealth levels). Both approaches had consequences for corporate governance that were not necessarily envisaged by the universities. The consequences of universities pursuing private market funding (Marginson & Considine 2000) meant that the university sector exposed itself to increasing demands from stakeholders with greater bargaining power (Aitkin 1997, 1998). This bargaining power arose as stakeholders who invested in

universities (e.g. by providing research funds, investing in projects), had greater perceived rights to demand efficiencies in research and teaching standards and associated services (Coady 2000; Marginson & Considine 2000; Watson et al. 2003). This meant that universities needed to reform moribund governance structures that were largely unresponsive to market forces. Failure to adjust corporate governance structures is likely to deter private market investment, thereby placing further financial pressures on the university. The pressures placed on universities by their pursuit of private market funding were mirrored by pressures stemming from demands for greater financial funding from public sources (Richter & Buttery 2004; Watson et al. 2003).

It is important to realise that the 1990s marked the watershed of neo-liberal economic theory in which free markets and private utility were widely embraced by public policy (Meek & Wood 1997). The consequence is that political responses to university demands for increased funding emphasised the efficacies of the market as more beneficial to university efficiency (Slaughter & Leslie 1997). At the same time, funding that was granted to universities came under increased oversight as policy emphasised the need for public funds to be invested 'wisely' (i.e. in ventures that maximised returns to the electorate). The consequence was that universities needed to reform their corporate governance structures in order to attract public sector funding, as well as to garner private sector investment.

Deregulation of the tertiary education sector is another factor that gave rise to university reforms (Jongbloed, Maassen & Neave 1999). Deregulation not only allowed universities to seek private investment through fee paying structures, but increased competition for public funding by increasing the number of institutions at the tertiary level. This meant that universities were confronted with the two-pronged problem of needing to respond to increased competition (Marginson 1997), particularly from new and small universities that were 'leaner' and more cost effective, as well as lobbying for every smaller public sector funding allocation. These considerations promoted universities to shift toward a managerial form of governance. This form of governance was perceived by universities to be beneficial as it emphasised performance reporting and the pursuit of market principles within universities (Marginson & Considine 2000; Slaughter & Leslie 1997), which would allow for greater efficiencies in the utilisation of resources (Association of Commonwealth Universities 1997; Meek & Wood 1997). Furthermore, the adoption of a managerial governance approach meant that the university would be capable of pursuing potential commercial interests

through subsidiaries that had little, if anything, to do with the promotion of academic objectives (Neumann & Guthrie 2002). These approaches required changes to corporate governance structures as there was a need to emphasize performance outcomes, commercial accountability, and the strategic management of the university (i.e. the pursuit of competitive advantage in the market of tertiary education) (Neumann & Guthrie 2002; Parker, LD 2002).

As a consequence of the preceding factors, Australian universities became increasingly dependent on income derived from international students (Neumann & Guthrie 2002). While this meant that corporate governance structures had to be responsive to the expectations and demands of these stakeholders, the more significant implication is that it prompted universities to pursue international expansion under the aegis of corporate and subsidiary brandings strategies (e.g. University of New South Wales in Singapore). One of the consequences of international expansion is that it increased the scope for opportunism on the part of university agents, necessitating the development of corporate governance structures that would allow geographically dispersed ventures to be effectively monitored. However, the evidence of international expansion suggests that Australian universities have not developed sufficiently robust corporate governance structures (commercial expertise) to manage international expansion (e.g. the costly debacle of UNSW in Singapore and Monash University in South Africa). The confluence of the preceding factors meant that individual university departments became increasingly subject to performance assessments (Marginson 1997, 2006; Marginson & Rhoades 2002), with performance (usually measured in terms of enrolment numbers) linked to funding allocations within the university. This meant that corporate governance structures of departments within the university also started to reform, as departments realised that greater accountability and performance oversight was necessary in order to ensure long term viability of departments. This consideration was also coupled with the adoption of performance assessments for individual agents within the university (e.g. the notorious quality of teaching surveys) (Coaldrake, Stedman & Little 2003; Swansson, Mow & Bartos 2004) that specifically linked individual performance (as measured by stakeholders) with financial remuneration and career development (Richard & James 2002; Winter, Sarros & Tanewski 1998; Winter, Taylor & Sarros 2000).

3.3 Australian University System

Fielden (Winter, Taylor & Sarros 2000) developed a model using legal status and the institutional autonomy of publicly-funded universities all over the world. This model revealed that there is a spectrum of positions ranging from tight control of the universities by the state governments to their enjoying full independence and autonomy. The typology in Table 3.1 summarised those four models from control to autonomy. According to this model, the Australian university system was positioned under the independent model. Fielden’s (2007) research findings further explained that there is an implicit acknowledgement that the higher education authorities are entitled to hold an institution accountable and must retain overall strategic control of the sector. The principle of academic freedom is the key driver for many of the reforms that took place over the years and this is the focal point of the autonomy of universities.

Table 3. 1
Institutional Governance Models: Four Models from Control to Autonomy

Institutional governance model	Status of public universities	Country
State control	Can be agency of the Ministry of Education or a state-owned corporation	Malaysia
Semi-autonomous	Can be agency of the Ministry of Education, a state-owned corporation or a statutory body	New Zealand, France
Semi-independent	A statutory body, a charity or a non-profit corporation subject to Ministry of Education control	Singapore
Independent	A statutory body, charity or non- profit corporation with no government participation and control linked to national strategies and related only to public funding	Australia, United Kingdom

Source: Fielden (2007, p. 9).

The basic principle behind institutional autonomy is that institutions operate better if they are in control of their own destiny Fielden ((2007, p. 9). They have an incentive to change if they can directly benefit from their actions. (Uhrig 2003). In emphasizing the importance of an independent governance model, Fielden (2007) further argued that if a group of institutions in a university system is given autonomy to respond to national policy goals as they see fit, there is a reasonable chance that they will choose different ways of reaching the same goal, and since “Universities can be entrepreneurial and reap the rewards” Fielden ((2007, p. 18) before their competitor institutions overtake them, and that some will be more innovative than others. The limitation of this concept is whether academic professionals have the managerial skills and competency of exercise these powers effectively (Fielden 2007, p. 18). The *Universities: Backing Australia’s Future* reforms (Nelson 2003b) is the cornerstone

of autonomy of Australian universities, as it lies at the root of enabling institutions to manage their affairs as fully as the state will allow (Edwards 2000; Marginson & Considine 2000). According to the *Higher Education Support Act 2003*, (Commonwealth of Australia 2003), Australian universities are established under the laws of the Commonwealth, the states and the territories that empower them to achieve their objectives, and the Act further explained that the council as the governing body is responsible for both the university's overall performance and its ongoing independence.

3.4 Governance Reforms in Australian Universities in the Last Two Decades

During the past two decades Australian policy makers have made a significant effort to examine the capacities of Australian universities including governance arrangements and governing boards (Commonwealth of Australia 2003; De Silva 2010). While the majority of university reforms commenced in the 1980s (Pick 2006), the process of reforming governance only became an important issue in the early 1990s (De Silva 2010; Harman, K & Treadgold 2007). According to the White Paper (Dawkins, JS 1988) the governance forms of Australian universities were obsolete and had to make way for more efficient and effective corporate models. Further the White Paper (Dawkins, JS 1988) recommended a change in university council structure. Vice-Chancellors were to assume the additional title of Chief Executive Officer (CEO), and universities were to become more 'business-like' and entrepreneurial with smaller council size (10 - 15 members) (Dawkins, JS 1988; Harman, G 2003; Harman, K & Treadgold 2007). The most significant review of university governance and management, *The Higher Education Management Review* by David Hoare was conducted in 1995. The Hoare Review (1995) identified shortcomings in university governance arrangements and recommended clarification of the role of the governing bodies, and changes to the size, composition and methods of appointments of members to the governing bodies. Hoare (1995) argued that there was a "widespread lack of clarity about the primary roles of the governing body", which should be "principally those of guidance and review ... [while members should] bring diverse viewpoints, rather than represent Sectional interests" (Hoare 1995, p. 4). In this report, size was seen as less important than quality of membership and information available to the council, albeit a membership of 10 - 15 was suggested. State governments have legislative responsibility for universities and university councils derive their authority from and act as a trustee for the state (Harman, K & Treadgold 2007). Set up as independent corporations at law, universities also remain accountable to the

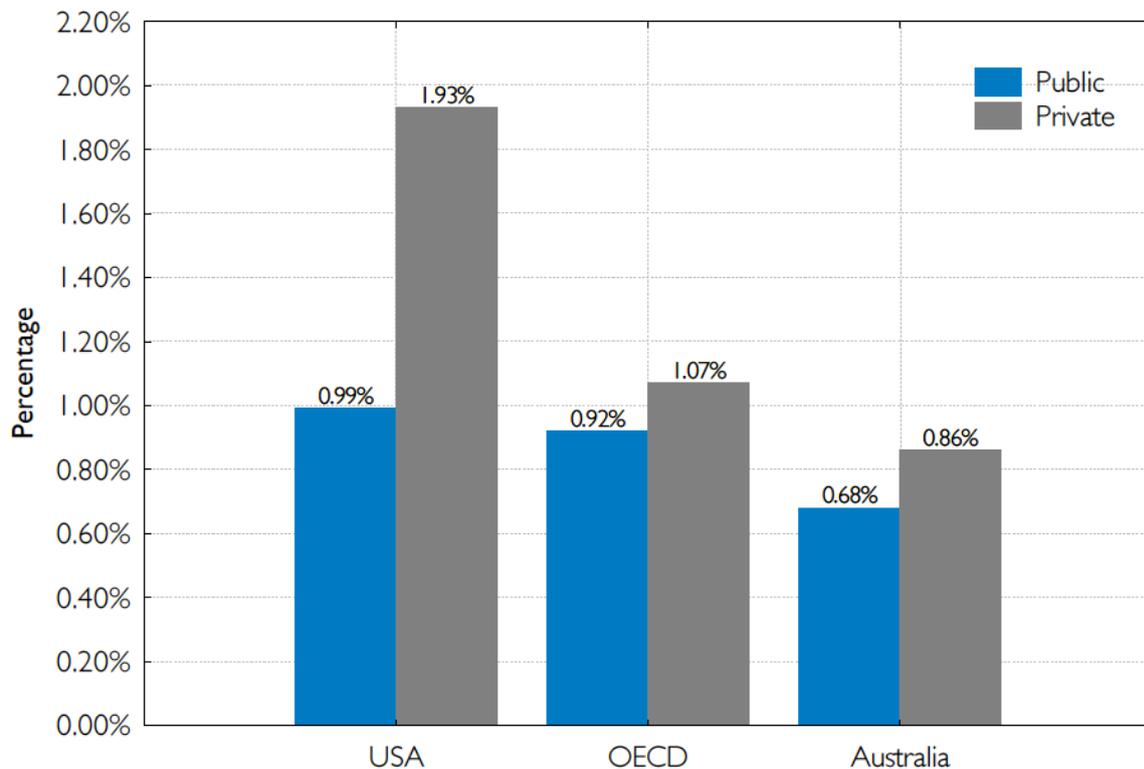
state for financial administration and auditing (Meek & Hayden 2005, p. 393). According to Fielden (2007), university governance should be autonomous in Australia compared to other form of governance structures identified in his study.

Several higher education reviews were undertaken from 2002 to 2005. *Higher Education at the Crossroads: An Overview Paper* (Nelson 2002a) dealt mainly with sectoral governance issues (Harman, K & Treadgold 2007), while attention was given also to the importance of formulating strategic directions for universities with council members to act “at all times as trustees of the university rather than as delegates representing Sectional interests” (Nelson 2002a, p. 137). This was followed by *Meeting the Challenges: the Governance and Management of Universities* (Nelson 2002b), in which emphasis was on duties and responsibilities of council members and also in *Higher Education at the Crossroads: An Overview Paper* (Nelson 2002a). *Our Universities: Backing Australia’s Future* (Nelson 2003b) outlined the National Governance Protocols for higher education announced by the Commonwealth Government. These protocols required universities to: specify the duties of council members; have members act solely as ‘trustees’; ensure council membership did not exceed 18; and secure at least one member with financial expertise and one with commercial expertise. This was followed by two more policy papers *Rationalising Responsibility for Higher Education in Australia* (DEST 2004) and *Building Better Foundations for Higher Education in Australia: A Discussion about Re-aligning Commonwealth-State Responsibilities* (DEST 2005a). The size of the governing body was limited to maximum 22 members, and the responsibilities, requirements and qualifications of members were also outlined. Further, the latter noted the two main perceptions of how university governance works: the traditional ‘stakeholder’ model and the proposed more ‘business’ model with independence from government (Nelson 2005, p. 10).

In the year 2008 the Higher Education Review Committee was appointed with Professor Denise Bradley as the chair of the committee. The Bradley Review (Bradley et al. 2009) revealed that Australia’s higher education sector was losing its competitive position against a number of countries on a range of performance indicators. This report further explained the need for the government and the members of the Australian community to take measures to strengthen the competitive position of Australian universities, as other countries have already moved to address the issue. The Bradley Review (Bradley et al. 2009) and *Universities Australia* (2008) emphasised the importance of higher participation and investment in tertiary

education, as a means of assisting the universities to remain internationally competitive. The Bradley report further recommended that Australia should follow other OECD countries, whose systems are of the best quality and with the highest performance, and hoped such an initiative would help Australia to find its competitive strengths in the international arena. “The measures supported in this report are designed to reshape the higher education system to assist Australia to adapt to the challenges that it will inevitably face in the future” (Bradley et al. 2009, p. xvii). This review noted that Australian government investment in the higher education sector is much lower than OECD countries (see Figure 3.3) (Bradley et al. 2009), and supported the requirement of additional, ongoing and significant public investment in higher education.

Figure 3.3
Public and Private University Funding, as a percentage of GDP



Source: Massaro (2009) and Bradley et al. (2009).

This report further emphasised the importance of the setting of public performance indicators to allow assessment of how well the Australian tertiary education system is performing against other countries to increase the transparency, accountability (Birrell & Edwards 2009; Bradley et al. 2009) and much needed “participation and higher engagement in higher education” (Massaro 2009, p. 3). Universities Australia (2008) argued that the performance indicators should be flexible and should not harm the academic integrity and the autonomy of

universities. As a consequence of the Bradley report, the government has expressed real concern for maintaining quality standards and has responded by making arrangements to establish the Tertiary Education Quality Standards Agency (TEQSA) in 2011, which has responsibility of introducing benchmarks for quality of teaching and research in Australian higher education system (2008)

In response to the findings of the *Bradley Review of Australian Higher Education* (Bradley et al. 2009), the Government introduced a comprehensive package of reforms to higher education in Australia in the 2009 Budget, which were articulated in *Transforming Australia's Higher Education System* (Commonwealth of Australia 2009). In the year 2010, the Australian government appointed the Higher Education Base Funding Review chaired by Dr Jane Lomax-Smith. This review will analyse public investment policies in higher education, including the 'appropriate balance' between public and private contributions in the cost of education in the higher education sector and distribution of funds by discipline. This panel will report in 2011 and in the terms of reference it was mentioned that its purpose was to:

... commission a review of the base funding levels for learning and teaching in higher education to ensure that funding levels remain internationally competitive and appropriate for the sector, together with work on options for achieving a more rational and consistent sharing of costs between students and across discipline clusters as recommended by the Bradley Review ... (DEEWR 2010, p. 1)

3.5 National Governance Protocols and Governance Best Practice

As noted above, various reviews in the higher education sector have taken place and, depending on the recommendations of those reviews, higher education policy reforms have been established. In 2003 the National Governance Protocols were introduced as a requirement of the *Our Universities: Backing Australia's Future* package (Nelson 2003b) which was the Code of Best Practice on Governance for Australian universities. The driving forces for changes to university corporate governance culminated from the package with the Nelson Report (Nelson 2003b) developed in 2003. Nelson Report was followed by *Rationalising Responsibility for Higher Education in Australia* (DEST 2004) and *Building Better Foundations for Higher Education in Australia: a Discussion about Re-aligning Commonwealth - State Responsibilities* (DEST 2005a). The Nelson Report (Nelson 2003b)

sought to develop a guideline or blueprint for university reform that responded to perceived market conditions in the tertiary education sector. As the then First Assistant Secretary of Higher Education observed shortly before the Nelson Report (Nelson 2005), there remained significant impetus for reforming university governance even in light of the changes over the preceding decade.

Scope also exists for management improvement in various areas, notwithstanding the significant advances made over the past decade in the development of policies, procedures and systems, and the gradual professionalization of the central administration, including commercial activities where performance has been volatile (Nelson 2005). Admissions are closely controlled in most universities but less so in others, as reflected in excessive levels of over-enrolment. Student services are efficient and customer-sensitive in some universities but not in others, and most have yet to develop customer management systems. Market analysis is undertaken well in several institutions, but not at all in others. There is variability in the efficiency of financial and asset and human resources management. Universities are on the whole lagging well behind other institutions in identifying and collaborating on ways to reduce back office inefficiencies, such as for transaction processing and fleet and property management. The Nelson Report (2003b) also sought to address perceived inefficiencies in the university system. These inefficiencies would be addressed through further reforms to university corporate governance.

The Nelson Report essentially boiled down the need for, and rationales of, corporate governance reforms, to three inter-related reasons. Firstly, the market for tertiary education services, both domestically and internationally, meant that universities had to differentiate themselves. For the Nelson Report (2003b), universities had to “differentiate their missions” and specialise through “developing a strategic portfolio of research activities and training programs.” The consequence of this need for differentiation (c.f. competitive advantage) is that universities needed to be more responsive to market forces (Harman, G & Harman 2003), providing services that stakeholders demanded and reducing those that were not demanded. The second reason was that the Nelson Report argued that stakeholder choice is vital to the promotion of efficiencies and accountability within universities. As Pick (2006) observes, the notion of choice had implications for public funding of universities “... the value of individual choice justifies a re-framing” (Pick 2006, p. 231) [of] the Higher Education Contributions Scheme (HECS) placing the idea of choice under the issue of allocating public

subsidies. In the previous HECS system, students were required to contribute to their higher education course fees either by paying up-front or through the taxation system after graduating. The Nelson reforms signalled a change to this system. Nelson introduced the idea of full-fee paying places for Australian students. These changes were in addition to an earlier introduction of differentiated HECS fees for different types of degree courses. This report thereby emphasised the assumption that university services and objectives could be measured through market-based pricing mechanisms (which themselves are a function of demand and supply). However, such price signalling could only be effective if universities were capable of transforming their governance structures so that price signalling could be used to manage supply within the university itself (i.e. the allocation of funding to departments that were more efficient than others) (Pick 2006).

The third reason for, and rationale of, corporate governance reforms proposed by the Nelson Report, was the need for improved accountability. The Nelson Report (2003b) argued that the benefits of market incentives and price signalling would not be internalised (i.e. adopted) by universities unless accountability became more stringent and robust. For the Nelson Report, accountability emphasised performance outcomes, and the capacity and willingness of university governing bodies to implement reporting and incentive mechanisms that promoted productivity (Nelson 2002a; Pick 2006). Accountability would, in turn, increase university performance and thus allow universities to attract larger numbers of fee-paying students, as well as a greater proportion of limited public sector funding. Though there are differences between the private sector and the public sector accountability to its stakeholders, including to its owners, it is similar in both sectors. The performance measures improve this accountability beyond the basic point where there are both similarities and differences in corporate governance in the public and private sectors, and even the similarities have their limits. “While ‘accountability’ to stakeholders (including owners) is a common feature in both sectors, the multiple dimensions of ‘accountability’ differ across the two sectors, and those differences split further into differences of context, character, focus and stakeholder identity” (Halligan & Horigan 2005, p. 16).

The impetuses for reforms since the 1980s have been reflected in the National Governance Protocols for university governance established by the Department of Education Science and Training and in the *Higher Education Support Act 2003*. As indicated, the protocols emphasis the very same rationales as that of the White Paper (Dawkins, J 1988), as well as responding

to the factors promoting governance reforms that emerged since the early 1990s (Meek & Wood 1997). As part of the 2003-04 Budget, the Australian Government announced the *Our Universities: Backing Australia's Future* package of reforms to the higher education sector. The reforms give universities access to increased funding to deliver world-class higher education, with a focus on quality learning outcomes (Nelson 2003b). These reforms included significant changes to university governance arrangements. The responsibility for the governance and management of a university is typically vested through State legislation in a governing body such as the Council or the Senate, which may delegate some of its powers. Almost every university's enabling legislation provides for the governing body to have the overall control and management of the university (Nelson 2003b). The Australian government exercises its influence over governance structures and accountability requirements by using the funding mechanism established under the *Higher Education Support Act 2003* (Commonwealth of Australia 2003). Universities were expected to comply with the National Governance Protocols for higher education by year 2007 and this was considered as one factor in funding. Table 3.2 outlines some governance policy initiatives which took place in the higher education sector in Australia.

Table 3.2
Major government policy initiatives in the higher education sector

Details	Reference
the Hoare Committee Review of Higher Education Management	(Hoare 1995)
the Victorian Ministerial Committee of Advice on University Governance	(Storey 1997)
the West Review	(West 1998)
the Victorian Review of University Governance	(Hamilton 2002)
the Nelson Review Backing Australia's Future	Nelson(2003)
the (Bradley review)Review of Australian Higher Education	(Bradley 2009).
Transforming Australia's Higher Education System	(DEEWR 2009)

3.5.1 National Governance Protocols for University Governance

National Governance Protocols (Nelson 2003b) for university governance were established by the Department of Education Science and Training (DEST) (now known as the Department of Employment, Education and Workplace Relations (DEEWR)). There are eleven protocols, each of which has substantial implications for theories of governance (Nelson 2003b). This sub-section presents the issues related to the following eleven protocols.

Protocol 1: the higher education provider must have its objectives and/or functions specified in its enabling legislation;

Protocol 2: the higher education provider's governing body must adopt a statement of its primary responsibilities, which must include;

Protocol 3: the higher education provider must have the duties of the members of the governing body and sanctions for the breach of these duties specified in its enabling legislation;

Protocol 4: each governing body must make available a programme of induction and professional development for members... At regular intervals the governing body must assess both its performance;

Protocol 5: the size of the governing body must not exceed 22 members; at least two members having financial expertise ... with commercial expertise. There must be a majority of external independent members who are neither enrolled as a student nor employed by the higher education provider;

Protocol 6: the higher education provider must adopt systematic procedures for the nomination of prospective members of the governing body for those categories of members that are not elected;

Protocol 7: the higher education provider is to codify its internal grievance procedures;

Protocol 8: the annual report of the higher education provider must be used for reporting on high level outcomes;

Protocol 9: the annual report of the higher education provider must include a report on risk management within the organisation;

Protocol 10: the governing body is required to oversee controlled entities by taking reasonable steps to bring about the following;

Protocol 11: A higher education provider must assess the risk arising from its part ownership of any entity; (Nelson 2003b)

The *first protocol* (Nelson 2003b) is that the university must have its objectives and functions specified in its enabling legislation. The intention of this is to ensure that authority is delegated to university oversight committees, with this authority being clearly defined and transparently articulated. In this context, the specification of objectives and functions in the

legislation means that university oversight committees are limited in their capacity to assume authority, though they may claim to do so in order to achieve the objectives and functions specified in the legislation. Furthermore, specification of objectives and functions provides greater accountability of university oversight committees to stakeholders, particularly given that stated objectives are clear and actual performance may thus be assessed against these objectives. The first protocol thereby seeks to promote alignment of the principal and agent interests by promoting transparency in delegated authority, as well as clearly articulated performance expectations. In itself, the first protocol is insufficient to promote proficient university governance. It is nevertheless fundamental to a system of reformed governance standards as it places transparency and accountability at the forefront of the rationale for universities (i.e. it embeds these concepts in the legislative mandate of the university). The prominence given to accountability and performance transparency in publicly available legislation also promotes potentially wider scrutiny (i.e. monitoring) of university agent behaviour and performance outcomes.

The *second protocol* (Nelson 2003b) is that the university's governing body must outline its primary responsibilities in a clear and publicly available manner. While this is appropriate to promoting efficient governance as it facilitates transparency and accountability, the protocol also outlines a set of minimum responsibilities that the university's governing body is required to be accountable for. These responsibilities include:

appointing the Vice-Chancellor as the chief executive officer of the university and monitoring their performance;

- approving the mission and strategic direction of the university, as well as the annual budget and business plan;
- overseeing and reviewing the management of the university and its performance;
- establishing policy and procedural principles, consistent with legal requirements and community expectations;
- approving and monitoring the systems of control and accountability, including general overview of any controlled entities;
- overseeing and monitoring the assessment and management of risk across the university;
- overseeing and monitoring academic activities of the university; and
- approving significant commercial activities of the university.

These minimum responsibilities are significant for a number of reasons. In the first instance, they specify executive responsibility and the accountability of this responsibility. This is evidenced in the appointment of a Vice-Chancellor (as chief executive) and the oversight and review functions of the university's governing board. The responsibilities also indicate that performance objectives and accountability need to be aligned with the interests of agents (i.e. the establishment of policy and procedural policies consistent with community expectations). In this sense, the performance objectives are linked to the mission and strategic direction of the university established by the governing board. As such, set objectives and performance are directly attributable to the members of the governing board, the implication being that authority is clearly delegated and the performance of this authority directly measured in regard to the policies and practices established by the governing board.

The minimum responsibilities also intend to define the scope of authority exercised by the university governing board. This is evidenced by the specifications placed on the board's monitoring and approval requirements, as well as the implied necessity of the board to ensure accountability of all aspects of operations controlled by the university. The requirements also recognise the capacity of agents to engage in opportunism, thus necessitating oversight and monitoring by the governing board, which is also directly connected to the appropriate release of resources to agents within the university. That is, the protocol implies that resource allocations should be linked to accountability mechanisms, with poor performance requiring greater monitoring and accountability mechanisms by the governing board.

Finally, the protocol recognises that governing boards should not engage in activities that are the interest of stakeholders.. This is evident not just from the accountability and reporting requirements, but by the responsibility of the governing board for approving the commercial activities of the university (i.e. the protocol intends to focus the university on academic and not commercial pursuits). When considered in combination with the preceding protocol, the second protocol provides more specific consideration as to how the objectives and functions of the university that are specific in mandating legislating should be pursued. The intent of the second protocol is to ensure that universities are managed in ways that not only promote achievement of legislated objectives, but the *efficient* pursuit of these objectives through clearly defined responsibility and accountability.

The *third protocol* (Nelson 2003b) was that the university must specify the duties and responsibilities of members of governing bodies, as well as sanctions for the breach of such duties in the universities Act – note the absence of rewards for productivity gains that maximise the achievement of duties. The protocol indicates that members of governing bodies should be elected and must be responsible and accountable, such that the member of the governing body acts in the best interests of the university, and by implication its stakeholders. A number of minimum duties must be specified by the university, including that the member:

- act in the best interests of the university;
- act in good faith, honestly and for a proper purpose;
- exercise appropriate care and diligence;
- not improperly use their position to gain an advantage for themselves or others; and
- disclose and avoid conflicts of interest.

This protocol was significant as it intended to limit the scope for individuals to engage in behaviour that failed to maximise the interests of stakeholders. On the one hand, these limitations are reflected through tacit consent to concepts that are empirically and procedurally difficult to substantiate (e.g. the notion of acting in good faith). On the other hand, these limitations are reflected in procedural practices that may be readily defined and assessed (e.g. disclosure provisions). Both of these applicable limitations methods are useful for promoting agent behaviour that maximises returns to stakeholders. The problem with the third protocol is that it fails to consider how agent behaviour may be furthered through incentive structures. While the protocol recognises that sanctions should be clearly specified, disseminated and understood, it fails to consider how reward mechanisms may be more appropriate and efficient in minimising agent opportunism. This is not to deny the importance of sanctions, yet sanctions serve largely to restrict behaviour, rather than to further engagement of behaviours that maximise stakeholder returns. In other words, rewards provide incentives for agents to act in certain (and presumably desired) ways, whereas sanctions punish undesired actions. Sanctions alone will thus be inadequate for promoting efficient achievement of the minimum duties outlined in the third protocol.

The *fourth protocol* (Nelson 2003b) specified that university governing bodies must provide induction and professional development programs to constituent members in order to

promote the development of appropriate expertise. These programs are also intended to increase agent awareness of their duties and responsibilities to stakeholders. More importantly, the protocol specifies that the governing body must assess both its performance, and conformance with the protocols, on a regular basis. The fourth protocol is thereby significant as it specifically outlines that governing bodies are required to assess their performance. However, with this protocol it is assumed that governing bodies are capable of not only objectively assessing their performance, but of enacting revisions to established policies and strategies in order to avoid potential under-performance (Armstrong & Unger 2009). This is somewhat circuitous in the absence of independent auditing of governing bodies, as it assumes that agents are capable of managing their own performance assessments in the interests of stakeholders. This is intuitively and empirically flawed reasoning (albeit without consideration of related conditions in other protocols).

However, the fourth protocol is important because it specifically articulates the assessment and accountability function of governing bodies, with this function needing to be periodic and transparent. In addition, the protocol implies that limitations to performance may be the result of inadequate or inappropriate knowledge, skills and abilities of the governing body. The suggestion is that such inadequacies can be corrected through training programs, but the underlying current (particularly in combination with protocol three) is that under-performance results in sanction and potential dismissal from the governing body. The fourth protocol is thus important as it specifies the connection between the expertise of governing body members, their performance and the potential consequences of under-performance. This is a connection that is required if stakeholder interests are to be duly considered and maximised.

The *fifth protocol* (Nelson 2003b) stated that the size of the governing body must not exceed 22 members, with at least two of these members possessing financial expertise and one with commercial expertise. In addition, in instances where the governing body contains fewer than ten members, one member must possess financial expertise and one with commercial expertise. In either case, the majority of governing body members must be independent (i.e. neither enrolled as a student nor employed by the university), and there must not be current members of Parliament or legislative assemblies on the governing boards unless these members are specifically selected by the governing board itself. Furthermore, the protocol specifies that a majority of members must be external (i.e. independent), the implication

being that better accountability and oversight are provided (as conflicts of interest are minimised). The benefit of this protocol is that it provides a blue-print for best practice of governing bodies, not just in their size but in terms of their composition. In addition, the protocol reiterates the notion of members possessing the ‘right’ knowledge, skills and abilities, with minimal requirements for members possessing financial and commercial expertise. The emphasis on a certain number of governing board members possessing financial and commercial expertise is important as it serves to emphasis the shift toward a managerial approach to governance that is guided by commercial and financial performance measures. At the same time, the emphasis on financial and commercial expertise suggests potential conflict between the pursuit of commercial outcomes and the academic programs/objectives of the university. As university academic programs do not generate revenue in the absence of fee-paying students, there is some degree of discrepancy between the espoused values of education and the commercial emphasis of board compositions. This tension could, however, be managed through specifications in other protocols, such as the first and second protocols.

The *sixth protocol* (Nelson 2003b) specified that the university must adopt systematic procedures for the nomination of prospective members of the governing body for those members who are not elected. Such members must be selected on the basis that their knowledge, skills and abilities provide demonstrated benefits to governing bodies. The protocol also specifies that the term of governing board membership must overlap with minimum term periods being specified by the university (though terms should not exceed twelve years unless agreed to by the majority of the governing body). The sixth protocol thereby seeks to specify contractual durations of agents on oversight committees, as well as re-emphasising the importance of knowledge, skills and abilities to effective university governance. The significance of the sixth protocol is that it limits the potential for agents to become fixtures of governing bodies, thus implicitly encouraging dismissal or removal of members who are under-performing. The limitation to term periods, coupled with revolving elections, means that agents are unable to easily monopolise or ‘stack’ the governing body with cronies or ineffectual agents who may collaborate in opportunism. Furthermore, limited terms and revolving elections provide increased scope for stakeholders to evaluate potential appointees, as well as providing periodic opportunities for stakeholders to express their assessments of board performance (e.g. by failing to support the election of governing board members nominated by an under-performing governing body).

The *seventh protocol* (Nelson 2003b) provided that a university must codify its internal grievance procedures and make these procedures publicly available. This is an interesting protocol as its intention is to promote transparency and accountability by allowing stakeholders to express dissatisfaction with agent behaviour. While this may promote effective governance, it is also a problematic and limited approach. In the first instance, the protocol fails to specify how such grievance procedures are administered and whether the outcomes of such procedures are subject to assessment and accountability (i.e. the procedures may lend themselves to perfunctory rather than productive dispute resolutions policies). Furthermore, the protocol does not explain how administration of the grievance procedures will proceed or whether failure to comply with the procedures will result in substantial sanctions (protocol three indicates that sanctions will apply, but it is unclear how such sanctions may be treated in regard to grievance procedure). The consequence of the seventh protocol is that while it is intended to promote accountability and transparency, it lacks specifics in terms of designated authority and stakeholder involvement. This means that the protocol is unlikely to represent a robust means for universities to pursue effective governance, though the protocol does contribute to the intentions of the other protocols. As such, the protocol provides complementary, rather than stand alone, support for the other ten protocols.

The *eighth protocol* (Nelson 2003b) indicated that the university must provide a publicly available annual report that outlines its performance against specified objectives. The intention of this protocol is to ensure transparency in reporting mechanisms which, in turn, provides information to stakeholders about governance structures. While annual reporting is beneficial to promoting transparency, the eighth protocol is limited as it fails to specify the depth and scope of reporting, resorting instead to general content rather than specifics. The implication is that agents can provide vague and poorly explained statements that merely articulate connections between performance and objectives that may be deliberately myopic – with such an approach being unlikely to be subject to sanctions as it is difficult to prove that reporting is deliberately short-sighted or misleading.

Furthermore, the protocol fails to specify the reporting requirements of committees accountable to the governing board. For example, there are no specifications as to what audit and human resource committees should report upon, or even whether such reporting is

required. This raises questions as to the efficacies of accountability, as the absence of such reporting casts doubt on the validity and reliability of conclusions and reports provided by the governing body. That is, in the absence of reporting data assessed by the audit board independently, it is difficult to accept that the governing body's claim that the financial situation of the university is sound, actually reflects the financial condition of the university. The protocol thereby limits the efficacies of separated powers within the university system that is intended to promote accountability and transparency in the best interests of stakeholders.

The *ninth protocol* (Nelson 2003b) supplemented the preceding protocol in that it specifies that the annual report of the university must include an assessment of risk management within the university. Risk management is essential to effective corporate governance as it necessitates transparency in information flows, clearly delineated lines of authority, specified objectives and accepted incentive mechanisms. The intent of the protocol is thereby to promote the adoption of transparency and accountability in risk management. The limitation, however, is that the protocol does not specify how strict, robust and detailed the risk management reporting should be, nor does it explain how these risk management reports are audited and approved (particularly whether such audits and approvals are granted by independent bodies within or outside the university). This is a substantial oversight as it leaves the risk management reporting open to opportunism, particularly if agents have no appropriate incentive mechanisms to warrant transparent and detailed reporting (i.e. there are incentives for agents to maintain asymmetric information to the detriment of stakeholder interest. This protocol is nevertheless useful in the context of the other ten protocols as it specifies how the objectives, practices and behaviours of agents are being translated into actual risk management processes. The mere fact that risk management reporting has to take place means that issues of transparency and performance assessments, as well as the extent to which transparency and performance contribute to the objectives of the university, will promote consideration of whether corporate governance is sufficient. However, as a standalone protocol, the risk management reporting requirement lacks sufficient depth and specifications to meaningfully contribute to the promotion of effective corporate governance.

The *tenth protocol* (Nelson 2003b) specified that the governing body of the university needs to take reasonable steps to oversee controlled entities. These steps include:

- ensuring that the entity's board possesses the knowledge, skills and abilities necessary to provide proper stewardship;
- appointing some directors to the board of the entity who are not members of the governing body;
- ensuring that the board adopts and regularly evaluates a written statement of its own governance principles;
- ensuring that the board documents a clear corporate and business strategy which reports on and updates annually the entity's long term objectives, and includes an annual business plan containing achievable and measurable performance targets; and
- establishing and documenting clear expectations of reporting to the governing body.

The intention of the tenth protocol was to ensure that the governing body exercises effective control (i.e. monitoring and responsibility) of those bodies that it delegates a defined authority to. This is an important consideration as it emphasises the need for the governing body to ensure accountability, transparency and performance management of those agents directly under its control.

The *final protocol* (Nelson 2003b) specified that a university must assess the risk arising from its part ownership in any entity. This protocol is similar to the preceding protocol, though it places emphasis on the notion of equity control and implies a role for the governing body in investing and managing subsidiary entities (which may be commercial in focus). The protocol is insightful in that it highlights the assumption that university governance is not just about the efficient pursuit of academic objectives, but about managing commercial entities or other entities that may have little to do with the central objectives and functions of the university. This implied that universities themselves could, and perhaps should, be managed as commercial entities and the current environment in which the higher education business is carried out bears many similarities to the business environment. Although the university structure is an ancient one, and the legal forms on which it is based do not sit easily with commercial ends, the increasingly commercial activities of the university lead to an inevitable increase in the potential for litigation, and a decrease in the effectiveness of defence based on the universities' public designations (Armstrong & Unger 2009).

This protocol emphasised the requirements of transparency and accountability, with these requirements being pursued through specified reporting and authority definitions. It is important to note, that the benefit of the protocols relies on the holistic adoption of all the protocols. This is because the individual protocols in isolation are incapable of promoting robust and effective corporate governance. The issue that arises from the discussion of university corporate governance protocols espoused by the DEST is how such protocols developed. In particular, consideration needs to be given to the extent to which the implementation of the protocols achieved their objectives.

3.6 Characteristics of Australian University Sector

According to the *Review of Australian Higher Education: Discussion Paper* (2008d), the Australian university system comprises of thirty-nine universities including 2 private universities. The average number of students at an Australian university is 25,000. Over the previous decade, total enrolments of higher education increased by 50 per cent and overseas student numbers trebled:

Higher education is now a major component of the economy and a major export earner ... and in 2006; the sector employed around 92,000 people and generated total revenue of \$15.5 billion. Overall education export earnings in 2007 were \$12.5 billion, making it Australia's largest services export and third largest export sector (behind coal \$20.8 billion and iron ore \$16.1 billion). Higher education's share was over \$7 billion in education export earnings, predominantly from onshore earnings. (DEEWR 2008d, p. 3)

Each publicly- funded university has its own enabling legislation that establishes it as a statutory body in its home state or territory (DEEWR 2008d, p. 3) except for the Australian Catholic University (which is incorporated under the *Corporations Act 2001*). Each is established under its own act as a separate legal entity given powers to act as an independent autonomous agency (Nelson 2005; Osborne, M & Bell 2009). All the Australian States and Territories have financial administration and audit Acts which apply to their statutory bodies and public universities, as statutory bodies, are subject to a wide range of State and Territory legislation in addition to their enabling legislation. These Acts, and the various regulations and Ministerial guidelines under them, provide the framework for universities' financial management and accountability:

The financial accountability frameworks of the States or Territories are, in general terms, those applied to any state/Territory statutory agency and are not university specific. They require universities to provide Ministers with audited financial statements and performance information and to notify about specified financial and business dealings. (Osborne, M & Bell 2009, p. 32)

The governing bodies of the Australian universities which are established by the acts of those universities are called university councils. Council is chaired by the Chancellor and is advised by oversight or standing committees. The university's Vice- Chancellor is appointed as the Chief Executive Officer and the President by the enabling legislation of the university (Nelson 2003b) and he or she is normally supported by the Deputy Vice-Chancellors. University enabling Acts generally include a description of the governing body's functions, making it clear that they manage and control the entire affairs of the university: including oversee the management and development of the 'university'; devise or approve strategic plans and major policies; and monitor and review the operations consistent with the university having a high level of autonomy (Nelson 2003b) . There are other provisions related to the legislation that limit their powers. The power of universities undertaking commercial activities is regulated by the legislative framework in the State/Territory and 'universities in general are restricted in their borrowing and investment powers to the purposes of the university. They frequently need some form of consent from the State or Territory Treasurer in relation to their borrowing and investment activities. Further the "universities are often restricted in the use and disposal of assets, especially land allocated to them for campuses" (Osborne, M & Bell 2009, p. 32).

Universities may undertake their commercial activities through many different sorts of legal entities such as trusts, unincorporated bodies, partnerships and companies limited by guarantee or shares. They may involve partnerships with other universities, including from other States or Territories and overseas, as well as private and public companies. States and Territories usually apply accountability and regulatory requirements, additional to those of the corporations' law, to the 'controlled' companies of universities. The relevant Auditor-General must usually audit the financial statements of any 'controlled' entity, (as defined for example in Australian Accounting Standard AAS24). (Osborne, M & Bell 2009, p. 33)

Australian universities have formed three mutual groups and according to Williams and Van Dyke (2004). The membership of any of these groups does not in itself signify anything

special about the member universities, but they have a similar style and focus and the formation of these groups will most likely accentuate these similarities (Williams, R & Van Dyke 2004). These groups have their own strengths and these groups have mainly formed to promote their mutual objectives and increase negotiation power over matters relating to the higher education sector and especially for their members. Those three groups are Group of Eight (Go8), Australian Technology Network (ATN) and Innovative Research Universities Australia (IRUA). There are universities that are not part of any of these groups. The list of those 37 publicly- funded universities according to the State with their affiliations is presented in Table3.3.

Table3.3 List of Publicly-funded Universities in Australia

State	Name of the University	Abbreviation	Group
New South Wales	Charles Sturt University	CSU	
	Macquarie University	MaqU	IRUA
	Southern Cross University	SCU	
	The University of Newcastle	UNC	IRUA
	The University of New South Wales	UNSW	Go8
	The University of New England	UNE	
	The University of Sydney	SYD	Go8
	University of Technology Sydney	UTS	ATN
	University of Western Sydney	UWS	
	University of Wollongong	UOW	
Queensland	Central Queensland University	CQU	
	Griffith University	Griff	
	James Cook University	JCU	IRUA
	Queensland University of Technology	QUT	ATN
	The University of Queensland	Qld	Go8
	University of Southern Queensland	USQ	
	University of the Sunshine Coast	USC	
Victoria	Deakin University	Deakin	
	La Trobe University	LTrob	IRUA
	Monash University	Monash	Go8
	RMIT University	RMIT	ATN
	Swinburne University of Technology	Swin	
	University of Ballarat	BAL	
	The University of Melbourne	Melb	Go8
	Victoria University	VIC	
Western Australia	Curtin University of Technology	Curtin	ATN
	Edith Cowan University	ECU	
	Murdoch University	MU	IRUA
	The University of Western Australia	UWA	Go8
Australian Capital Territory	The Australian National University	ANU	Go8
	University of Canberra	Canb	
South Australia	The University of Adelaide	Adel	Go8
	Flinders University	Flind	ARUA
	University of South Australia	USA	ATN
Northern Territory	Charles Darwin University	CDU	
Tasmania	University of Tasmania	Tas	
Multi State	Australian Catholic University	ACU	

Notes: Go8: Member of Group of Eight.

IRUA: Member of Innovative Research Universities Australia

ATN: Member of Australian Technology Network.

Source: Williams and Van Dyke (2004).

The Australian university sector has shown a considerable growth and Table 3.3 shows some of the important statistics obtained from DEEWR's selected higher education statistics annual data collection for the period from 2003 to 2007. Figure 3.4 shows the selected financial statistics from 2003 to 2007 and Figure 3.5 shows the selected student load and staff load statistics for the same period.

Table 3.4
Summary of Key Statistics for Australian Higher Education, 2003 to 2007

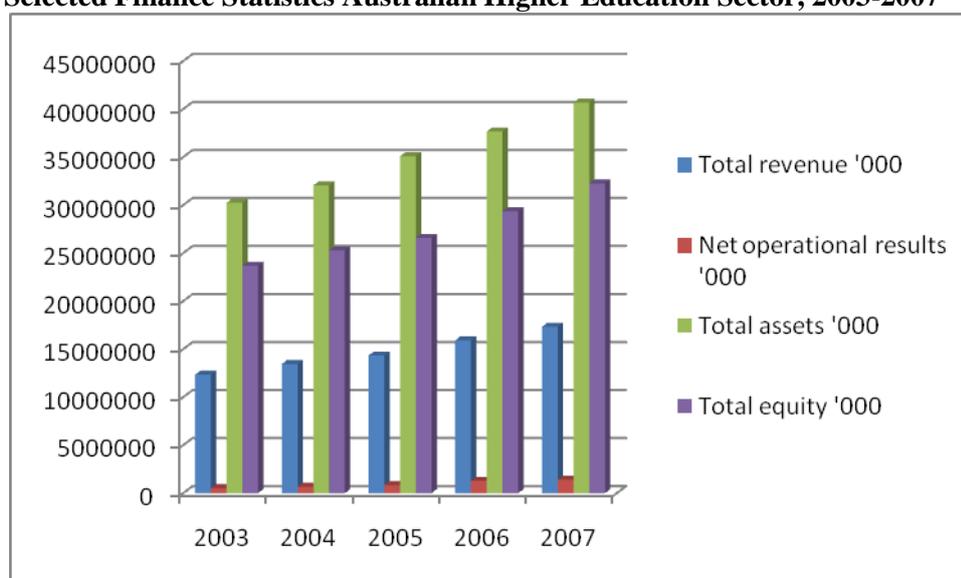
Item	2003	2004	2005	2006	2007
Total revenue \$ '000'	12331827	13448372	14327515	15913021	17316029
Net operational results \$ '000'	527086	662131	832923	1279560	1400149
Total assets \$ '000'	30241156	32046901	35084948	37658174	40675880
Total equity \$ '000''	23679888	25276883	26574030	29359794	32253871
EFTSL total	650849	661206	674092	691928	725892
EFTSL domestic	503443	498985	501853	512156	529016
EFTSL Overseas	147405	162220	172239	179772	196876
EFT total	75555	78189	80464	81781	83929
EFT academic	31904	33043	34277	35151	36600
EFT non-academic	43651	45146	46188	46630	47330

Notes: EFTSL= Equivalent full-time student load.

EFT= Equivalent full-time.

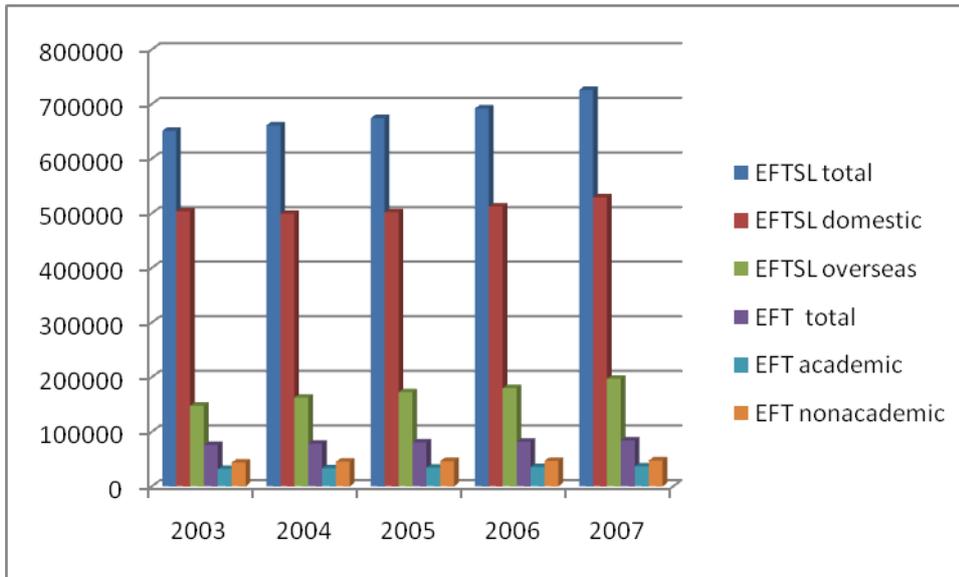
Source: DEEWR higher education data collection based on *Finance: Selected Higher Education Statistics, Students: Selected Higher Education Statistics and Staff: Selected Higher Education Statistics* for years 2003 to 2007.

Figure 3.4
Selected Finance Statistics Australian Higher Education Sector, 2003-2007



Source: DEEWR higher education data collection based on *Finance: Selected Higher Education Statistics*, for 2003-2007.

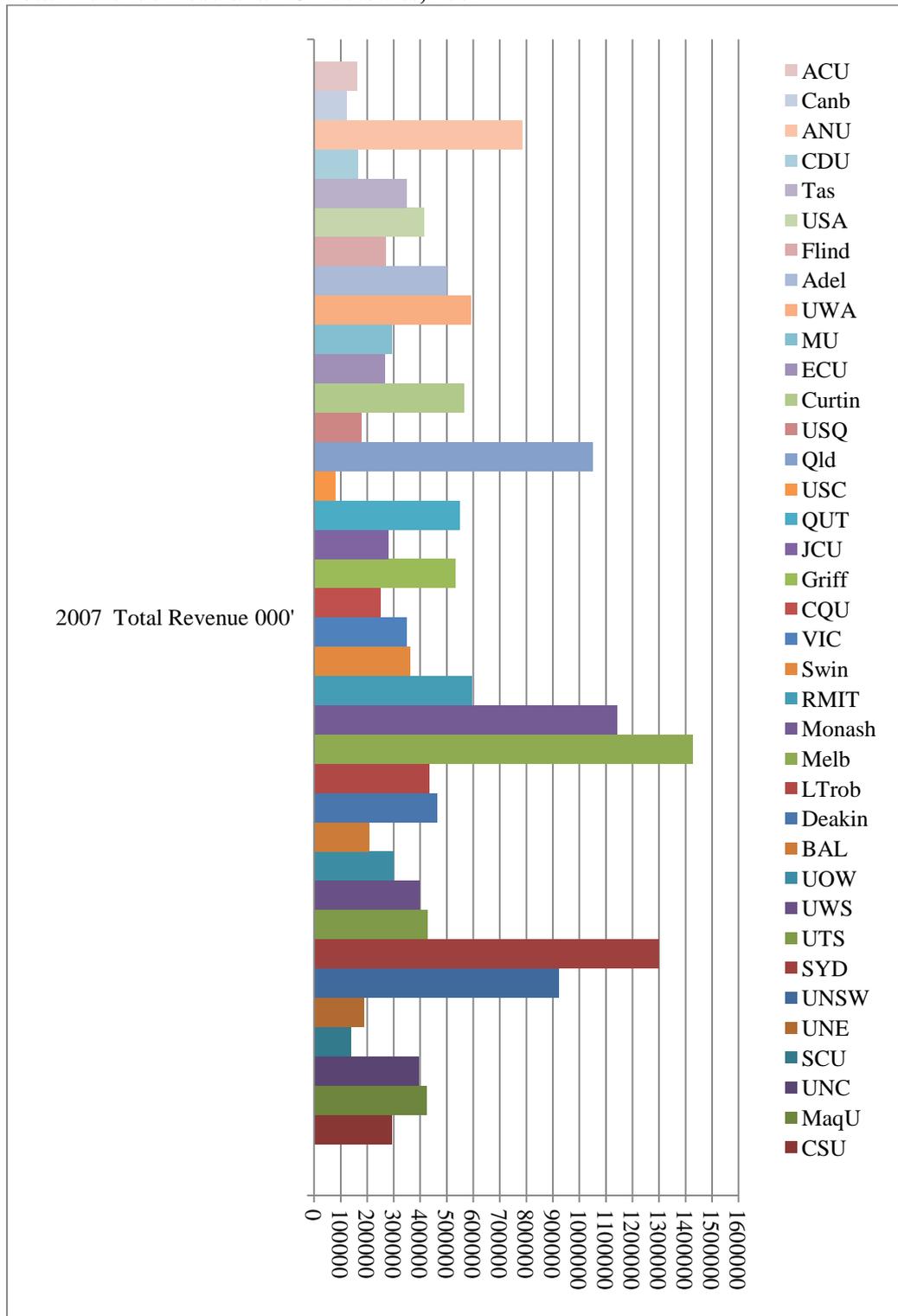
Figure 3.5
Selected Student Load and Staff Load Statistics Australian Higher Education Sector 2003-2007



Source: DEEWR higher education data collection based on *Staff: Selected Higher Education Statistics and Students Selected Higher Education Statistics*, both for year, 2003-2007.

As shown in the Figure 3.6, in the year 2007 all the Australian universities except University of Sunshine Coast enjoyed total revenue above 100 million and University of Melbourne which had the largest cash flow of the year had annual revenue of 1.4 billion. Those revenue figures explain the rigorous requirement of applying the universal best practice governance principals in the Australian university sector. In addition to the revenue figures all the universities except Sunshine Coast University have more than 200 employees (Figure 3.5) and total assets were of well above 200 million again except the University of Sunshine Coast which indicates that all the Australian universities fitting in to the categorization of large corporations and hence proper reporting and disclosure requirements, high transparency and accountability mechanisms.

Figure 3.6
Total Revenue Australian Universities, 2007



Note: See Table3.3 for list of abbreviation.

Source: DEEWR higher education data collection based on *Finance: Selected Higher Education Statistic, 2007*.

3.7 Conclusion

This chapter examined the context of the study, the Australian university sector including legal status and policy development in the higher education sector leading to current governance reforms. The effect of the environmental forces on the governance of the universities was discussed in length. The recent governance reforms and the National Governance Protocols for higher education and governance best practice of Australian universities were also discussed. Finally, the characteristics of the government-funded universities in Australia were discussed in detail. The next chapter will focus on the theoretical perspective of the study.

CHAPTER 4

CONCEPTUAL FRAMEWORK: PROPOSITIONS AND MODEL DEVELOPMENT

4.1 Introduction

The purpose of this chapter is to substantiate the conceptual framework of this study and develop the propositions. Chapter 2 of the study provided the theoretical basis, demonstrating that best practice corporate governance involves a number of inter-related and mutually supportive components. These components centre on creating transparency, responsibility, accountability and reinforce these aspects through good governance mechanisms (Universities Australia 2010; Williams, R & Van Dyke 2004). The proposed explanatory framework is important as it provides the basis on which cross sectional assessments may be made of the linkages between corporate governance and university performance. As discussed in chapter 2, the limitations of the literature suggest that corporate governance mechanisms and the influence of these mechanisms are contradicted. Governance variables of universities are not identified in the light of important factors affecting the performance of universities.

The explanatory framework also incorporated the variables and inter-relationships that have not been previously considered, thereby providing potentially new insights into the relationship between university governance and performance.. In this respect, the proposal of van der Ploeg and Veugelers is :

... a call for more and better analysis with more and better data at the micro level [in regard to university corporate governance and performance] ...We hope that these issues will incite further research on this fascinating topic in much the same way that is already prevalent in the economics of education. (van der Ploeg & Veugelersy 2008, p. 117).

This chapter is structured as follows. Section 4.2 presents a brief discussion of relevant theories. This is followed by the development of the theoretical framework in Section 4.3. Development of a conceptual framework for the study is presented in Section 4.4, followed by the governance model for the study in Section 4.5 and the performance model in Section

4.6. Section 4.7 provides a discussion of the proposition development for the study. Section 4.8 consists of the conclusion of the chapter

4.2 Management and Governance Theories

A variety of economic, business management and governance theories have impacted the development of governance structures. Various scholars from many different disciplines have contributed in developing these governance theories. According to Kiel and Nicholson(2003), studies by scholars from a variety of theoretical perspectives have resulted in a number of competing theories. Jensen and Meckling (2003) and Jacobson (1976) from the discipline of economics, Fama (1996) from finance, Useem (1980) from sociology, Boyd (1995), from strategic management and Johnson (1995) from organization theory are some. of them..Numerous governance theories have emerged through these theoretical findings from all the above mentioned disciplines including agency theory, stewardship theory, resource dependency theory, stakeholder theory, social contract theory, legitimacy theory, neoclassical theory and institutional theory. The main theories used to analyse the governance of universities in this study are agency theory, stewardship theory, stakeholder theory and institutional theory.

4.2.1 Agency Theory

Agency theory provides a rational argument for the introduction of corporate governance mechanisms in institutions. Jensen and Meckling (1976) and De Matos (2001) suggested that agency cost in the firm arises from the principal-agent problem. The managers, being agents, may not maximise the profits of the principals and be involved in building their own interests where their decisions do not improve the value of the stakeholders. Among various theories discussed in the literature, agency theory is concerned with ensuring that managers act in the interest of the shareholders. This theory is based on the inherent conflict of interest between the owners or the principals and management (Fama & Jensen 1983a).Conflicts arise as a result of managers' incentives to pursue their own interests at the expense of shareholders (Agrawal & Knoeber 1996; Fama & Jensen 1983a; Jensen, M.C. & Meckling 1976).. According to agency theory adequate monitoring and control mechanisms are needed to mitigate the agency problem (Fama & Jensen 1983a). According to Fama (1980), initiatives to control management such as the appointment of non-executive directors to a board are designed to address this issue. A higher proportion of non-executive directors on the board is intended to have a positive effect on firm performance (Fama & Jensen 1983a; Jensen, M.C.

& Meckling 1976). Shleifer and Vishny (1997) and Keil and Nicholson (2003) also concluded that agency theory leads to normative recommendations that a board should be comprised of a majority of outside independent directors and have separation of the positions of chairman and CEO to increase performance.

4.2.2 Stewardship Theory

”Stewardship theory suggests there is no agency cost between the principal (shareholders) and the agent (management)” Rashid, Islam & Anderson 2008, p34). The interests of the management coincide with the stakeholders and there is no need to motivate or discipline the management for the performance of the firm (Davis, Schoorman & Donaldson 1997) Stewardship theory presents a contrasting view to agency theory. According to the perspective of the stewardship theory, managers are “inherently trustworthy and faithful stewards of the corporate resources entrusted to them” (Donaldson, L. & Davis 1991, p. 82). According to the stewardship theory, managers are good stewards of the organization and it is in their own interest to work to maximize corporate profits (Donaldson, L 1990). Depending on the above argument, proponents of stewardship theory (Donaldson, L. & Davis 1994) argue that firm performance is linked to a majority of inside directors and CEO duality. Thus, stewardship theory supports the argument of boards consisting of executive directors with speciality knowledge rather than majority non-executive directors and the need to combine role of board chair and the CEO. According to the literature (Dalton & Kesner 1987; Donaldson, L. & Davis 1991; Kesner & Johnson 1990), stewards protect and maximize shareholder wealth through firm performance, which results in maximizing the stewards’ utility. Therefore, by improved firm performance, the organization satisfies most groups that have an interest in the organization (Donaldson, L. & Davis 1991; Kesner & Johnson 1990). According to Clarke(2004) stewardship theory supports a strong relationship between managers striving to successfully achieve the objectives of the firm, and the resulting satisfaction accorded to investors/owners, as well as other participants in the enterprise.

4.2.3 Stakeholder Theory

According to stakeholder theory, managers must consider the impact of their decisions on a broad spectrum of stakeholders and hence they should evaluate their decisions based on the impact on the value of their firm (Bird et al. 2007). This theory is based on the accountability of the board not only to the shareholders but also those who can affect or are affected by the

achievement of the firm's objectives (Freeman, 1984). If the achievement of a firm's objectives can be affected by stakeholders, then a firm's decisions, and hence its performance, can be affected by stakeholder activities, and in turn the "firm's decisions may affect the well-being of its stakeholders" (Berman et al. 1999, p. 488). According to Clarke (2004), if corporate managers are there to maximize the total wealth of the organization, they must take into account the effects of their decisions on all the stakeholders. The most important feature of stakeholder theory is that a firm must be profitable and viable, because the prospective stakeholders will be reluctant to take a stake in companies that are likely to lead to failures (Berman et al. 1999; Clarke 2004). For a firm to be economically successful, senior managers should adopt corporate governance strategies and policies that facilitate the maintenance of an appropriate balance between the interests of the different stakeholders (Ogden & Watson 1999). It is unlikely that the managers can maximize the value of a firm to its owners by completely ignoring the interest of other stakeholders (Berman et al. 1999; Wicks, Berman & Jones 1999).

4.2.4 Institutional Theory

Institutional theory attends to the deeper and more resilient aspects of social structure. According to Ritzer (2004) it considers the processes by which structures, including schemas, rules, norms and routines, become established as authoritative guidelines for social behaviour. It inquires into how these elements are created, diffused, adopted and adapted over space and time; and how they fall into decline and disuse.

Although the ostensible subject is stability and order in social life, students of institutions must attend not just to consensus and conformity but to conflict and change in social structures. (Ritzer 2004, p. 409)

Applications of institutional theory in governance have been advocated in the business literature (Aldridge 2004; Greenwood & Hinings 1996; Kondra & Hinings 1998). 'Accounting scholars using institutional theories challenge economics-inclined colleagues' (Major & Hopper 2004, p. 4) beliefs that organisations are bounded, relatively autonomous and economically rational. Basically, institutional theory asserts that organisational structures and procedures are adopted because important external institutions prefer them. Institutional networks are not merely controlling and co-ordinating mechanisms for economic transactions, they socially construct rules and beliefs, exert social pressures for conformity,

and are “founts of legitimacy and hence rewards” (Major & Hopper 2004, p. 3) Early researchers (Dacin, Goodstein & Scott 2002; Powell 2003; Scott 2005; Scott & Christensen 1995) resolved the conundrum between institutional and market forces by restricting its claims to governmental and not for profit organizations, and they argued that organisations were dichotomised as facing either institutional or technical (efficiency) demands (Powell 2003; Scott & Meyer 1994).

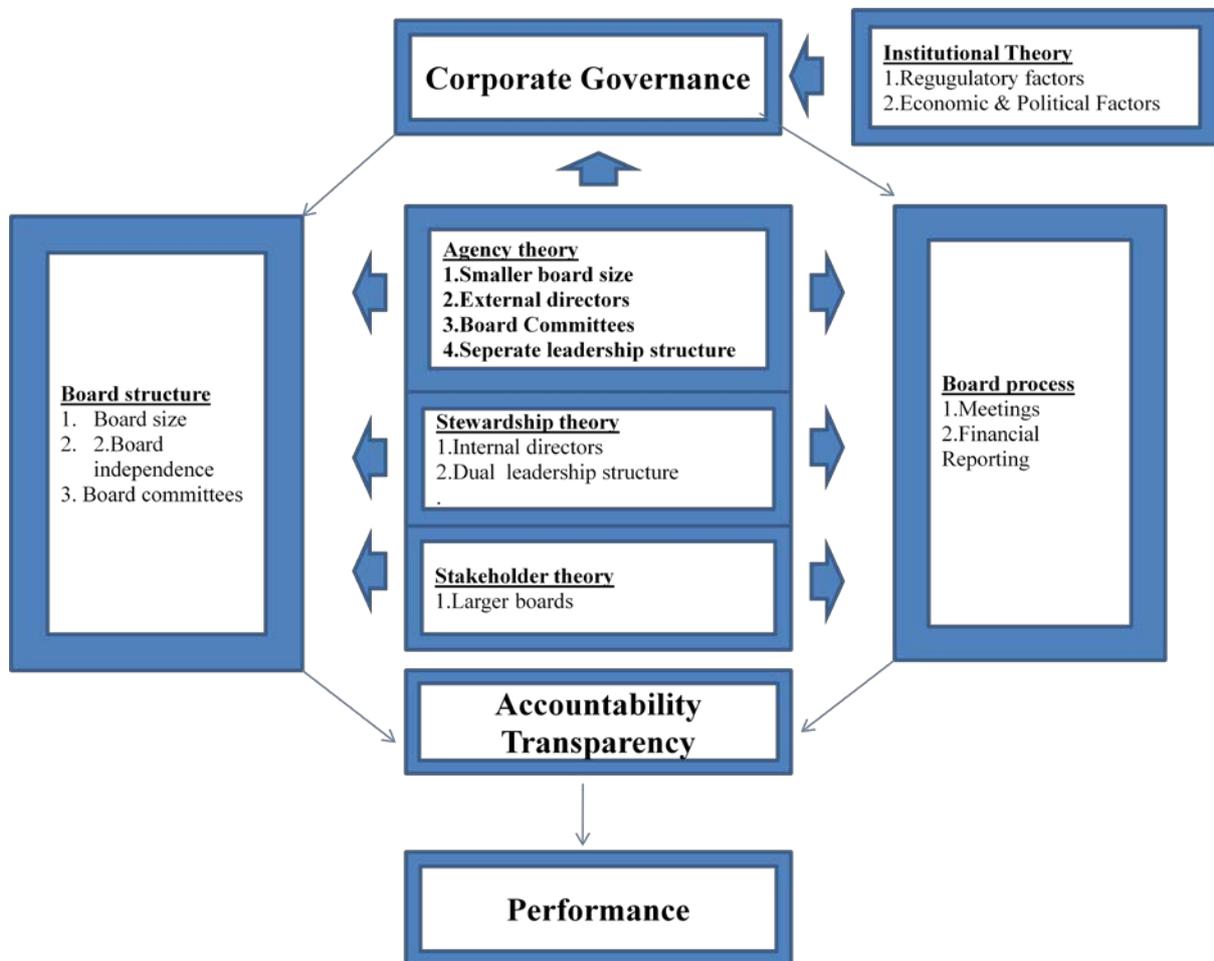
According to Rutherford (1983), the relevance and applicability of these economic and corporate governance theories are different between private sector and public sector organizations. It was assumed that private profit-seeking organisations faced technical and efficiency pressures because their goals are clear and measurable (Powell 2003; Scott & Meyer 1994). In contrast, public, governmental or not-for-profit organisations have ambiguous goals and unclear means-ends relationships. Thus, they seek legitimacy by conforming to institutional rules and myths (Major & Hopper 2004). Given the low level personal ownership in organizations or the ownership structure of the institutions, it can be argued the agency theory is relatively more applicable in representing the organisational behaviour and business management principles in public sector organizations (Rutherford, BA 1983), and hence publicly-funded universities in Australia (Fielden 2007).

4.3 Theoretical Framework: Corporate Governance and Firm Performance

Four theories of corporate governance were reviewed in the above theoretical framework (Figure 4.1). This focused on how corporate governance influenced the firm performance. Institutional theory addresses the influence of external governance mechanisms and internal corporate governance mechanisms on performance and this theory suggests that effective regulatory authority and the stakeholder influence is important for better governance and hence high performance. Agency theory focuses on the conflicting interests between principals and agents and maximizing profits. It also focuses on the governance structures of the organizations and suggests that independent boards with majority outside directors and board committees are important in monitoring firm performance, and hence lead to better performance. Stakeholder theory suggests that the firm has a responsibility to serve all the stakeholders who are affected by the decisions and activities of the firm (Freeman, Wicks & Parmar 2004). This would result in reporting to broader stakeholder groups which require

higher transparency to gain the confidence of the influenced groups and hence leads to better performance in the long term.

Figure 4.1 Theoretical Framework, Corporate Governance and Institutional Performance



Stewardship theory views managers as stewards of the firms and considers that managers as agents of the principals have an intrinsic motivation to maximize the value of the firm, and the board should be considered as stewards. An insider dominated board structure with specialist knowledge is likely to maximize performance due to their particular interest in the firm.

4.4 Conceptual Framework

The intention of this study is to examine how systems of corporate governance differ across universities and to explain the implications this has for university performance. The previous chapter provided a theoretical foundation for an empirical investigation of the link between

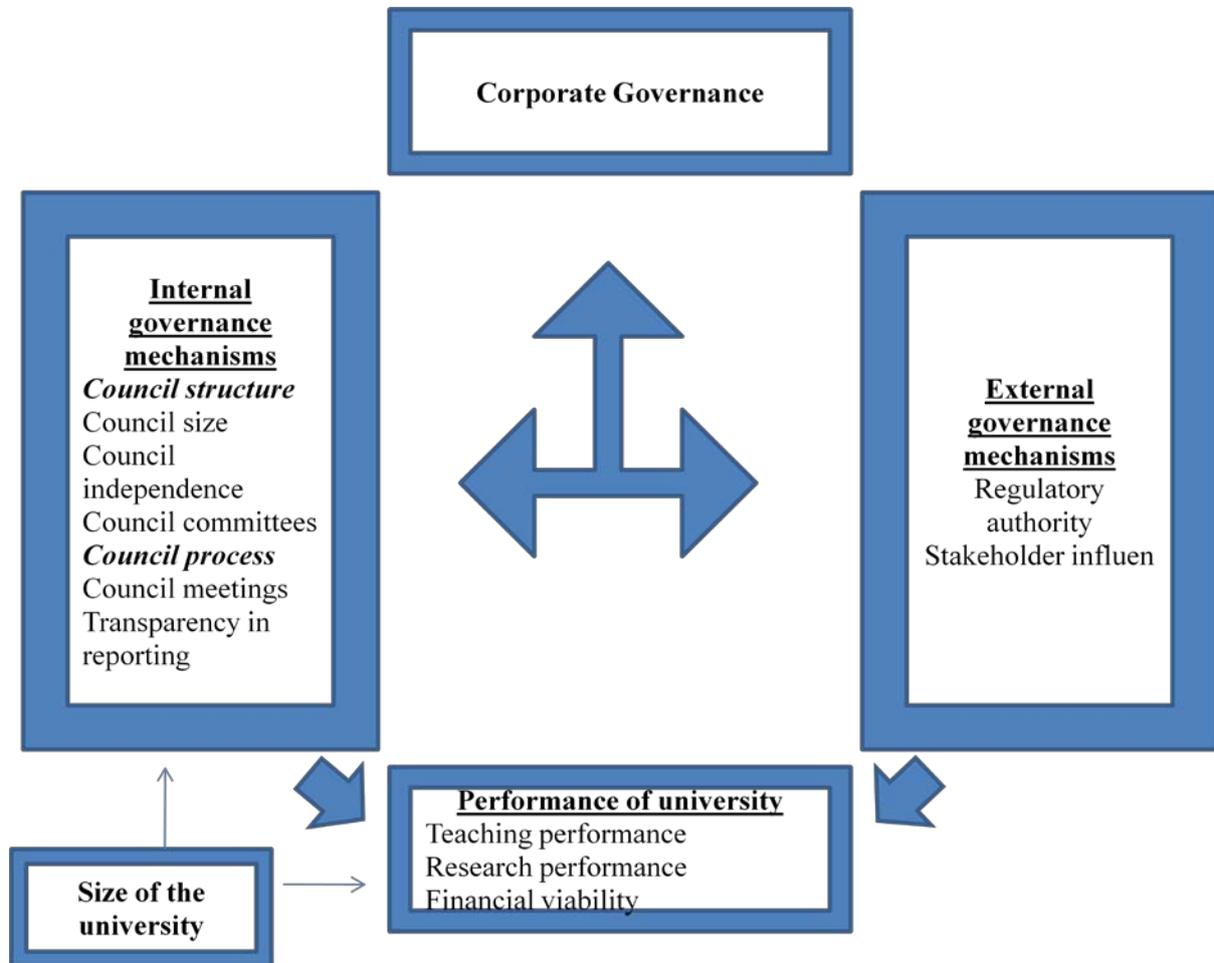
governance and the performance of universities. The conceptual framework of the study (Figure 4.2) illustrates the link between the theoretical framework (Figure 4.1) and the operationalisation of the governance and performance variables that are investigated here. The conceptual framework involves the external corporate governance mechanisms, internal corporate governance mechanisms, control variables and performance. These variables are based on the governance and performance of publicly- funded Australian universities. Assessment of the effects of corporate governance on university performance necessitates development of an conceptual framework by which causal relationships may be proposed and discrete variables identified (Burns & Scapens 2000; Morgan & Smircich 1980).

In previous studies of corporate governance (Abdullah 2004; Daily & Dalton 1994; Weir, Laing & McKnight 2002) the external and internal corporate governance mechanisms and control variables (Weir, Laing & McKnight 2002) were used to construct the models. As discussed in Chapter 2, control variables play an important role in affecting the relationship between independent and the dependent variables (Edwards & Clough 2005). External corporate governance mechanisms include the role of a regulatory authority and the influence of stakeholders, while the internal corporate governance mechanisms consist of the council structure which includes council size, council independence and the role of audit, nomination and remuneration committees as council committees, council process at council meetings and transparency in reporting. Performance was measured by using teaching performance and research performance (Abbott & Doucouliagos 2003a) and financial viability of universities (DEST 2007). In the conceptual framework of this study, the influence of the regulatory authority was represented by compliance with the National Governance Protocols for higher education. The proportion of government funding of the university's revenue was used for the stakeholder influence as important external governance mechanism variables supported by institutional theory. Council size supported by stewardship theory, a majority of external members in the council as the council independence, the existence of council committees and frequency of council meetings supported by agency theory and transparency in reporting supported by the stakeholder theory, were used as important variables of internal governance mechanisms. Better governance increases efficiency of the agencies (Barrett 2002).and means funds are used more productively (Love 2010)

The conceptual framework presented in the Figure 4.2 shows that size of the university as a controlling variable influencing the governance and the performance of the university. The

conceptual framework further shows external governance mechanisms are complementarities of internal governance mechanisms.

Figure 4.2
Conceptual Framework, Governance and Performance of Australian Universities



The model represents the performance of universities (regressand), which can be affected by the independent variables (regressors), namely, the external and internal governance variables and control variables of the study. By incorporating the different elements of this approach, the general multi-factor valuation model of the study is presented as follows:

$$p = f(EXTG + INTG + CV + e) \quad (4.1)$$

where:

p = performance of the university;

$EXTC$ = external corporate governance instruments;

INTC = internal corporate governance instruments;

CV = control variables; and

e = error term (Hair et al. 2006).

4.5 Governance Model

The governance model of this study (Figure 4.2) consists of external and internal governance mechanisms. The following analytical model incorporates the elements from the above conceptual framework to explain the relationship of regulatory authority and stakeholder influence as external governance variables, and council size, council independence, council committees, council meetings and the transparency in reporting as internal governance variables with the performance of Australian universities.

4.5.1 External Governance Mechanisms

The external Governance Variables were:

Regulatory Authority: Compliance with National Governance Protocols for higher education in Australia was used as the proxy for the influence of regulatory authority (see Appendix 1).

Stakeholder influence: Percentage of government funding to total funding of universities was used as the stakeholder influence.

4.5.2 Internal Governance Mechanisms

The internal Governance Variables were:

Board/Council size: Number of members (appointed and elected) in the council.

Board/Council independence: Percentage of outside members to council size.

Board/Council committees: Existence and the process of the audit, nomination and remuneration committees (see Appendix 2).

Board/ Council meetings: Number of council meetings held during the year. This variable was used as the proxy for board process.

Transparency in reporting: Reporting of council member information and performance indicators in the annual reports in addition to the mandatory financial reporting requirements (see Appendix 3).

4.6 Performance Model

The performance model of this study consists of teaching, research and financial performance variables and the criteria for performance variables were as follows:.

Teaching performance variables

Progression rate, full-time employment rate, overall satisfaction rate and staff to student ratio were used as teaching performance variables.

Progression rate, full-time employment rate and the overall satisfaction rate were obtained from the data developed and published by the Graduate Careers Council Australia (GCCA). Every year GCCA conducts the Graduate Destination Survey (GDS) which is used to obtain data for progression rate and the full-time employment rate, and the Course Experience Questionnaire (CEQ) which is used to obtain data to calculate the overall satisfaction rate.

Staff to student ratio was calculated by full time equivalent student load divided by the full-time equivalent academic staff load.

Research performance variables

Research and publications, research grants and research degree completion were used as variables for research performance indicative variables.

Research and publications per academic was calculated by research and publications divided by full-time equivalent academic staff load.

Research grants per academic was calculated by research grants divided by full-time equivalent academic staff load.

Research degree completion per academic was calculated by research degree completion divided by full-time equivalent academic staff load.

Financial performance variables

Assets turn over (AT) was calculated by total revenue divided by total assets.

Return on equity (ROE) was calculated by operational results divided by total equity.

Current ratio was calculated by current assets divided by current liabilities.

Control variable

Size of the university was proxied by the full-time equivalent student load of the university.

4.7 Development of Propositions

The above theoretical framework was used to develop some testable propositions in this study of Australian universities. The basis of the propositions is that the external governance mechanisms and the universal governance best practices (internal governance mechanisms) namely the council size, council independence, council committees, council process and transparency in reporting, will be reflected in the university performance. The propositions presented will be tested in the context of the publicly- funded universities in Australia.

4.7.1 Summary of Propositions

The propositions developed in this study are based on the argument that good governance practices have a positive relationship with performance and the main function of the council board is to monitor the top managers for their stewardship and monitor the performance of the university as they are accountable to the stakeholders who are affected by the activities of the universities as stated in the conceptual framework of the study (Figure4.2) . The monitoring mechanism of the university was viewed as external governance mechanisms and internal governance mechanisms. *Proposition 1* (P1) is about the external corporate governance mechanisms and this proposition suggests that the regulatory authority has a positive relationship with university performance. *Proposition 2* (P2) suggests that stakeholders could influence the performance of universities and hence this has a positive relationship with universities.

Propositions 3, 4, 5,6and 7 (P3, P4, P5, P6 and P7) are related to the internal governance mechanisms and their influence on the performance of universities. These propositions suggest that strong governance leads to better performance of universities and hence internal governance and the performance of the universities have a positive relationship. *Proposition 3* (P3) suggests that bigger councils/boards affect the performance in the negative manner as more members of a larger board lead to the free rider problem and strength in a board is contrary to corporate governance principles, because of the observer role by the members. *Proposition 4* (P4) suggests that higher independence of the council has a positive relationship with performance as the external members bring more managerial and professional skills and monitor the performance of the university and the CEO in an independent manner. *Proposition 5* (P5) of the study suggests council committees and performance have a positive relationship as committees play a positive role in monitoring the

activities and decisions of the managers and because of their unbiased role in appointing and remunerating executives. *Proposition 6 (P6)* suggests that frequent council meetings leads to higher performance. Council meetings and performance have a positive relationship as the council meetings provide the opportunity for frequent monitoring of performance and prompt feedback of performance. Hence, frequent correction of setbacks. *Proposition 7 (P7)* suggests that transparency in reporting influences the management behaviour in decision making and implementation of decisions, and hence has a positive relationship with performance. *Proposition 8 (P8)* suggests that size as a controlling variable relates positively with performance due to the availability of more resources. Furthermore, the complementarities between internal corporate governance mechanisms and external governance mechanism will be tested by separating internal and external mechanism instruments.

P1: Regulatory authority positively influences the performance of universities.

The new conceptual framework suggests that the role of an effective regulatory authority is important in improving performance. Existing governance literature suggests that regulatory authority has the power to influence the performance of the firms through enforcing regulations and monitoring performance (Fielden 2007; La Porta et al. 1997; Nelson 2002a; Nenova 2003). According to Nenova (2003), regulatory authorities influence organizations to decrease the gap of information asymmetry between managers and stakeholders, empower the board to be robust in making and implementing decisions, protect the rights of external stakeholders, improve the relationship of stakeholders with the management, remove CEO duality, appoint independent auditors, align the incentives of management with their performance, and control the adverse actions of managers.

Supporting the same views, La Porta et al. (1998) argued that weak judiciary and regulatory authorities are biased and in the absence of an effective regulatory authority, managers have a free hand to pursue their interests in a firm. An effective regulatory authority reduces the agency cost by protecting the rights of stakeholders and enabling them to play a role in decision-making. Furthermore, a stronger regulatory regime eliminates risk from the system and makes institutions more stable. Further, Holmström and Tirole (1997) argued that there are hurdles in the free flow of information due to a weak regulatory regime.

P2: Stakeholder influence was positively related with the performance of universities.

The second proposition of the study requires analysis of the relationship between stakeholder influence and the performance of universities. As suggested by stakeholder theory, stakeholders can positively influence the performance (Fama & Jensen 1983b) through monitoring the performance of the firm and influencing the decisions of the management.

According to governance literature (Dittmar, Mahrt-Smith & Servaes 2003; Durney & Kim 2002; La Porta et al. 1997; La Porta et al. 1999; Nenova 2006), the democratic firm with higher stakeholder influence has a positive relationship with high performance. Some researches (Fama & Jensen 1983b; Holmstrom & Tirole 1997; Holmström & Tirole 1993), argued that higher stakeholder rights minimises the free hand of managers and forces them to perform well and to improve the performance. The agency cost is much lower in democratic firms with high stakeholder influence (Dojige, Karolyi & Stulz 2004; Gompers, Ishii & Metrick 2003) and the university governance literature (Fielden 2007; Nelson 2003a, 2003b; Swansson, Mow & Bartos 2004) emphasized the democracy of Australian universities.

P3: Council size is negatively related with the performance of universities.

The third proposition of the study is about the role of council size in affecting performance of universities. As suggested by agency theory, a bigger board results in the erosion of the performance (Fama 1980; Fama & Jensen 1983a). The National Governance Protocols of the *Our Universities: Backing Australia Future* (Nelson 2003b) suggested reducing the council size of universities which aligned with the corporate governance best practice guidelines of ASX (ASX Corporate Governance Council 2003). The council plays an important role in the implementation of governance. The council should have authority to protect stakeholders, discipline poor performing managers and resolve conflicts between managers and principals (Baysinger & Butler 1985; Fama & Jensen 1983b). Zahra and Pearce (1989) distinguish two important roles of the board. Their first duty is to control the operations of the firm and the activities of the CEO. The second activity is to promote the organisation culture by such activities as improving the image of the firm and maintaining the relationship between the stakeholders and firm management. The board can improve the performance of a firm by performing these two functions.

The current study, which is based on agency theory, predicts that a larger council/board creates an agency cost and free rider problem and does not monitor the university properly (Jensen, M.C 1993; Lipton, P 2003) Jensen (1993) followed by Yermack (1996) Loderer and Peyer (2002) and Eisenberg (2005) were the earlier researchers to hypothesise that board size

affects firm performance and suggested a negative relationship between a larger board and the performance. They further argued that a large board leads to a free rider problem where most of the board members play a passive role in monitoring the firm and make delayed and irrational decisions harming its performance. In addition, Jensen (1993) and Tomasic, Pentony and Bottomley (2003) argued that a smaller board is more cohesive and it is easier for the CEO to control the board members. Jensen (1993) further argued that agency cost in the bigger board leads to deterioration of the firm performance. Endorsing the results of the above-mentioned researchers, Conyon and Peck (1998) also proved a negative relationship between board size and performance. They argued that a larger board size leads to mismanagement and lack of coordination in the board, and further, lack of cohesiveness, making it difficult to monitor performance. According to Yermack (1996), a larger board cannot discipline management because of the agency cost among board members, and is less likely to dismiss an underperforming CEO.

P4: Council independence positively relates with the performance of universities.

The fourth proposition relevant to the study is about the role of board independence in affecting the performance of universities. Council composition is an important component of governance that affects the performance of universities. According to the available service sector literature (Cobham & Subramaniam 1998; Mishra & Nielsen 2000; Pathan, Skully & Wickramanayake 2007), board independence has a positive relationship with performance. Pathan et al. (2007) revealed that independent board members would be better monitors than other members as they have a market reputation to maintain. Best practice recommendations on corporate governance require boards to be composed of a majority of non-executive directors (Pathan, Skully & Wickramanayake 2007). Those recommendations (ASX Corporate Governance Council 2003; Cadbury 1992; Hampel 1998) were incorporated in the governance best practice of universities in Australia (Duckett 2004; Nelson 2003b).

Both agency theory and stewardship theory apply to board composition. Agency theory argues that outside directors are better monitors. Alternatively, stewardship theory argues managers are inherently trustworthy, are not prone to misappropriation of corporate resources (Donaldson, L 1990; Donaldson, L & Davis 1991) and are good stewards of the organization who work diligently to attain a higher level of corporate profits and shareholder returns (Donaldson, T & Preston 1995). Accordingly, proponents of stewardship theory argue that superior performance of the firm is linked to a majority of insider directors. They work to

maximize shareholders wealth, and their knowledge of the business is better than outside directors, resulting in superior decisions (Donaldson, L 1990; Donaldson, L & Davis 1991). As a result, there will be no agency costs, since senior executive are naturally trustworthy (Donaldson, L 1990; Donaldson, T & Preston 1995) and will not disadvantage shareholders for the fear of damaging their reputation (Donaldson, L & Davis 1994). Therefore, stewardship theory argues that the board should be comprised of a significant proportion of executive directors to ensure effective and efficient decision-making.

Proposition 4 was developed on the argument of Agency theory. Findings of previous studies (Baysinger & Butler 1985; Baysinger & Hoskisson 1990; Hermalin, B E & Weisbach 1991; Weisbach 1988; Zahra & Pearce 1989) also supported the proposition that council independence has a positive relationship with performance of universities.

P5: Council committees have a positive relationship with the performance of universities.

The fifth proposition of the study is relevant to the role of council committees. The requirement of sub-committees in the board was emphasized by the Cadbury Committee (1992) for specific areas of governance that have been identified as problematic such as executive remunerations, appointment of executives and the quality of financial reporting (Spira & Bender 2004), which was supported by agency theory. Researchers Khanchel(2007), Shivdasani and Yermack (1999) and Spira and Bender (2004) considered board committees were an additional control mechanism that increase accountability .This was further highlighted in ASX principles (Australian Securities Exchange (ASX) Corporate Governance Council 2003) which recommend establishing audit, remuneration and nomination committees.Khanchel (2007) identified audit, remuneration and nomination committees are the most important committees in the governance structure that influence performance.

The proposition about the role of council (board) committees in affecting performance of universities was constructed using the existing corporate governance literature John and Senbet(1998) and Klein (1998) who reported the empirical evidence showing that presence of oversight committees (audit, nomination and remuneration committees) positively correlates with factors associated with the positive impact of monitoring. Board committees are appointed to function as independent monitors. This further confirms the agency theory argument that independent committees can monitor the performance of the board and this is a remedy for the agency problem. Further studies (Klein 2002; Shivdasani, A. & Yermack

1999) showed that independent committees improve transparency which encourages the high performance. Newman & Mozes (1999) also emphasized the importance of board committees in influencing performance. Audit committees regularly review the financial reporting, audit process and internal controls which help to alleviate agency problems by the timely release of unbiased accounting information to those who rely on such information. According to agency theory, this reduces the information asymmetry between insiders and outsiders. Remuneration committees determine and review the remuneration to senior officers and nomination committees help unbiased nominations and appointments to senior positions. The oversight function of the board committees is supported by agency theory (Klein, A. 1998), which suggests that independent monitoring (Newman, L 1982) alleviates the agency problem (Klein, April 1998; Newman, HA & Mozes 1999; Rezaee 2009).

P6: Council meetings are positively related with the performance of universities.

The sixth proposition relevant for the study is about the role of council meetings in influencing the performance of universities. Khanchel (2007) used council meetings as the proxy for council process. This proposition was developed on the arguments of agency theory and was given further emphasis by the findings of Bebchuk, Cohen and Ferrell (2004) Kohli and Saha (2008) and Shivdasani and Zenner (2004). Vafeas (1999) revealed that a board can recover from poor performance faster if the board increases the frequency of board meetings, which in other words implies that board meetings and performance have a positive relationship. Kula and Tatoglu (2006) emphasised that a keen focus on information and sticking to fiduciary responsibility are indispensable attributes of high performance. This in turn suggests that council meetings are positively correlated with performance if keen focus is kept on information and frequent attendance. The proposition was developed according to the above arguments and findings.

P7: Transparency in reporting has a positive relationship with the performance of universities.

The seventh proposition of the study is about how transparency in reporting in influencing the performance of universities. Gietzmann and Ireland (2005) introduced a measure of timely information disclosure which attempted to capture the quality of strategic disclosures. Gray, Owen and Adams (1996) emphasized the importance of strategic information disclosure in the annual reports, and they further argued that openness plays a very important role in performance and leads to better accountability (Braadbaart 2007; Bushman & Smith 2003;

Holm & Schoeler 2010) which otherwise enhance the performance. Chua et al. (2007) found that both Corporate Governance regime and the degree of openness play a significant role in explaining corporate performance and a corporate valuation. This was supported by other studies of Klapper and Love (2004) and Lang, Lins and Miller (2004).

P8: Size of the university is positively related with the performance of universities.

The eighth proposition of the study is about the size of the university in influencing the performance (Orlitzky, M 2001)of universities. There has been some theoretical and empirical debate that the positive relationship between corporate performance is influenced by the size of the firm as a third factor or the controlling factor (Orlitzky, M 2001; Orlitzky, M., Schmidt & Rynes 2003). Orlitzky (2001) further argued that large size firms have a positive influence on performance as they have more resources. Some researchers (Gooding & Wagner III 1985; Stanwick & Stanwick 1998) argued that firm size could be used as a controlling variable in analysing firm performance. Johnes (1992) used the size as a controlling variable in his study and found that size of the university has appositive influence on the performance.

4.8 Complementarities in the Corporate Governance Mechanisms

The relationship between governance and the performance of universities also depends on the complementarities in the corporate governance mechanisms. The conceptual framework developed in this study also suggested that internal governance mechanisms and external governance variables should be present, in an investigation as both types of instruments constitute corporate governance mechanisms that are the complements of each other. The conceptual framework suggested that an efficient regulatory authority and stakeholder influence are complement to the internal corporate governance mechanisms: council size, council independence, council committees, council meetings and transparency in reporting. Similarly, the internal corporate governance mechanisms are hypothesised to be complementary to an efficient regulatory authority and the stakeholder influence.

As discussed in Chapter 2, there is a positive relationship between corporate governance instruments (internal and external) and the performance of the firm (Bhagat & Black 2001; Gompers, Ishii & Metrick 2003; Klapper & Love 2004; Love 2010). According to Donaldson and Davis (1991), agency cost arises when managers pursue their own interests for private

benefits as opposed to creating value for the stakeholders.. The asymmetric information and insufficient information to make a decision and evaluate the actions of the managers is important, and Bhagat & Black (2001) suggest that if the external corporate governance mechanism is weak the irrational acts of managers are not controlled. By improving the external corporate governance mechanisms, the performance of a firm can be improved to a higher degree (La Porta et al. 1997). Doidge and Stulz (2004) argued that the weak regulatory authority leads to high agency cost. Good governance puts emphasis on a positive relationship between the principal and agent, which leads to high performance. In addition, managers are forced to work for the benefit of stakeholders and are restricted from making decisions for their own benefits. The argument is that better-governed universities receive more funds as they enjoy more confidence from the stakeholders. As argued in Chapter 2, the role of internal corporate governance instruments is important in improving the performance of universities. Some researchers (Bain & Band 1996; Barrett 2004; Bhagat & Black 1998) argued that an independent council, timely and transparent information and independent oversight committees (auditor) are the pillars of corporate governance. These instruments have a positive relationship with the performance; hence good governance improves performance.

4.9 Conclusion

The main purpose of this chapter was to develop the conceptual framework and the propositions used to analyse the relationship between governance and the performance of Australian universities. This chapter started with the theoretical framework which linked to the conceptual framework of the study. The conceptual framework consisted of three main components: namely, external governance mechanisms, internal governance mechanisms and the performance of universities. The relevance of variables used in the new framework also examines the propositions suggested in the study and the bases of constructing those propositions. The complements of internal and external governance variables and their impact on the performance of universities were also discussed. The methodology and the definition of variables used in the econometric model of the study and the method of data analysis will be discussed in the next chapter.

CHAPTER 5

METHODOLOGY AND STATISTICAL FRAMEWORK

5.1 Introduction

This chapter presents the methodology of this study which includes the methods employed to quantify the variables used in developing the propositions of the study. The models used to test relationships between corporate governance and the performance of the universities are also discussed. The analyses discussed in this chapter include factor analysis, correlation analysis and regression analysis. The structure of this chapter is as follows. Section 5.2 presents the research methodology adopted in the study and the population of the study is described in the Section 5.3. Section 5.4 of the study discussed the types and method of data collection, while conceptualization of the variables is presented under Section 5.5. Section 5.6 elaborates the measurements and analyses of variables and Section 5.7 presents the analysis of data including diagnostic statistics, goodness of fit, multicollinearity and heteroscedasticity. Section 5.8 presents the econometric tests including factor, descriptive and multiple regression analyses. Computer programs used in the study are discussed under Section 5.9 and Section 5.10 presents the policy formulation for Australian universities. Finally Section 5.11 concludes the chapter.

5.2 Research Methodology

According to Veal and Ticehurst (2005), the two main research paradigms used in social science and economic research are referred to as deductive and inductive reasoning. The term paradigm refers to the set of assumptions about the proper techniques for any specific inquiry. This includes selection of what is to be studied, how the research is conducted, what data are collected and how it should be interpreted (Simon, JL & Lincoln 1969; Smith 2003). If the research process begins with theory and examining of the literature and then developing the theoretical and conceptual structure, which is tested by empirical observation, it is called the deductive method (Brownell, Coopers & Lybrand 1995; Veal & Ticehurst 2005); where as in an inductive process, the theory is developed from empirical observations (Collis et al. 2003). Research methods must be compatible with the theoretical paradigm and the positivist

paradigm considers researchers are independent of the research they are conducting. The positivists view reality as objective, measurable and hence research emphasizes the facts and predictions to explain causes and effects. The normal process for the positivist approach is to study the literature to establish a relevant theory and develop the hypotheses or propositions, which can be tested for association or causality by deducing logical consequences that are tested against empirical evidence (Smith 2003; Veal & Ticehurst 2005). The positivist paradigm is also referred to as scientific, empiricist, quantitative or deductive.

So for the research design, the method used to analyse data also depends on the paradigm adopted by the researcher. According to Veal & Ticehurst (2005), mainly qualitative methods are associated with inductive reasoning and quantitative methods are usually applied to a positivist and inductive approach. Both qualitative and quantitative research methods are used by researchers in deducting reasoning depending on the research design. Quantitative methodology uses objective data, rigorous measurement and statistical methods of analysis. It has the advantage of being able to generalize the results to a large population. This method is criticized for failing to explain 'why' the factors observed may have happened or behave in such a way, whereas qualitative methods investigate how individuals think and react, and is directed towards deep understanding of their experiences, motivations and values even though this method is often criticized as being too subjective, biased and lacking rigor. According to Veal and Ticehurst (2005) data for scientific research derives from two main sources, referred to as primary and secondary. The primary data is original data gathered by the researcher by employing questionnaires, observations and experiments, and data which already exists is referred to as secondary data, such as data obtained from annual reports, books, published statistics and internal records kept by companies (Veal & Ticehurst 2005).

This study on governance and performance of Australian universities is based on a positivist paradigm and hence uses deductive reasoning and quantitative techniques. The positivist approach seeks facts or causes and effects of social phenomena. The reasoning of this study is deductive because the propositions were derived depending on the existing theory and then data were collected to confirm or negate the propositions. Evidence required to test the propositions in this study is based on annual reports and published statistics, and therefore the data used for this study is from secondary sources, which is the method used in many university governance and performance studies (Abbott & Doucouliagos 2003a, 2003b; Warning 2004; Worthington & Lee 2005). The population, sources and procedures of data

collection quantification of variables used and methods used to analyse data are presented below

5.3 Population of the Study

The current study, about the relationship between corporate governance and performance, is based on the government- funded universities in Australia. Universities Australia is the representative body of the 39 universities in Australia. There are three currently active main groupings of Australian Universities: such as Group of 8 (Go8), Australian Technology Network (ATN) and Innovative Research Universities Australia (IRU Australia), which have been formed to promote the mutual objectives of the member universities. These groups represent universities with similar style, strength, focus and objectives. There are universities that are not part of any of these groups. The population of this study is publicly- funded universities in Australia. Bond University, a private university was excluded from the study due to its source of funding and Notre Dame University was excluded due to lack of information and inability to obtain research data pertaining to the observation period of 2005 to 2007. All the other 37 publicly- funded universities in Australia were included in the study. The list of those 37 publicly- funded universities used for this study was presented in Table3.3.

5.4 Types and Method of Data Collection

This Section discusses the different data collection methods used in the study. The method of secondary data collection used in this study consisted of annual observations of 37 government-funded Australian universities over the period 2005 to 2008. The information required was obtained from university websites, publications of the Department of Education Employment and Workplace Relations (DEEWR) formally known as the Department of Education Sciences and Training (DEST) and Department of Innovation and Research, the Australian University Quality agency (AUQA), and the Learning and Teaching Fund (DEEWR). Data regarding the internal corporate governance mechanism variables such as council size, council independence, council meetings, council committees and transparency in reporting were obtained by using the 2005 to 2007 annual reports of all 37 universities and university websites. Data for the external governance mechanisms, which comprises compliance with National Governance Protocols for higher education (regulatory index) were also obtained from the university websites and 2005 to 2007 annual reports. The influence of

government funds was used as the proxy for the influence of external stakeholders and the data relevant to this variable were obtained from financial performance data of the Higher Education Data Collection Reports from 2005-2007. Previous studies of university governance and performance of Australian universities (Abbott & Doucouliagos 2003a, 2003b; Fielden 2007; Warning 2004, 2007; Worthington & Lee 2005) also used the same method to obtain data for their studies.

To measure the teaching performance of universities, data recording full-time employment, graduate satisfaction and the progression rate were obtained through the Learning and Teaching Performance Fund website (DEEWR) for the years 2005 to 2008 and the Australian National University data archives. Student load and staff load data were obtained from the Higher Education Statistics of the DEEWR. Ramsden(1991) and Abbott and Doucouliagos (2003a, 2003b) also used the published indicators of the DEST and DEEWR as data for analysing teaching and research performance of Australian universities. Financial performance data (total revenue, total assets, total liability, total equity, current liability, current assets and operational surplus/deficit), Student Load data and data of the full time equivalent staff load were collected from the (DEEWR) Higher Education Statistics collection from 2005-2008. Higher education research performance data such as research and publications, research grants and research degree completions were obtained from the website of higher education research data collection of the Department of Innovation and Research and the DEEWR Higher Education Statistics collection from 2005 to 2007. Previous researchers (Abbott & Doucouliagos 2003a, 2003b; Ramsden 1991; Ramsden & Moses 1992; Worthington & Lee 2005) also collected the performance data for Australian universities in the same manner.

5.5 Conceptualisation and Measurement Analyses of the Variables

This Section presents the conceptualisation, measurement and analyses of the variables used in the governance and performance models. The treatment given to the variables used in the models is also discussed. In the current study, full-time employment, overall satisfaction, progress rates, Assets turnover, return on equity and current ratio were expressed as percentages to keep the relationship in line with the independent variables as argued by Gujarati and Porter (1992). Variables such as council size and regulatory index were transformed into logarithmic form as suggested by Hair (2006). Variables were given those

treatments to remove non-linearity in the relationships and to adjust them for best use in the functional forms in the models. Furthermore, the data in the current study was also adjusted for missing observations. Missing values were approximated by taking the average of the values adjacent to (before and after) the missing observation, and if the first or last observation was missing they were replaced by the second and second to last observations respectively. Previous researchers (Khatri, Leruth & Piesse 2001, 2002; Worthington & Lee 2005) used the same type of methodology for missing values for their research.

5.5.1 Selection of Variables

The framework identified 3 sets of variables: external governance mechanisms, internal governance mechanisms and performance. As discussed in the previous chapter, the dependent variable in the model is the performance of universities, while the independent variable is governance.

External governance mechanisms refer to the components by which actors external to the direct administration or management of university exercise control over the performance of the university. The influence of a regulatory authority is proxied by the compliance with the National Governance Protocols, and the influence of stakeholders and accountable to public bodies proxied by dependency on government funds.

Internal governance mechanisms are concerned with the systems and practices adopted by the university to promote effective management of individual agents. The internal governance mechanisms comprise five variables: the size of the council, the proportion of independent members on university council, oversight committees in the council, council process (meetings) and transparency (extent and depth) of reporting.

The dependent variable, performance, consists of three variables: teaching performance, research performance and financial performance (financial sustainability). In addition to the above mentioned variables that are used to hypothesize the relationships, size of the university is also considered a controlling variable in this study. Table 5.1 shows the measures of variables used in the study.

Table 5.1
Variables Used to Study the Governance and Performance of Australian Universities

Variable	Measure	Symbols
External Governance Mechanisms		
Regulatory index	Compliance with National Governance Protocols for Higher Education (Appendix 1)	REG
Stakeholder influence	Government funds as a percentage of total revenue of universities	STI
Internal Governance Mechanisms		
Council size	Number of appointed and selected and members in the council	CSIZE
Council independence	Percentage of external members to total members in the council	CIND
Council committees	Existence, process and the independence of the audit committee, nomination committee and the remuneration committee (Appendix 2)	CCMT
Council process	Number of meetings held during the year (Council meetings were used as the proxy for council process)	CMEET
Transparency in reporting	Discloser of information in addition to the mandatory reporting requirements (Appendix 3)	TRANS
Performance		
<i>Teaching –</i>		
Overall satisfaction rate	Rate published by the AGCR	TSAT
Full-time employment rate	Rate published by the AGCR	TFEM
Progression rate	Rate published by the AGCR	TPR
Staff to student ratio	Percentage of full-time equivalent academic staff load to full-time equivalent student load	TSSR
<i>Research-</i>		
Research income	Research income divided by full-time equivalent academic staff load	RRI
Research and publication	Research and publications divided by full-time equivalent academic staff load	RRP
Research degree completion	Research degree completions divided by full-time equivalent academic staff load	RRDC
<i>Financial</i>		
AT	Revenue/book value of total assets	FAT
ROE	Net operational results/ equity	FROE
Current ratio	Current assets/current liability	FCR
Controlling variable		
Size of the university	Full time equivalent student load	SIZE

Regulatory index

A regulatory index (Baxt, Ramsay & Stapledon 2002; Rashid, Islam & Anderson 2008) was calculated by developing the index of compliance with the 2003 National Governance Protocols for higher education (Nelson 2003b) This variable was constructed by taking into consideration how thoroughly universities comply with 2003 higher education protocol requirements outlined in *Our Universities: Backing Australia's Future* (Nelson 2003b) (see Appendix 1). This measure represents the influence of regulatory authority in the study.

Stakeholder Influence

The dependence on government assistance was used to measure the influence and the consideration of broader stakeholders in affecting the performance of universities in Australia. This measure was constructed as a percentage of government assistance (including HECS and HELP) and as a percentage of the total revenue of the university. The argument is that the Australian Government, as the main stakeholder in funding universities, has the ability to influence the internal governance mechanism and the performance of the universities (CaIPERS 2009; Fielden 2007).

External Governance Index

The regulatory index and stakeholder influence variables were used to calculate the external governance index and this was used as proxy for the external governance mechanisms.

Council Size

Council (board) size refers to the number of members in the council and is a very important variable in studying the relationship of governance to performance. This variable is widely used in the corporate governance literature and was calculated by counting the number of appointed and selected members in the university council. Previous studies such as Chaganti, Mahajan and Sharma (1985) and Khanchel (2007) (Chaganti, Mahajan & Sharma 2007; Chaganti, Mahajan & Sharma 1985; Khanchel 2007) used the same methodology to construct this variable.

Council Independence

Council (board) independence was calculated as a percentage of the number of independent members to total numbers of appointed and elected members in the university council. The same methodology was used to construct the measure for determining council independence in the corporate governance literature in many studies (Baysinger & Butler 1985; Bhagat & Jefferis 2002; John & Senbet 1998; Klein 2002; Morck, Shleifer & Vishney 1989; Pathan, Skully & Wickramanayake 2007).

Council Committees

In this study, the existence of an audit committee, nomination committee and remuneration committee, and the independence of these committees and the number of meetings held during the year were considered as indicators to construct this index. Khanchel (2007) used

the same methodology to construct the oversight committee measure in research to determine a good governance index and this research concluded that council committees is a main determinant of good governance. In constructing this index, existence of an audit committee was given 1, and if the chair of the audit committee is an external member another 1. For majority external members another 1 was given, plus a score of 1 was given for each audit committee meeting held during the year up to ten. This 1 mark was given for the existence of a nomination committee and another 2 was given if the CEO is not a member of the committee, otherwise a 1 was given. Existence of the remuneration committee was given 1, CEO is not a member another 2, otherwise a 1 was given (Abbott, Parker & Peters 2004; Khanchel 2007).

Council Process (Meetings)

The number of council (board) meetings held during the year was used as the measure of council process. Previous researchers (Khanchel 2007; Shivdasani, A & Zenner 2005; Vafeas, N. 1999) were also used the same methodology to determine the council process

Transparency in Reporting

Transparency in reporting index was constructed by using the ASX (2003).guidelines and the 2003 higher education National Governance Protocol requirements (Guthrie, G, Johnston & King 2004; Nelson 2003b). A detailed list of items used to construct the index in the study is attached (see Appendix 2).

Internal Governance Index

The sum of council independence, council committee, council size, council meeting and transparency in reporting indices are used as the internal governance index which was used as the proxy for internal governance mechanism.

Teaching Performance index

The variables used to obtain the teaching performance index were full-time employment as the graduate outcome measure, overall satisfaction as the student satisfaction measure and the progression rate as the student success measure (Bratti et al. 2004; Department of Education Science and Training 2005; Guthrie, J & Neumann 2006; Guthrie, J. & Neumann 2007; Warning 2007). Graduate starting salary was excluded as a performance measure, as this measure is influenced by many other uncontrollable factors by the institution (Worthington &

Lee 2005). In addition to the above three factors staff to student ratio was also included as a teaching performance variable (Warning 2007; Worthington & Lee 2005).

The Department of Education Employment and Workplace Relations (DEEWR) introduced the Learning and Teaching Performance Fund (LTPF) to reward universities that best demonstrated excellence in learning and teaching for domestic undergraduate students. The performance of the university's learning and teaching outcomes were assessed using a quantitative model. This model used three groups of performance indicators. They were student satisfaction, student outcomes and student succession (DEST 2005b). The data for these indicators were derived from responses to the Course Experience Questionnaire (CEQ), the Graduate Destination Survey (GDS) and the DEST higher education data collection' respectively. This quantitative model included an adjustment process to reduce the effects of identifiable external factors that may have influenced university performance (DEST 2005b). DEEWR higher education reports and the Learning and Teaching Performance Fund (LTPF) publish the full-time employment, graduate outcome and overall satisfaction data every year. The current study used the data published by the LTPF from 2005 to 2007 for full-time employment, overall satisfaction and the progression rate.

In constructing these measures, DEST (2005b) used the dependent variable in the form of an indicator variable in the econometric analysis, which takes the value of 1 if the response is positive and 0 if otherwise. For example, in the overall satisfaction performance indicator, the variable is 1 if the respondent is 'broadly satisfied' and is 0 if not. They used a linear regression model with the outcome variable as the dependent variable and a set of institution dummy variables as the explanatory variables along with a set of control variables (DEEWR 2008c; DEST 2005b) and those adjusted estimates were used as the basic input into the performance indicators.

The staff to student ratio was calculated as the proportion of academic equivalent full-time (EFT) to equivalent full-time student load (EFTSL) from 2005 to 2007. Data for this measure were taken from the staff and the student load statistics of the DEEWR higher education data collection.

Research Performance Index

A research performance index comprises research income, research degree completion and research and publications. The *Higher Education Report 2007* (DEEWR 2008c) used the same measures to calculate the research block funding under the Research Training Scheme. In the current study, research income per academic staff member, research and publications per academic staff member and the research degree completion per academic member (Linke 1995; Valadkhani & Worthington 2006; Warning 2007) were used to calculate the research performance index. In all three measures, the number of full-time equivalent academic staff members was used as input to avoid the influence of the nature of the university on the research performance measure as discussed by Aghion (Aghion, P. et al. 2009)

Financial Performance (Viability) index

The annual Institution Assessment Framework (IAF) for higher education institutions of the DEEWR uses a number of indicators to measure the financial performance of government-funded universities which comprise organizational sustainability, and verifies that the university is in a sound financial situation and well managed financial position to continue delivering the educational programs for the stakeholders including the Australian Government. In accordance with the DEEWR (2008c), financial sustainability was measured as operational performance, liquidity and the efficiency of capital expenditures. Three indicators were used in this study to measure the financial performance for organizational sustainability of Australian universities. They are assets turn over (AT) as the measure of operational performance of funds, return on equity (ROE) as a measure effective use of investments and current ratio as a liquidity measure (Zahra & Pearce 1989). Debt to equity ratio is not an important measure for Australian universities as they do not have a significant debt capital involvement.

Assets turnover

Return on total assets is used to gauge the operational performance of funds and the efficiency of using assets to generate revenue. Assets turnover shows the performance of the assets and it reflects the efficiency of assets in generating the revenue in universities. Assets turnover is widely used in the literature to measure financial performance of institutions (Beiner & Schmid 2005; Kyereboah-Coleman & Biekpe 2005; Yildirim & Philippatos 2007).

Return on Equity

Return on equity is calculated by using net operational surplus to net equity. This provides a good measure of operational performance and effectiveness of the capital investment (Rashid, Islam & Anderson 2008), .and hence is used for the study of Australian universities.

Current Ratio

Current ratio indicates the liquidity of the institution which represents the short-term financial stability in the finance literature (Guthrie, J. & Neumann 2007; Rashid, Islam & Anderson 2008).

Size of the University

Size of the university was considered in previous research (Khanchel 2007) as a controlling factor for performance of the universities so as in Warning (2007), equivalent full-time student load (EFTSL) was used to measure the size of the university in the present study.

5.7 Analyses of the Data

Regression analysis was used to test the propositions and to reveal the relationships between corporate governance instruments, control variables and university performance. The general representation of the model is given in the equation below:

$$Y_t = C + \beta_{1t} X_{1t} + \beta_{2t} X_{2t} + \dots + \beta_{nt} X_{nt} + et \quad (5.1)$$

where:

Y_t = dependent variable (performance);

C = intercept;

β_t = slope of the independent variables (internal, external and control variables);

X_t = independent variables; and

et = error term (Mills & Markellos 2008).

The ordinary least square (OLS) estimation was used to diminish the residuals of the models for the current study function (Hair et al. 1998). OLS estimation minimises the residual of the model and enables the sample regression function to explain the maximum portion of the

regression function (Cuthbertson, Hall & Taylor 1992). For econometric estimation, the model can be specified as follows:

$$Y = X\beta + e \quad (5.2)$$

Definition of the variables and parameters are:

Y = a vector of a dependent variable;

$X = (TxK)$ matrix of explanatory variables;

$\beta = (Kx1)$ unknown (to be estimated) matrix of parameters; and

$e = (1xT)$ unobservable random error vector.

In the Classical Least Squared Method, it is assumed that the random errors have zero mean:

$$E(e) = 0 \quad (5.3)$$

and a constant variance:

$$E(ee') = \sigma^2 I \quad (5.4)$$

The econometric estimation by the model involves the estimation of β by minimizing the following squared errors:

$$M = (Y - X\beta)'(Y - X\beta) \quad (5.5)$$

When X has K rank and $X'X$ is non-singular, the minimisation method generate the vector of estimated β which is shown as follows:

$$\hat{\beta} = (X'X)^{-1} X'Y \quad (5.6)$$

Following are the functional forms widely chosen in the financial econometrics studies:

$$\log y = \alpha + \beta \log x \quad (5.7)$$

$$y = \alpha + \beta x \quad (5.8)$$

$$yx\beta=\alpha + \tag{5.9}$$

$$\log yx\beta=\alpha + \tag{5.10}$$

$$y =\alpha + \beta \log x \tag{5.11}$$

Equation 5.7 represents the double log function. Equation 5.8 shows the linear function and Equation 5.9 represents the inverse function. Similarly, Equation 5.10 shows the log inverse function. Finally, Equation 5.11 represents the lin-log function.

Different functional forms of corporate governance and performance variables have been used in this study to best fit with the data used. The multifactor corporate governance model used to test the relationship between corporate governance and the performance of universities in Australia is as follows:

$$Performance = f(REG, STI, CSIZE, CIND, CCMT, CMEET, TRANS) \tag{5.12}$$

The general representation of the equation above is as follows:

$$Yt = C + \beta1t \log X1t + \beta2t X2t + \beta3t X3t + \beta5t \log X4t + \beta5t X5t + \beta6t X6t + \beta7t X7t + \beta8t X8t + et \tag{5.13}$$

where: Yt = dependent variable;

C = intercept;

βt = slope of the independent variables;

Xt = independent variables (council size, council independence, council committees, council meetings, transparency in reporting, regulatory index, stakeholder influence and size of the university);

t = periods;

et = error term;

$\beta1$ = coefficient of regulatory index;

$\beta2$ = coefficient of stakeholder influence;

$\beta3$ = coefficient of council size;

$\beta4$ = coefficient of council independence;

$\beta5$ = coefficient of council committees;

$\beta6$ = coefficient of council meetings;

β_7 = coefficient of transparency in reporting; and

β_8 = coefficient of size/EFTSL (fulltime equivalent student load).

In the above model, the sign of β is expected to be negative when the results show the negative relationship between the performance of a firm and the governance variable, and positive when it shows a positive relationship. As the literature suggests, regulatory index, stakeholder influence, council independence, council committees, council meetings, transparency in reporting and EFTSL, β_1 , β_2 , β_4 , β_5 , β_6 , β_7 and β_8 are expected to have a positive relationship with performance, while council size (β_3) is expected to have a negative relationship with performance.

5.7.1 Diagnostics Statistics

Diagnostic statistics were used to identify the reliability and the validity of the model in measuring the relationship between the governance and the performance of universities in Australia (goodness of fit). Different functional forms were tried, and diagnostics of all the functions were analysed. Treatments were given and variables were transformed by using a natural logarithm. The regulatory index, council size, progression rate and research and publications per academic were transformed into logarithm, progression log, research and publications per academic log, regulatory index log, council size log. This adjustment brings the coefficients of these variables in line with the other variables and this treatment removed the potential violation of the OLS assumptions. The adjustment is similar to the treatment given by Sridharan and St John (1998) Kyereboah-Coleman and Chen (2005) in their studies about corporate governance and performance. Variables such as progression rate, overall satisfaction and full-time employment rate were transformed into percentage form to bring the coefficients into proportion with the other variables.

5.7.2 R-squared

The R-squared values in the econometric model explain the percentage of the dependent variables explained by the independent variables (goodness of fit). R-squared lies between the values of 0 and 1 (Campbell et al. 1997). The closer the value of R-squared to 1 shows how regulatory index, stakeholder influence, council size, council independence, council

committees, council meetings and transparency in reporting, explain the variation in the performance of a university.

5.7.3. Significance Testing and Goodness of Fit

According to Hair et al.(2006) t test is used to test hypotheses involving the mean difference between two independent groups.. The t test was used to check the significance of individual parameters (propositions) of the regression relevant for the study. These individual propositions are related to the relationship between regulatory index, stakeholder influence, council independence, council size, council committees, council meetings and transparency in reporting with the performance of a university. The t value and significance level in the each row of the table of coefficients tells whether to accept or not to accept each of the hypotheses tested.

Furthermore, the f test makes the partial slopes of the coefficient equal to zero and hence checks the significance of all the parameters (propositions) in the model. The significant f statistic shows the relationship between the dependent variable (performance) and independent variables: regulatory index, stakeholder influence, council size, council independence, council committees, council meetings and transparency in reporting.

The relationship between the dependent and independent variables was tested by accepting or rejecting the alternative propositions. In this study, the alternative proposition was tested against the null proposition, which suggests a lack of relationship between the performance of a university and corporate governance instruments.

The t and f statistics give correct results only if the model follows the classic linear regression assumptions (Gujarati & Porter 1992). These assumptions are as follows:

- The error terms have a constant variance in all the observations in the model;
- There is a lack of a relationship between the repressors of the models in the study;
- The explanatory variables in the model must take a fixed value in the repeated samples;
- There is a linear relationship between dependent and independent variables, and the error term of the model;
- The expected value of the error term is zero for all the observations in the model; and

- The error terms are independent of each other in different observations in the model.

In case of the violation of the classic linear regression assumptions, the following problems will arise.

5.7.4. Multicollinearity

According to Cuthbertson et al. (1992), multicollinearity takes place in the model when the independent variables are related to each other. Multicollinearity will arise in the model if the independent variables (regulatory index, stakeholder influence, council size, council independence, council committees, council meetings and transparency in reporting) of the model in the current study areas are related to each other. Multicollinearity will be detected when the model has a high R-squared, but insignificant *t* ratios of the above-mentioned variables. The high standard errors of the variables will also be a sign of high collinearity. In contrast, indeterminate coefficients with large standard errors will show a perfect collinearity in all the above mentioned variables (Gujarati & Porter 1992).

The tolerance factor and variance inflation factor of each corporate governance variable in the model was tested to detect multicollinearity (Appendix 5). The value of the variance inflation factor greater than 2 and the tolerance factor closer to 0 will show the presence of multicollinearity in the model (Field 2009).

Variance inflation Factor (VIF)

The variance inflation factor (VIF) was calculated by using all the independent variables (regulatory index, stakeholder influence, council size, council independence, council committees, council meetings and transparency in reporting), the dependent variable and calculating R-squared. R-squared was substituted in the formula below to calculate the variance inflation factor:

$$VIF = 1 / 1 - R^2 \tag{5.14}$$

Tolerance factor

The tolerance factor in the model is calculated by using all the above mentioned variables and the dependent variable and calculating R-squared. Finally, R-squared will be subtracted from one to get the value for the tolerance factor.

The formula below is used to calculate the tolerance factor:

$$TF = 1 - R^2 \quad (5.15)$$

The variables of the model having multicollinearity were exchanged with new variables to solve the problem.

5.7.5. Heteroscedasticity

The variance of the error term of the model was also observed. The variable variance led to the problem of heteroscedasticity (Hair et al. 2006). The estimators of the model in this case will be inefficient, but remain unbiased and consistent, making the results of study unreliable. The White diagonal measure (White 1980) was used to remove the heteroscedasticity in the model (Field 2009). This treatment corrects the variance of the error term of the model, by dividing the error term with its variance (Appendix 6). As a test of heteroskedasticity, White's test proposed by White (1980) is widely used and included in many econometric software packages including SPSS.

5.8 Econometric and Statistical Tests

Additional econometric and statistical tests used in this study include: factor analysis, tests for incremental regression, tests for complementarities of corporate governance instruments, and descriptive statistics for the study. These tests are discussed in detail as follows.

5.8.1 Factor Analysis

In the current study, factor analysis was performed to identify the correlation among the variables in all five constructs of the study and to determine the weights for factor loading on each variable about the relationship between the performance of a university and corporate governance. In the present study, factor analysis was used as the confirmatory measure of the

variables in the each construct (Field 2009; Hair et al. 2006), namely internal and external governance mechanisms as independent variables of the study, and teaching performance, research performance and financial performance as dependant variables in the study. Factor analysis was the tool used to ensure the robustness of the model, the reliability of the constructs and the validity of the variables in each construct (Hair et al. 1998).

Factor rotation was used to simplify the factor structure. According Hair et al. (1998) and (2006), rotation of factors improves the interpretation by reducing the ambiguity. The Varimax rotational approach further simplifies the factors by maximising the sum of variances of the required loading of the factor matrix. Factor loading represents the correlation between the original variable and its factors, and correlation coefficients were used for determining the significance level for the interpretation. Loading exceeding 0.70 is considered indicative of a well define structure, and for the purpose of factor loading this measure was used to determine variables and factor loadings for each construct in this study..

5.8.2 Incremental Regressions

The incremental regression was performed to reveal the importance of an individual variable in affecting the performance of a university, by removing the individual variables from the model and capturing the effect on R-squared (Field 2009). These tests will highlight the importance of individual variables in affecting the dependent variable (performance) in the model. More tests will be performed for each sub variable of the independent variable: teaching performance, research performance and financial performance.

5.8.3 Tests for Complementarities of Corporate Governance Instruments

Tests for the complementarities of corporate governance instruments in affecting the value of universities were conducted in this study. In the model, the complementarities between both internal corporate governance instruments (council independence, council size, council committees, council meetings and transparency in reporting) and external governance instruments (regulatory index and stakeholder influence) were tested.

5.8.4 Suggested Relationship among the Complements

As mentioned in Chapter 4, the internal corporate governance mechanisms (Council independence, council size, council committees, council meetings and transparency in

reporting) were considered to be the complement of the external corporate governance mechanisms (regulatory index and stakeholder influence). Similarly, the external corporate governance mechanisms (regulatory index and stakeholder influence) were considered to be the complement of the internal corporate governance mechanisms (council independence, council size, council committees, council meetings and transparency in reporting).

5.8.5 Descriptive Statistics

As discussed in the previous chapter, descriptive statistics were used to analyse the basic features of the data in this study. An analysis of individual corporate governance variables was also performed to examine the variables relevant for corporate governance and the performance of a university on an individual basis. The descriptive statistics used in this study consist of a mean to show central tendency, and maximum and minimum values of the relevant variables to show the range or standard deviation (Hair et al. 1998; Veal & Ticehurst 2005). The maximum value will be used to show the highest value of the variable in the population. In contrast, the minimum value will be used to show the lowest value of the variable in the population. Descriptive statistics are also useful to make general observations about the data collected. They report on the trends and patterns of data and provide the basis for comparisons between variables.

5.9 Computer Programs Used in the Current Study

The SPSS statistical package, together with Microsoft Excel, was used to transform and analyse data to obtain the results of the study. SPSS was used to calculate the results for the factor analysis and descriptive statistics for the model. Multiple regressions, tests of complementarities and incremental regressions were performed with the help of SPSS software (Field 2009). The analysis consists of descriptive statistics for the model, the factor analysis, multiple regressions and correlation analysis.

5.10 Policy Formulation for Australian Universities

Policy implications were based on the results of this research which aimed at formulating a variety of policies derived from the results of the corporate governance and the performance model in order to improve the performance of universities in Australia. The following policies were derived from the study:

- governance policies for the higher education sector in Australia; and
- policies regarding the role of governance in improving the performance of universities.

5.11 Conclusion

The current chapter has discussed the underlying theories relevant to the study, the systems of the variables used and the methodology used in the study in detail. The population of the study, methods and sources of data collection, variables used for the construction of the model of the relationship of governance and performance of universities, and statistical analysis used to test the propositions of the study, were elaborated. The role of the variables in representing good governance and the relationship between good governance and teaching, research and financial performance of the universities were discussed. This chapter also discussed the nature of the data and treatments given, methods and programs used to analyse data, and reliability and validity of the models used to test the relationship between governance and performance of universities. Chapter 6 examines the important corporate governance variables and the performance variables on the basis of the statistical results obtained by applying the methods discussed in this chapter.

CHAPTER 6

DATA ANALYSES AND RESULTS

6.1 Introduction

This chapter details the results of the research, the analyses of the data and the statistical methods applied to the data in the study. The relationship of governance instruments with the performance of universities was discussed in detail. The analyses were conducted to investigate the complementarities of governance instruments in affecting the performance of universities. Incremental tests for the importance of each variable in the governance and performance models were also carried out. In addition, statistical treatments for multicollinearity and heteroscedasticity are presented. Five constructs described in Chapter 4 were analysed to determine the relationship between governance and the performance of universities. They were external governance mechanism, internal governance mechanism, research performance, teaching performance and financial performance. Each construct was composed of several variables.

The structure of the chapter is as follows. Section 6.2 reports the descriptive statistics of the variables comprising each construct of the study. Section 6.3 presents the factor analysis among the variables of the constructs in confirming the factor loading on each variable of the study. Section 6.4 reports the results of correlation analyses of the variables used for the five constructs of the study. Section 6.5 presents the multiple regression analyses of the independent and dependent variables of the study. Section 6.6 reports the analysis of robustness tests of the study or the econometric tests. Section 6.7 considers the nature of the relationship between governance and the performance of universities. Section 6.8 deals with the test of the complementarities of the internal and external corporate governance mechanisms. Finally, Section 6.9 concludes the chapter.

6.2 Descriptive Statistics

As discussed in Chapter 5, the descriptive statistics for the independent and dependent variables were constructed to ascertain the general characteristics of the universities in

Australia. The independent variables used in the study were external governance mechanisms and internal governance mechanisms. The dependant variables were research performance teaching performance and financial performance. The descriptive statistics for the external governance mechanism variables: regulatory authority and stakeholder influence are presented in Table 6.1. The descriptive statistics for the internal governance mechanism variables of the study: council size, council independence, council committees, council meetings and the transparency in reporting are presented in Table 6.2. The descriptive statistics for the dependant variables of the study, research performance is presented in Table 6.3. Teaching performance is presented in Table 6.4 and the descriptive statistics for financial performance are presented in the Table 6.5. Data from the year 2005 to 2007 were used for the performance variables and the mean of the three years was used to obtain the values for the dependent variables (performance indices) of this study. A summary of the descriptive statistics of these variables are presented as follows.

6.2.1 Descriptive Statistics for External Governance Mechanism

A regulatory index of the study was proxied by compliance with the National Governance Protocols, and government assistance as a percentage of total revenue represented the stakeholder influence in this study. These two measures were used to construct the external governance mechanism index described in Chapter 5. Table 6.1 below presents the descriptive statistics for the external governance mechanism variables for year 2007.

Table 6.1
The Descriptive statistics of External Governance Mechanism Variables for 37 Universities - 2007

Variable	No.	Minimum	Maximum	Mean	Std. Deviation
Regulatory index(<i>Compliance with protocols</i>)	37	92%	100%	94%	3%
Stakeholder influence (<i>Government assistance/ total revenue</i>)	37	33%	94%	57%	12%
Valid No. (listwise)	37				

Source: Authors calculations, 2009.

Regulatory Index

Universities compliance with National Governance Protocols was used as the regulatory index of the study. The minimum value for compliance (Table 6.1) with the 2003 protocols was 92% and the maximum was 100%. The standard deviation was only 3%. Compliance

with the 2003 National Governance Protocols represented the role of the influence of regulatory authority or the regulatory index in the study at the time of study. Descriptive statistics showed that the mean value of the compliance with the protocols was 94% and this agreed with the findings of the Australian Government *Higher Education Report 2005*, (DEST 2007) which confirmed that all Australian universities had made some effort to comply with the 2003 National Governance Protocols by the year 2005. Though the universities were expected to be 100% compliant, some universities could not address the risk criteria as outlined in the protocols and this reduced the mean value to 92%.

Stakeholder Influence

The Australian Government, as the main funding body for the publicly- funded universities, was considered as the main stakeholder of the study. As discussed in Chapter 4, universities' dependency on government funding was calculated as a percentage of government assistance including HECS and HELP to total revenue for 37 universities in Australia. The mean of government funding and total revenue of the 37 universities over the three years from 2005 to 2007 were used to calculate the percentage of dependency on government funds. The minimum value of government assistance as a percentage of the total revenue was 33% for Central Queensland University and the maximum value for dependency on government funds was 94% for Flinders University of South Australia. The mean value was 56.84%, where the standard deviation was 12%. This demonstrated that on average, around 57% of university revenue is generated from government funds.

6.2.2 Descriptive Statistics for Internal Governance Mechanism

There were five variables used in the construction of the internal governance mechanisms. They were council size, council independence, council committees, council meetings and transparency in reporting. Descriptive statistics for the internal governance mechanism variables for year 2007 are presented in Table 6.2 and described below.

Table 6.2
The Descriptive Statistics for Internal Governance Mechanism Variables for 37 Universities - 2007

Variables	No.	Minimum	Maximum	Mean	Std. Deviation
Council size	37	12.00	22.00	19.24	2.76
Council independence	37	0.50	0.70	0.60	0.05
Council committees	37	0.18	0.76	0.54	0.14
Council meetings	37	4.00	12.00	6.84	1.48
Transparency in reporting	37	0.25	1.00	0.60	0.18
Valid No. (listwise)	37				

Source: Authors calculations, 2009.

Council Size

Descriptive statistics for council size of Australian universities varied from a maximum of 22 council members to a minimum of 12 council members (see Table 6.2). The mean value was 19 members in the council or the governing body of the university. According to the research findings of the study, 8 out of 37 universities had a maximum of 22 council members and a minimum of 12 council members existed at Central Queensland University. The higher average of 19 suggested that universities preferred to have larger governing bodies.

Council Independence

The council independence variable showed the extent to which external members were appointed to university councils. The descriptive statistics showed that the minimum value for the council independence index was 0.50 at James Cook University and the maximum value 0.70 was at Edith Cowan University. The mean value for council independence was 0.60. This confirmed the 2003 protocol requirement for best practice governance, that there should be a majority of external members in a university governing body.

Council Committee Index

The council committee index referred to the process of appointing standing committees to the university council. This variable examined the existence, process and independence of audit remuneration and nomination committees as standing committees in the university governing body. In analysing the process of the audit, remuneration and nomination committees, the number of meetings held and the influence of the Vice-Chancellor as the Chief Executive Officer of the University on those committees were also addressed. The maximum value for the council committee index was reported as 0.76 at the University of Sydney and the minimum value of 0.18 was reported at the University of Tasmania. The mean for a standing

committee index of Australian universities was 0.54. The research results revealed that every university had an audit committee and the chair of the committee was an external member. This confirmed that all 37 universities had independent audit committees. The research results further disclosed that only 12 out of 37 universities had remuneration committees and 20 out of 37 universities had nomination committees as of 2007, although some universities were in the process of establishing remuneration and nomination committees.

Council Meetings

The council meeting was used as the proxy for council process (refer to Chapter 5). The number of council meetings held during the year varied from a maximum of 12 meetings at the University of Melbourne to a minimum of 4 meetings held during the year at the Australian Catholic University. The mean value for council meetings was 6.8 which could be considered as 7 meetings per year.

Transparency in Reporting

Transparency in reporting was measured by using the transparency index. The transparency index described in Chapter 5 was constructed to measure the depth and the extent of information disclosure in the annual reports of the universities, in addition to fulfilling the mandatory requirements in reporting for government agencies. According to the descriptive statistics, the minimum value for transparency in reporting was 0.25 for the University of Canberra and the maximum value was 1.00 for the University of Melbourne. The mean value of the transparency index was 0.60 and the standard deviation was 0.18. Statistics showed that on average, universities exhibited 0.60 transparency in reporting in their general purpose reports (annual reports), in addition to fulfilling mandatory disclosure requirements.

6.2.3 Descriptive Statistics for Research Performance Index

The research performance index of the Australian universities was constructed by using three measures in this study (see Table 6.3). They were research income per academic, research and publications per academic and research degree completion per academic.

Table 6.3
Descriptive Statistics for Research Performance

Measure		No.	Minimum	Maximum	Mean	Std. Deviation
Research and publications per academic	2005	37	1.13	2.84	1.96	0.39
	2006	37	1.19	2.88	2.04	0.43
	2007	37	0.42	14.08	2.31	2.05
	Average	37	1.20	6.12	2.10	0.78
Research degree completion per academic	2005	37	0.61	6.12	3.13	1.35
	2006	37	0.89	5.89	3.11	1.34
	2007	37	0.36	22.10	3.49	3.40
	Average	37	0.84	8.69	3.24	1.58
Research income per academic (\$'000)	2005	37	12.82	169.97	69.88	44.36
	2006	37	16.22	231.13	80.52	55.12
	2007	37	14.35	220.48	88.20	57.75
	Average	37	16.79	196.96	79.53	51.94
Valid No. (listwise)		37				

Source: Authors calculations, 2009.

Research and Publications

According to the descriptive statistics for research and publications per academic, the mean value varied from a minimum of 1.20 to a maximum of 6.12 over the three years from 2005 to 2007. The mean value for this measure was 2.10. The standard deviation for the research and publications was of 0.78. Australian universities have published an average of 2.09 research articles, books and book chapters per academic per year. Whilst there was no big change in the statistics of 2005 and 2006, data showed that in 2007 the minimum number of publications per academic dropped to 0.42 and the maximum rose to 14.08. This resulted in a standard deviation of 2.05 in the year 2007.

Research Degree Completion

The mean research degree completion per academic from 2005 to 2007 varied from a minimum of 0.84 at the Australian Catholic University to maximum of 8.69 at the University of Canberra. The mean value for the measure was 3.24, whilst the standard deviation was 1.58. The minimum research degree completion per academic in the years 2005 and 2006 were 0.61 and 0.89 respectively. This drastically dropped to 0.36 in the year 2007. The mean research degree completion per academic in 2005, 2006 and 2007 were 3.13, 3.11 and 3.49,

respectively. The mean research degree completion per academic in an Australian university over the period of three years from 2005 to 2007 showed an upward trend.

Research Income

The research income per academic was constructed by dividing the mean research income from 2005 to 2007 by the mean total academic full-time staff load from 2005 to 2007. Descriptive statistics of this measure showed the mean of AUS\$79.53 thousand per academic per year. The minimum AUS\$16.79 thousand of research income per academic per year was at the Australian Catholic University and maximum was Australian AUS\$196.96 thousand per academic per year at the University of Sydney.

Descriptive analysis of data year-wise from 2005 to 2007 showed that the mean value has increased from AUS\$69.88 thousand in 2005 to AUS\$80.52 thousand in 2006 and AUS\$88.20 thousand in 2007. This showed that universities were moving towards improving their research income over the years. Comparison of the descriptive statistics for the years 2005, 2006 and 2007 revealed that research income per academic dropped to a AUS\$16.22 thousand minimum in 2006 and to AUS\$14.35 thousand in 2007. The maximum AUS\$ of 231.13 thousand in 2006 went down to AUS\$220.48 thousand in 2007.

When comparing the mean values of 2005, 2006 and 2007, all three measures reported an upward trend, and this indicated the research performance of Australian universities showed a positive growth over the years 2005 to 2007.

6.2.4 Descriptive Statistics for Teaching Performance

The teaching performance index of the Australian universities was constructed by using the four measures used by the LTPF (DEEWR 2008d; DEST 2005b, 2007b) in the years 2005, 2006 and 2007, and other existing research (Abbott & Doucouliagos 2003a; Warning 2007; Worthington & Lee 2005), to gauge the teaching performance. They were progression rate, graduate overall satisfaction, graduates in full time employment within four months after graduation and staff to student ratio. The staff to student ratio was calculated by dividing the number of enrolled students equivalent to full time student load (EFTSL) by number of academics equivalent to full time load (EFT) and was discussed in Chapter 4. Descriptive statistics of the measures in the construct of teaching performance was presented in Table 6.4.

Table 6.4
Descriptive Statistics for Teaching Performance

Measure		No.	Minimum	Maximum	Mean	Std. Deviation
Progression rate	2005	37	78.87	94.36	86.21	3.46
	2006	37	73.64	90.71	84.32	4.12
	2007	37	75.07	90.02	84.69	3.35
	Average	37	76.37	90.43	85.07	3.23
Overall satisfaction	2005	37	60.12	80.81	69.17	4.50
	2006	37	52.13	78.41	69.56	5.15
	2007	37	62.23	80.59	70.57	4.71
	Average	37	59.00	79.02	70.01	4.03
full-time employment	2005	37	65.77	91.56	76.96	5.85
	2006	37	68.15	90.29	79.77	4.70
	2007	37	73.37	90.57	82.31	4.86
	Average	37	70.14	88.58	79.68	4.35
Staff to student ratio	2005	37	10.66	85.50	38.50	14.36
	2006	37	10.64	83.10	38.92	14.62
	2007	37	11.04	77.74	39.31	14.31
	Average	37	10.78	77.12	38.91	14.19
Valid No. (list wise)		37				

Source: Authors calculations, 2009.

Progression rate

The progression rate was calculated from LTPF (DEEWR 2008d; DEST 2005b, 2007b) data from 2005 to 2007, based on from the Graduate Careers Council Australia (GCCA) survey data. This measure indicated the successful progression of the students enrolled for a course in university. The average descriptive statistics from 2005 to 2007 of the progression rate varied from a minimum 76.37% at the Central Queensland University to a maximum 90.43% at the University of Canberra. The mean value of the progression rate in an Australian university was 85.07%. This meant that on average, 85% of the students enrolled in a course in an Australian university successfully completed their course during the research period. The standard deviation among universities was only 4.5%. When comparing data from 2005 to 2007, the minimum progression rate in 2005 was 78.87 and this had come down to 73.64 in 2006 and in 2007 it showed a slight progress to 75.07. The maximum progression rate of 94.36 in 2005 had gone down to 90.71 in 2006 and to 90.02 in 2007, which showed a downward trend in the maximum values for progression rates over the 3 years. The mean value of progression rate in 2005 was 86.21% and in 2006 and 2007 this had gone down to

84.32 and 84.69% respectively. This result indicated that the progress rate showed a downward trend over the years 2005 to 2007.

Overall Satisfaction Rate

Overall satisfaction was calculated by using the data obtained from the LTPF 2005, 2006, and 2007 (DEEWR 2008d; DEST 2005b, 2007b) which was constructed by using the Course Experience Survey (CES) data of the GCCA. Descriptive statistics of the measure showed a minimum value of 0.59 and maximum value of 0.79, and the mean value of overall satisfaction of the students who completed a degree in an Australian university was reported as 0.70. The standard deviation among universities was only 0.04. This showed that the differences in overall satisfaction among universities were very small. Descriptive statistics for overall satisfaction showed a slight upward trend from 2005 to 2007, varying from 60.12, 52.13 and 62.23, respectively. The maximum value of overall satisfaction varied from 80.81 in 2005, 78.41 in 2006 and 80.59 in 2007. The statistics showed that there was no remarkable difference among the three years maximum data for overall satisfaction. The mean value for overall satisfaction showed a slight upward trend from 69.17 in 2005, to 69.56 in 2006 and 70.57 in 2007.

Full-time Employment Rate

Full-time employment rate was calculated by using the data obtained from the LTPF (DEEWR 2008d; DEST 2005b, 2007b) 2005, 2006, and 2007. Descriptive statistics for the full time employment rate showed a minimum value of 70.14% and maximum value of 88.58%. The average value for an Australian student in full-time employment within four months after completing the first degree was 79.68% and the standard deviation was 4.35% among universities. The minimum statistics for full-time employment showed an upward trend ranging from 65.77% in 2005 to 68.15 in 2006 and 73.37 in 2007, respectively. The maximum in 2005 was 91.56% and this came down to 90.29 in 2006 and slightly increased to 90.57 in 2007. The mean value of the full-time employment rate for 2005, 2006 and 2007 were 76.96, 79.77 and 82.31, respectively. This showed an upward trend in the measure for the three years from 2005 to 2007. The standard deviation which was 5.85 in 2005, it came down to 4.7 in 2006 and went slightly up to 4.86 in 2007.

Staff to Student Ratio

Staff to student ratio was constructed by dividing the enrolled number of students equivalent to full time student load (EFTSL) by academic equivalent to full time load (EFT). The ratio showed a minimum of 10.78 at the Australian National University and a maximum 76.93 students per academic staff member at the Central Queensland University. On average, there were 38.91 students per full time academic staff member in an Australian university. The standard deviation was 14.19. When analysing the trend of the data from 2005 to 2007, the minimum changed slightly from 10.66 in 2005 to 10.84 in 2006 and 11.04 in 2007. The maximum number of students per academic in 2005 was 85.8 and this came down over the 3 years to 83.10 in 2006 and 77.74 in 2007, showing a good trend.

6.2.5 Descriptive Statistics for the Financial Performance Index

The values composing the financial performance index of the universities were measured by using three measures in this study, namely current ratio, assets turnover ratio (AT) and return on equity ratio (ROE) in line with the financial performance measurement literature discussed in Chapter 4. *Higher Education Report 2005, 2006 and 2007* (DEEWR 2008a, 2008b, DEST 2007) used financial performance measures to gauge the financial sustainability of universities. Descriptive statistics of these measures in the construct are presented in Table 6.5.

Table 6.5
Descriptive Statistics for Financial Performance

Measure		No.	Minimum	Maximum	Mean	Std. Deviation
Current ratio	2005	37	0.61	4.86	1.77	0.97
	2006	37	0.35	4.67	1.51	0.84
	2007	37	0.32	4.95	1.60	0.90
	Average	37	0.46	4.83	1.59	0.85
Assets turnover	2005	37	0.27	1.00	0.47	0.13
	2006	37	0.07	0.95	0.46	0.14
	2007	37	0.30	0.76	0.47	0.11
	Average	37	0.31	0.90	0.47	0.11
Return on Equity	2005	37	-0.02	0.14	0.03	0.03
	2006	37	-0.006	0.11	0.04	0.04
	2007	37	-0.01	0.12	0.05	0.03
	Average	37	-0.002	0.09	0.04	0.02
Valid No. (listwise)		37				

Source: Authors calculations, 2009.

Current ratio

The current ratio indicates the short term financial viability or the liquidity of universities. This financial measure is used to gauge the ability of a provider to meet its short-term financial obligations. According to the descriptive statistics, the average current ratio varied from a minimum of 0.46 times of current assets to meet current liabilities at Monash University to a maximum of 4.83 times of current assets to meet current liabilities at the University of Tasmania. The standard deviation of these measures amongst Australian universities was 0.85 and the ratio ranged from 0.46 to 4.83. The financial literature suggests an optimum position as of 2 times of current assets to meet current liabilities. The mean or the average current ratio of 1.63 suggested that Australian universities maintained a satisfactory liquidity position. *Higher Education Report 2005* (DEST 2007) considered a ratio of less than 1 as an indication of a potential liquidity risk, while the finance literature considers the optimum position of this ratio as 2 times current assets to 1 time current liabilities. The Minimum statistics of m 0.61 in 2005 came down to m 0.35 in 2006 and further down to 0.32 in 2007, and the maximum statistic showed this as 4.86 in 2005, 4.67 in 2006 and 4.95 in 2007. The mean varied from 1.77 in 2005 to 1.51 in 2006 and 1.6 in 2007. This suggested that though there were extremes, overall liquidity position of Australian universities were at a satisfactory level over the years 2005 to 2007.

Assets Turnover

The descriptive statistics for the assets turnover (AT) ratio varied from a maximum of 0.90 to a minimum 0.31, and the mean value for AT for Australian universities was 0.46. This ratio showed the revenue generating power of the assets or in other words the effective use of assets in generating revenue for universities in Australia which averaged at 0.47. The descriptive statistics for 2005 showed a minimum value for AT as 0.27 and this had gone down to 0.07 in 2006 and went up to 0.3 in 2007. While the maximum value for AT in 2005 was a very good 100%, and in 2006 this came slightly down to 0.95, in 2007 the maximum value showed a significant reduction down to 0.76. Average or mean return on asset statistics for 2005, 2006 and 2007 showed some consistency and this suggested that most of the Australian universities had around 47% revenue generating power over assets and that condition was stable over the period from 2005 to 2007.

Return on Equity

Return on equity (ROE) shows the efficiency of equity of universities. Calculated as a percentage of operating surplus to equity, equity can be defined as the net assets of universities. The descriptive statistics varied from a minimum of negative 0.01 to a maximum 0.09. The mean value was 0.04, which showed an overall efficiency of funds in the Australian university sector. The descriptive statistics from the year 2005 to 2007 showed an upward trend for the mean ROE of the universities. In 2005, the mean ROE was 0.03. In 2006 this went up to 0.04 whilst this pattern continued showing the mean value of ROE as 0.05 in 2007. The minimum and the maximum values during these three years did not show any clear trend.

6.3 Factor Analysis of the Variables

Factor analysis was used as the confirmatory measure of the variables used in the constructs of the indices. Factor loadings represented the correlation between the original variable and its factors. In determining the significance level for the interpretation, correlation coefficients were used. Loadings exceeding 0.70 are considered indicative of a well defined structure (Field 2009), and for the purpose of factor loading in this study, this measure was used to determine variables and factor loadings for each construct. The Varimax rotation method with Kaiser normalization (Field 2009) was performed to examine the loading of each variable on the five constructs of the model and to confirm the robustness of the model. Factor weightings were used to transform the variables to calculate all five indices in the model. Factor analysis was used to identify the contribution of each variable (Field 2009; Hair et al. 2006), and the percentage of correlation among the variables in the model. The results of the factor analysis are reported in Table 6.6 below.

Table 6.6
Factor Analysis (Rotated Component Matrix)

Variable	Component				
	Research	Finance	IGM	EGM	Teach
Overall satisfaction rate					0.734
Full-time employment rate					-0.028
Staff to student ratio					0.105
Progression rate log					0.339
Research and publications per academic log	0.717				
Stakeholder influence				-0.710	
Regulatory index log				0.370	
Council size log			0.547		
Council committee log			-0.018		
Current ratio		0.817			
Asset turnover ratio (AT)		0.592			
Return on equity (ROE)		0.715			
Research degree completion per academic	0.888				
Research income per academic	0.785				
Council meetings			0.688		
Council independence			0.167		
Transparency in reporting			0.775		

Notes: Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization
 a. Rotation converged in 6 iterations
 b. Research: Research performance Index
 Finance: Financial performance index
 IGM: Internal governance mechanisms
 EGM: External governance mechanisms
 Teach: Teaching performance index

Source: Authors calculations, 2009.

Factor Loading for Research Performance Index

There were three variables used in the study to construct the research performance index of the study. According to the results of the principal component analyses with the Varimax rotation method, the first component showed the highest loadings for research and publications per academic of 0.72, research degree completion per academic 0.89 and research income per academic 0.79. The first component of the factor tables was labelled as research construct on the above results. The above results suggested the factor loading of each variable in constructing the research performance index was reliable.

Factor Loading for Financial Performance Index

The financial performance index was constructed by using the variables ROE and current ratio. The second component of the Varimax rotation was labelled as the financial

performance index, as this component derived the second highest loadings, 0.82 for the current ratio, 0.59 for AT and 0.72 for ROE and this further suggested the factor loading of each variable in the construct.

Factor Loading for Internal Governance Mechanisms

There were five variables used in the internal governance mechanisms and the next highest factor loading in the Varimax rotating matrix showed as 0.78 for transparency in reporting followed by .69 for council meetings, 0.55 for council size 0.17 for council independence and -0.02 for council committees. The third component in the factor matrix was labelled as the internal governance mechanism, depending on the above loadings.

Factor Loading for External Governance Mechanisms

Depending on the Varimax factor loadings, the fourth component was labelled as the external governance mechanism and the weights given by the factor rotation for the variables in this component were -0.71 for stakeholder influence and 0.37 for regulatory index.

Factor Loading for Teaching Performance Index

The last component of the Varimax rotation matrix was labelled as the teaching performance index, which derived the factor loadings as 0.73 for overall satisfaction,-0.03 for the full time employment rate, 0.11 for the staff to student ratio and 0.34 for the progression rate.

6.3.1 Communalities of the Variables

It is a necessary to identify whether all the variables adequately contributed to the factor solution of the model for a reliable factor loading. Communalities of the variables represented the variance accounted for by the factor solution for each variable, and according to Hair et al. (2006), the communalities of the variables should be more than 0.5 to have a sufficient explanation of the variable. All seventeen variables used for the factor loading in the five different constructs used in this study were tested for this assumption. Table 6.7 shows the communalities of the variables. The extraction column of the table shows that the communalities were more than 0.5 for all the variables loaded in the solution.

Table 6.7
Communalities of the Variables

Variable	Initial	Extraction
Overall satisfaction	1.000	0.573
Full time employment	1.000	0.674
Staff to student ratio	1.000	0.836
Progression rate log	1.000	0.559
Research publication log	1.000	0.697
Stakeholder influence log	1.000	0.618
Regulatory index log	1.000	0.697
Council size log	1.000	0.594
Council committees log	1.000	0.701
Current ratio	1.000	0.785
Assets turnover	1.000	0.659
Return on equity	1.000	0.634
Research degree completion	1.000	0.834
Research income	1.000	0.818
Council meetings	1.000	0.556
Council independence	1.000	0.603
Transparency in reporting	1.000	0.655

Notes: Extraction method: principal component analysis.
Source: Authors calculations, 2009.

6.4 Correlation Analysis of the Measures of Constructs

There were five constructs included in the model of this study. They were external governance mechanism, internal governance mechanism, teaching performance, research performance and financial performance. Correlation analyses of these constructs were performed to identify the significant relationship among all the variables used. The results are presented as follows. The correlation of external governance measures are presented in Table 6.8. Correlation of internal governance mechanism measures in Table 6.9, and Table 6.10 show the research performance measures. Correlation results for teaching performance measures are presented in Table 6.11, and Table 6.12 shows the financial performance measures.

6.4.1 Pearson Correlation Analysis of the External Governance Mechanism

Results of the correlation analysis of the external governance variables showed a non-significant correlation of 0.058 between the two variables used in the construct: influence of the regulatory authority and the stakeholder influence (see Table 6.8). Hence these variables should be considered as two independent variables in analysing the relationship between the dependant variables.

Table 6.8
Pearson Correlations of External Governance Mechanism

Variable	Stakeholder influence
Stakeholder influence	1
Regulatory index Log	.058

Notes: * Correlation is significant at the 0.05 level (2-tailed).
 ** Correlation is significant at the 0.01 level (2-tailed).
 N = 37.

Source: Authors calculations, 2009.

6.4.2 Correlation Analysis of the Internal Governance Mechanism

Table 6.9 shows the results of the correlation analysis of the five variables used in the internal governance mechanisms. According to the correlation analysis, with the exception of council size, council meetings and transparency in reporting, none of the other variables used in the construct were significantly correlated. Board/ or council size showed a positive correlation at $p < 0.05$ with council meetings. Council meetings showed a positive correlation at $p < 0.05$ with transparency in reporting.

Table 6.9
Pearson Correlations of Internal Governance Mechanism

Variables	CSIZELOG	CCMTLOG	CMEET	CIND	TRANS
Regulatory index log	1				
Council Committee index log	-0.219	1			
Council Meetings	0.357*	-0.083	1		
Council independence	0.091	-0.034	0.094	1	
Transparency in reporting	0.237	0.100	0.340*	0.167	1

Notes: * Correlation is significant at the 0.05 level (2-tailed).
 ** Correlation is significant at the 0.01 level (2-tailed).
 N = 37.
 CSIZELOG: Council size log.
 CCMTLOG: Council committees index log.
 CMEET: Council meetings.
 CIND: Council independence.
 TRANS: Transparency in reporting.

Source: Authors calculations, 2009.

6.4.3 Pearson Correlation Analysis of the Research Performance Index

Table 6.10 shows the correlation of the variables used in the construct of the research performance index. According to the results of the correlation analysis among the three variables used in this construct, research and publications per academic staff member showed a positive correlation at the $p < 0.01$ confidence level with research degree completion per academic. The research degree completion per academic showed a positive correlation with

research income per academic at the level of $p < 0.01$ confidence. The results revealed that research and publications, research degree completion and research income were highly correlated to each other variable in the construct showing a $p < 0.01$ level of correlation among the three variables used in the construct. These variables formed a reliable construct to measure the research performance of Australian universities.

Table 6.10
Pearson Correlation Analysis of the Research Performance Index

Variable	RRPLOG	RRDC
Publications per academic log	1	
Research degree completion per academic	0.810**	1
Research income per academic	0.313	0.610**

Notes: * Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

N = 37.

RRPLOG: Publications per academic log.

RRDC: Research degree completion per academic.

Source: Authors calculations, 2009.

6.4.4 Pearson Correlation Analysis of the Teaching Performance Index

Table 6.11 below shows the correlation of the variables in the construct of the teaching performance index. Overall satisfaction as a measure of teaching performance showed no significant correlation with any of the other variables in the construct. The progression rate was positively correlated with a full time employment rate at the $p < 0.05$ level correlation between two variables. Further, the progression rate of the students negatively correlated with academic staff to student ratio at the level $p < 0.01$ of significance. The correlation analysis results of the construct of the teaching performance index revealed that the progression rate, full-time employment rate and staff to student ratio were the contributing variables for the construct of teaching performance. The overall satisfaction rate did not show a significant correlation with any of the other variables used in the construct.

Table 6.11
Pearson Correlation Analysis of the Teaching performance Index

Variable	TPRLOG	TFEM	TSAT
Progression rate log	1		
full-time employment rate	-0.374*	1	
Overall satisfaction rate	0.230	0.008	1
Staff to student ratio	-0.445**	0.256	-.0071

Notes: * Correlation is significant at the 0.05 level (2-tailed).
 ** Correlation is significant at the 0.01 level (2-tailed).
 N = 37
 TPRLOG: Progress rate log
 TFEM: Full-time employment rate
 TSAT: Overall satisfaction rate
 Source: Authors calculations, 2009.

6.4.5 Pearson Correlation Analysis of the Financial Performance Index

Table 6.12 shows the results of the correlation analysis of the variables used in the financial performance index. According to the results of this analysis, the current ratio was significantly correlated with AT the level of $p < 0.05$ and with the ROE at the confidence level of $p < 0.01$. AT was correlated with ROE at a $p < 0.01$ confidence level. The results confirmed that current ratio was positively correlated with AT and ROE. Correlation results confirmed that the three variables used to measure the financial viability of the universities: current ratio, AT and ROE were highly correlated with each other. These results suggested that all three variables were appropriate measures in constructing the financial performance index in this study

Table 6.12
Pearson Correlation Analysis of the Financial Performance Index

Variable	FCR	FAT
Assets turnover	0.384*	1
Return on equity	0.498**	0.443**

Notes: * Correlation is significant at the 0.05 level (2 tailed).
 ** Correlation is significant at the 0.01 level (2 tailed).
 N = 37.
 FCR: Current ratio.
 FAT: Assets turnover.
 Source: Authors calculations, 2009.

6.4.6 Pearson Correlation of External and Internal Governance Mechanism

Results of the correlation between the external governance and internal governance index showed that there was no significant correlation between these two constructs, and hence the two indices should be used as separate measures. Table 6.13 shows the correlation results of external and internal governance indices in the study.

Table 6.13
Pearson Correlation of External and Internal Governance Mechanism

Variable	EXGMINDEX
IGMINDEX	0.035

Notes: * Correlation is significant at the 0.05 level (2 tailed).

** Correlation is significant at the 0.01 level (2 tailed).

N = 37.

IGMINDEX: Internal governance mechanism index.

EXGMINDEX: External governance mechanism index.

Source: Authors calculations, 2009.

6.4.7 Pearson Correlation Analysis of the Performance Index

The performance index was constructed from research performance, teaching performance and financial performance. Correlation analysis was performed to examine the reliability of the summated scale of performance indices constructed by using the indices research, teaching and finance performance. Results revealed that teaching performance and research performance negatively correlate with each other at the confidence level of $p < 0.01$. Further, the correlation results of financial performance reported a level of significance of $p > 0.05$, which reported an insignificant correlation with the other two variables in the construct, teaching performance and research performance. This suggested that either financial performance of the universities should be considered as a separate dependant index in the study or this index should be excluded from the performance index of the study. Literature of the performance measurement of universities suggested that research and teaching were the main variables in measuring performance of universities (Abbott & Doucouliagos 2003a; Warning 2007; Worthington & Lee 2005). Table 6.14 exhibits the results of this correlation analysis of the performance index. Teaching performance research performance and financial performance were used as three different models in the regression analysis.

Table 6.14
Pearson Correlation Analysis of the Performance Index

Variable	TEACHINDEX	FININDEX
Finance index	0.078	1
Research index	-.0791**	-0.023

Notes: * Correlation is significant at the 0.05 level (2 tailed).
 ** Correlation is significant at the 0.01 level (2 tailed.)
 N = 37.
 TEACHINDEX : Teaching performance index.
 FININDEX : Financial performance index.

Source: Authors calculations, 2009.

6.4.8. Pearson Correlation Analysis of the Performance Index with the Control Variable

Size of the university was used as the controlling variable in the analysis of the correlation among variables. Research performance showed a negative correlation with teaching performance at $p > 0.01$, whilst the financial performance showed a significant negative correlation with size of the university at the level of $p < 0.05$. Table 6.15 shows the results of this correlation.

Table 6.15
Pearson Correlation Analysis of the Performance Index with Control Variable

Variable	TEACHINDEX	FININDEX	RESINDEX
Finance index	0.078		
Research index	-0.791**	-0.023	
EFTSL	-0.248	-0.386*	.0291

Notes : ** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).
 N = 37.
 TEACHINDEX: Teaching performance index.
 FININDEX: Financial performance index.
 RESINDEX: Research performance index.

Source: Authors calculations, 2009.

6.4.9. Pearson Correlation Analysis of the Governance Index with the Control Variable

Table 6.16 shows the correlation of the internal and external governance mechanisms with the controlling variable, size of the university. The results revealed that there was no significant ($p > 0.05$) correlation between external governance mechanism and size of the university, but there was a significant positive correlation at $p < 0.05$ between the internal governance mechanism and size of the university

Table 6.16
Pearson Correlation Analysis of the Governance Index with the Control Variable

Variable	EFTSL
IGMINDEX	0.407*
EXGMINDEX	0.209

Notes: ** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).
 N = 37.
 IGMINDEX: Internal governance mechanism index.
 EXGINDEX: External governance mechanism index.
 Source: Authors calculations, 2009.

Table 6.17
Correlation of Research Performance with Independent Variables

VARIABLE	GOVDEX	IGINDEX	EXGNDEX	TRANS	CIND	CMEET	CCMTLOG	CSIZELOG	REGLOG	STI	EFTSL	RRI	RRDC
IGINDEX	0.990**	1											
EXGNDEX	0.176	0.035	1										
TRANS	0.454**	0.458**	0.015	1									
CIND	.0130	0.122	0.068	0.167	1								
CMEET	0.980**	0.989**	0.042	0.340*	0.094	1							
CCMTLOG	-0.113	0-.076	-0.271	0.100	-0.034	-0.083	1						
CSIZELOG	.0421**	0.435**	-0.056	0.237	0.091	0.357*	-0.219	1					
REGLOG	0.496**	0.484**	-0.142	0.304	-.0074	0.451**	-0.361*	0.433**	1				
STI	0.135	0-.006	0.996**	0-.011	0.075	0.004	-0.242	-0.093	.0058	1			
EFTSL	0.431**	.0407*	0.209	0.195	.0292	0.382*	-0.348*	0.403*	0.273	0.188	1		
RRI	0.352*	0.349*	0.058	0.012	-0.179	0.372*	0.151	0.120	0.111	0.049	0.292	1	
RRDC	0.229	0.257	-0.169	0.113	-0.200	0.279	0.166	0.203	0.056	-0.175	0.136	.0610**	1
RRPLOG	0.104	0.132	-0.189	-0.061	-0.0019	0.140	0.061	0.157	-0.003	-0.190	0.161	0.313	0.810**

Notes: ** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).
 N = 37
 GOVINDEX: Governance index
 IGINDEX: Internal governance mechanism index
 EXGINDEX: External governance mechanism index
 TRANS: Transparency in reporting
 CIND: Council independence
 CMEET: Council meetings
 CCMTLOG: Council committees log
 CSIZELOG: Council size log
 REGLOG: Regulatory index log
 STI: Stakeholder influence
 EFTSL: Full-time equivalent student load(size of the university)
 RRI: Research income per academic
 RRDC: Research degree completion for an academic
 RRRPLOG: Research and publications per academic
 Source: Authors calculations, 2009.

6.4.10 Correlation of Research Performance with Independent Variables

Table 6.17 shows the Pearson correlation results of the research performance with independent variables. The governance index was positively correlated at a $p < 0.01$ confidence level with the internal governance mechanism index, transparency in reporting, council meetings, council size, regulatory index and size of the university. Further, the governance index was positively correlated with research income per academic at the level of $p < 0.05$. The internal governance index was positively correlated at the level of $p < 0.01$ with transparency in reporting, council meetings, council size and regulatory index. It was also positively correlated with the size of the university at $p < 0.05$ level. It also positively correlated with research income per academic and research degree completion per academic at the level of $p < 0.05$ and negatively correlated with the staff to student ratio at the $p < 0.05$ level.

The external governance mechanism index was positively correlated with stakeholder influence at $p < 0.01$. Transparency in reporting was positively correlated with council meetings at the level of $p < 0.05$, and council independence did not show any significant correlation with any variable. Council meetings was positively correlated at the $p < 0.05$ level with council size, size of the university and research income. Council committees reported a negative correlation with regulatory index and size of the university at $p < 0.05$. Council size was positively correlated with regulatory agency influence and the size of the university at the level of $p < 0.05$ and $p < 0.01$ respectively. Regulatory authority and the size of the university correlated at $p > 0.05$ with research income, research degree completion and research and publications which were not significant. Research income was positively correlated with research degree completion at $p < 0.01$ and research degree completion was positively correlated with research and publications at $p < 0.05$.

Table 6.18
Pearson Correlation Analysis of Teaching Performance with Independent Variables

VARIABLE	GOVINDE X	IGINDEX X	EXGINDEX X	TRANS	CIND	CMEET	CCMTLO G	CSIZELO G	REGLOG	STI	EFTSL	TFEM	TPRLOG
IGINDEX	0.990**	1											
EXGINDEX	0.176	0.035	1										
TRANS	0.454**	0.458**	0.015	1									
CIND	0.130	0.122	0.068	0.167	1								
CMEET	0.980**	0.989**	0.042	0.340*	0.094	1							
CCMTLOG	0.113	-0.076	-0.271	0.100	-0.034	-0.083	1						
CSIZELOG	0.421**	0.435**	-0.056	0.237	0.091	0.357*	-0.219	1					
REGILOG	0.496**	0.484**	0.142	0.304	-0.074	0.451**	-0.361*	0.433**	1				
STI	0.135	-0.006	0.996**	-0.011	0.075	0.004	-0.242	-0.093	0.058	1			
EFTSL	0.431**	0.407*	0.209	0.195	0.292	0.382*	-0.348*	0.403*	0.273	0.188	1		
TFEM	-0.174	-0.113	0.440**	0.011	0.147	0.119	0.219	-0.064	-0.228	0.425**	-0.408*	1	
TPRLOG	0.216	0.230	0.073	0.095	0.062	0.196	-0.217	0.493**	0.319	-0.101	0.474**	-0.374*	1
TSSR	-0.330*	0.356*	0.147	-0.107	0.195	-0.355*	-0.250	-0.220	-0.143	0.160	-0.242	0.256	-0.445**

Notes: ** Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

= 37

GOVINDE: Governance index

IGINDEX: Internal governance mechanism index

EXGINDEX: External governance mechanism index

TRANS: Transparency in reporting

CIND: Council independence

CMEET: Council meetings

CMTLOG: Council committees log

CSIZELOG: Council size log

REGLOG: Regulatory index log

STIN: Stakeholder influence

EFTSL: Full-time equivalent student load (size of the university)

TFEM: Full-time employment rate

TPRLOG: Progress rate log

TSSR: Staff to student ratio

Source: Authors calculations, 2009.

6.4.11. Pearson Correlation Analysis of Teaching Performance with Independent Variables

Correlation analysis of teaching performance with independent variables used in the study was conducted to identify the association of teaching performance variables with the independent variables in the study. Table 6.18 shows the results of the analysis.

The governance index was positively correlated at the $p < .01$ confidence level with the internal governance mechanism index, transparency in reporting, council meetings, council size, regulatory index and size of the university. The governance index was negatively correlated with staff to student ratio at the $p < 0.05$ confidence level.

The internal governance index was positively correlated at the level of $p < 0.01$ with transparency in reporting, council meetings, council size and regulatory index. This was also positively correlated with the size of the university at $p < 0.05$ level and negatively correlated with the staff to student ratio at $p < 0.05$ level. The external governance mechanism index was positively correlated with stakeholder influence at $p < 0.01$ and negatively correlated with full-time employment rate at the level of $p < 0.01$. Transparency in reporting was positively correlated with council meetings at the level of $p < 0.05$ and the council independence did not show any significant correlation with any variable. Council meetings were positively correlated at $p < 0.05$ level with council size and size of the university, whilst negatively correlated with staff to student ratio. Council meetings were also positively correlated with regulatory agency influence at the level of $p < 0.01$. Council committees reported a negative correlation with regulatory index and the size of the university at $p < 0.05$. Council size was positively correlated with regulatory index and the size of the university at the level of $p < 0.05$ and $p < 0.01$ respectively. The council committee index was positively correlated with progression rate at the level of $p < 0.01$. Regulatory authority did not show any significant correlation whilst the stakeholder influence showed a negative correlation with the full-time employment rate at the level of $p < 0.01$.

Size of the university was negatively correlated with full-time employment at the level of $p < 0.05$, but positively correlated with progression rate at $p < 0.01$. The full-time employment rate was negatively correlated with the progression rate at $p < 0.05$ and the progression rate was negatively correlated with the academic staff to student ratio at the level of $p < 0.01$.

Table 6.19
Pearson Correlation of Financial Performance with Independent Variables

VARIABLE	IGINDEX	EXG INDEX	TRAN	CIND	CMEET	CCMTLOG	CSIZELOG	REGLOG	STIK	FCR	FAT	FROE
IGINDEX	1											
EXGINDEX	0.035	1										
TRANS	0.458**	0.015	1									
CINDI	0.122	0.068	.0167	1								
CMEET	0.989**	0.042	0.340*	0.094	1							
CCMTLOG	-0.076	-0.271	0.100	-0.034	-0.083	1						
CSIZELOG	0.435**	-0.056	0.237	0.091	0.357*	-0.0219	1					
REGLOG	0.484**	0.142	0.304	-0.074	0.451**	-0.361*	0.433**	1				
STI	-0.006	0.996**	-0.011	0.075	0.004	-0.0242	-0.093	0.058	1			
FCR	-0.071	-0.063	-0.003	-0.455**	-0.056	.0488**	-0.240	-0.152	-0.050	1		
FAT	-0.194	0.154	-0.192	-0.096	-0.144	0.074	-0.478**	-0.030	0.158	0.384*	1	
FROE	-0.014	0.028	0.163	-0.234	-0.024	0.135	-0.150	-0.006	0.028	.0498**	0.443**	1
EFTSL	0.407*	0.209	0.195	0.292	0.382*	-0.348*	0.403*	.0273	0.188	-.0382*	-0.222	-0.105

Notes: ** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

N = 37

GOVINDEX: Governance index
 IGINDEX: Internal governance mechanism index
 EXGINDEX: External governance mechanism index
 TRANS: Transparency in reporting
 CIND: Council independence
 CMEET: Council meetings
 CCMTLOG: Council committees log
 CSIZELOG: Council size log
 REGLOG: Regulatory index log
 STI: Stakeholder influence
 EFTSL: Full-time equivalent student load (size of the university)
 FCR: Current ratio
 FAT: Assets turnover
 FROE: Return on equity

Source: Authors calculations, 2009.

6.4.12 Pearson Correlation of Financial Performance with Independent Variables

Table 6.19 shows the results of the Pearson correlation of financial performance with the independent variables. The governance index was positively correlated at the $p < 0.01$ confidence level with the internal governance mechanism index, transparency in reporting, council meetings, council size, regulatory index and size of the university. The internal governance index was positively correlated at the level of $p < 0.01$ with transparency in reporting, council meetings, council size and the regulatory index. This was also positively correlated with size of the university at $P < 0.05$ level. The external governance mechanism index was positively correlated with stakeholder influence at $p < 0.01$.

Transparency in reporting was positively correlated with council meetings at the level of $p < 0.05$ and council independence did not show any significant correlation with any variable.

Council meetings were positively correlated at the $p < 0.05$ level with council size and size of the university. Council committees reported a negative correlation with the regulatory index and size of the university at $p < 0.05$. Council size was positively correlated with regulatory agency influence and the size of the university at the level of $p < 0.05$ and $p < 0.01$, respectively. Regulatory authority and the size of the university correlated at $p > 0.05$ with current ratio, AT and ROE, which were to be considered as not significantly correlated.

6.4.13 Pearson Correlation Analysis of all the Variables

Correlation analysis was performed to test the correlation of all the variables used in the study. Results are shown in the Table 6.20.

According to the results of the Pearson correlation, council size was positively correlated at $p < 0.05$ with council meetings and size of the university. Further, this was positively correlated with the regulatory authority influence and progression rate at $p < 0.01$. Also the size of the council was negatively correlated with the Assets turnover at $p < 0.01$. The council committee index was negatively correlated with the regulatory authority and size of the university at $p < 0.05$ and positively correlated with the current ratio at $p < 0.05$. Council meetings were positively correlated with transparency in reporting, research income and size of the university at $p < 0.05$, and $p < 0.01$ with the regulatory authority. This was negatively correlated with the staff to student ratio at $p < 0.05$ level. Council independence was negatively correlated at $p < 0.01$ with the current ratio and did not correlate with any of the other variables used in the study. Transparency in reporting did not significantly correlate with any of the variables used. Stakeholder influence was negatively correlated with the full-time employment rate at $p < 0.01$ level.

Table 6.20
Pearson Correlation Analysis of all the Variables

VARIABLE	CSIZELOG	CCMTLOG	CMEET	CIND	TRANS	STI	REGLOG	FCR	FAT	FROE	TPRLOG	TFEM	TSAT	RRPLOG	RRDC	RRIN	TSSR
CCMTLOG	-0.219	1															
CMEET	0.357 [*]	-0.083	1														
CIND	0.091	-0.034	0.094	1													
TRANS	0.237	0.100	0.340 [*]	0.167	1												
STI	-0.093	-0.242	0.004	0.075	-0.011	1											
REGLOG	0.433 ^{**}	-0.361 [*]	0.451 ^{**}	-0.074	0.304	0.058	1										
FCR	-0.240	0.488 ^{**}	-0.056	-0.455 ^{**}	-0.003	-0.050	-0.152	1									
FAT	0.478 ^{**}	0.074	-0.144	-0.096	-0.192	0.158	-0.030	0.384 [*]	1								
FROE	-0.150	0.135	-0.024	-0.234	0.163	0.028	-0.006	0.498 ^{**}	0.443 ^{**}	1							
TPRLOG	0.493 ^{**}	-0.217	0.196	0.062	0.095	-0.101	0.319	-0.435 ^{**}	-0.480 ^{**}	-0.142	1						
TFEM	-0.064	0.219	-0.119	0.147	-0.011	-0.425 ^{**}	-0.228	0.051	0.038	0.133	-0.374 [*]	1					
TSAT	0.240	-0.048	0.102	0.145	0.035	-0.095	0.189	-0.197	-0.099	0.026	0.230	0.008	1				
RRPLOG	0.157	-0.061	0.140	-0.019	-0.061	-0.190	-0.003	-0.191	-0.418 ^{**}	-0.323	.0237	-0.167	0.225	1			
RRDC	0.203	0.166	0.279	-0.200	-0.113	-0.175	0.056	-0.004	-0.302	-0.223	0.254	-0.139	0.177	0.810 ^{**}	1		
RRIN	0.120	0.151	0.372 [*]	-0.179	-0.012	0.049	0.111	0.011	-0.321	-0.070	0.338 [*]	-0.296	-0.208	0.313	.610 ^{**}	1	
TSSR	-0.220	-0.250	-0.355 [*]	0.195	-0.107	0.160	-0.143	0.035	0.493 ^{**}	.222	-0.445 ^{**}	0.256	-0.071	-0.446 ^{**}	-0.651 ^{**}	-0.780 ^{**}	1
EFTSL	0.403 [*]	-0.348 [*]	0.382 [*]	0.292	0.195	0.188	0.273	-0.382 [*]	-0.222	-0.105	0.474 ^{**}	-0.408 [*]	-0.165	0.161	0.136	0.292	-0.242

Notes: ** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

- CSIZELOG: Council size log
- CCMTLOG: Council committees log
- CMEET: Council meetings
- TRANS: Transparency in reporting
- STI: Stakeholder influence
- REGLOG: Regulatory index log
- FCR: Current ratio
- FAT: Assets turnover
- FROE: Return on equity
- TPRLOG: Progression rate log
- TFEM: Full-time employment rate
- TSAT: Overall satisfaction
- RRPLOG: Research and publication per academic
- RRDC: Research degree completion per academic
- RRIN: Research income per academic
- TSSR: Staff to student ratio
- EFTSL: Full-time equivalent student load (Size of the university)

Source: Authors calculations, 2009.

Stakeholder influence was negatively correlated at $p < 0.05$ with full-time employment rate and the variable regulatory authority, and did not show any statistically significant relationship with any of the variables used.

The current ratio was positively correlated at $p < 0.05$ with RAO, $p < 0.01$ with ROE and staff to student ratio, whilst it was negatively correlated with research and publications per academic, progression rate at $p < 0.01$ and with size of the university at $p < 0.05$. Assets turnover was positively correlated at $p < 0.01$ with ROE and the staff to student ratio and negatively correlated at $p < 0.01$ with the progression rate and research and publications per academic. ROE did not significantly correlate with any of the other variables.

The progression rate was positively correlated at $p < 0.05$ with research income and $p < 0.01$ with size of the university. This was negatively correlated at $p < 0.05$ with the full-time employment rate and $p < 0.01$ with the student to staff ratio. The full time employment rate was negatively correlated with size of the university at $p < 0.05$. Overall satisfaction did not significantly correlate to any of the variables.

Research and publications per academic was positively correlated at $p > 0.01$ with research degree completion per academic and negatively correlated at $p < 0.01$ with the staff to student ratio. Research degree completion per academic was positively correlated at $p < 0.01$ with research income per academic and negatively correlated at $p < 0.01$ with the staffs to students ratio. Research income was negatively correlated at $p < 0.01$ with staff to student ratio.

6.5 Multiple Regression Analysis

A regression analysis was performed to determine the relationship between the dependent and independent variables. The regression analysis was based on the dependent variable (performance of the universities) and the independent variables of the study (external governance mechanisms and internal governance mechanisms), with the size of the university as a controlling variable. The independent variables used in the current study were regulatory index and stakeholder influence as external governance variables and the roles of council size, council independence, council committees, council meetings and transparency in reporting as internal governance mechanisms. As discussed in Chapter 4, the performance of

the university was constructed by using research performance, teaching performance and financial performance of universities.

Correlation analysis results suggested that teaching performance and research performance explained a significant correlation between two constructs and hence these two indices could be used to summate the performance index, but financial performance should be treated as a separate dependant variable. Further, the correlation analysis of the external governance and the internal governance mechanism suggested that all the instruments of both mechanisms should be used as independent variables in this study instead of an index of governance. Multiple regression analyses were performed to test the propositions for the study described in Chapter 4. As described in the methodology (Chapter 5), different functional forms were tried, and diagnostics of all the functions were analysed. Treatments were given and variables were transformed by taking a natural logarithm. The regulatory index, council size, progression rate and research and publications per academic were transformed into logarithms: progression log, research and publications per academic log, regulatory index log, and council size log. The variables such as the progression rate, overall satisfaction and the full-time employment rate were transformed into a percentage form to bring the coefficients into proportion with the other variables.

6.6 Econometric Model of the Study

Violation of the OLS assumptions leads to variable variance of the error term. The variance of the error term (heteroscedasticity) in the model makes the results of the t and f statistics unreliable, because the estimators of the model are inefficient (Maddala & Flores-Lagunes 2001) The model used for this study was tested for the variance of the error term, heteroscedasticity, and was removed by applying the White diagonal test (White 1980). This adjustment corrects the variance of the error term and enables obtaining better results from the proposition testing in the study.

6.6.1 Variance Inflation and Tolerance Factors

Variance inflation and tolerance factors for the independent variables of the model were performed to detect multicollinearity of the model. The largest variance inflation factor was obtained for stakeholder influence, a value of 1.72 and the smallest variance inflation factor was for size of the university which was 1.13. Similarly, the tolerance factor varied from a

low of 0.58 for stakeholder influence to a high of 0.89 for size of the university. The results of this analysis showed that there was no sign of multicollinearity in the model as the highest value of the variance inflation factor (VIF) is less than 2 and the tolerance factor is less than 1. Table 6.21 shows the results of the variance inflation factor and tolerance factor of the independent variables and the controlling variable of the model.

Table 6.21
Values for Variance Inflation and Tolerance Factors

Variable	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Transparency index	0.77	1.29
Council independence	0.86	1.16
Council meetings	0.67	1.49
Council committee log	0.70	1.44
Council size log	0.68	1.47
Regulatory index log	0.58	1.72
Stakeholder influence	0.89	1.13
Equivalent full-time student load (EFTSL)	0.63	1.60

Notes: VIF: Variance inflation factor.

Source: Authors calculations, 2009.

6.6.2 Overall Results of the Regression Model

Regression analysis was performed to test the propositions related to individual governance variables used in the study. The overall results of the regression model was presented in the Table 6.22. The results showed that the overall performance of a university has a statistically significant relationship with council meetings and the size of the university.

Table 6.22
Overall Results of the Regression Model

Variables	Overall performance	Teaching performance	Research performance	Financial performance
(Constant)	0.00 (1.11) 0.278	0.00 (0.81) 0.423	0.00 (0.61) 0.550	2.161 (0.04)** 0.039
Regulatory index log	-0.01 (-0.03) 0.978	-0.045 (-0.223) 0.821	0.011 (0.05) 0.957	0.009 (0.05) 0.960
Stakeholder influence	0.14 (0.83) 0.415	0.103 (0.65) 0.523	0.071 (0.44) 0.664	0.113 (0.76) 0.455
Council size log	-0.05 (-0.24) 0.810	-0.089 (-0.49) 0.628	-0.005 (-0.03) 0.978	-0.125 (-0.736) 0.468
Council independence	-0.25 (-1.44) 0.162	0.294 (1.81)* 0.080	-0.287 (-1.75)* 0.091	-0.402 (-2.67)*** 0.012
Council committee index log	0.27 (1.44) 0.161	-0.403 (-2.24)** 0.033	0.346 (1.90)* 0.068	0.419 (2.50)*** 0.018
Council meetings	0.34 (1.75)* 0.092	-0.253 (-1.38) 0.178	0.344 (1.85)* 0.075	0.086 (0.50) 0.620
Transparency in reporting	-0.22 (-1.23) 0.228	0.076 (0.44) 0.659	-0.195 (-1.13) 0.269	0.033 (0.21) 0.835
Size of the university (EFTSL)	0.35 (1.74)* 0.093	-0.358 (-1.88)* 0.070	0.387 (2.02)** 0.054	-0.135 (-0.76) 0.452
R-squared	0.298	0.376	0.353	0.453
Mean dependant variable	104.21	38.64	65.57	1.63
F- statistics	(1.485)	(2.04)*	(1.91)***	(2.89)***

Note: The values of coefficients are in the first row of the cell.
The values for T statistics in parenthesis in the second row of the cell.
The P values are shown in the third row of the cell.
* Indicative variables are at the 0.1 significant level.
** Indicative variables are at the 0.05 significant level.
*** Indicative variables are at the 0.01 significant level
N = 37

Source: Authors calculations, 2009.

R-squared was 30-45% in this model and the F-statistic was statistically not significant ($p > 0.1$). This explained that there was no statistically significant relationship among the

governance instruments and the overall performance of the universities as proposed in this model. As the overall performance model was not statistically strong enough to test the propositions, and teaching performance, research performance and financial performance of the universities were analysed as separate models of dependent variables. F-statistics of the teaching performance model showed 2.04 of the model fit at the level of $p < 0.1$. This suggested that this model provided a modest measure to explain the relationship of corporate governance mechanism variables and the performance of universities.

According to this model, teaching performance had a significant relationship with council committees and council independence. Further, the controlling variable, size of the university, also had a significant relationship with teaching performance. F-statistics or the model fit for research performance was significant at $p < 0.01$ and this model explained that research performance of the universities had a significant relationship with council independence, council committees, council meetings and the controlling variable, size of the university. F-statistics of the financial performance model is significant at $p < 0.1$ and value of R-squared was also close to 0.5 (0.453), which showed a higher value compared to the teaching performance model which showed only 0.376 and the research performance 0.353. This model confirmed that the financial performance of the universities was strongly significantly related with the council independence and council committees. Regression results of the study are presented in detailed in Table 6.22

Influence of Regulatory Authority

The regulatory index was used as an external governance mechanism instrument in this study. Regression analysis was performed to analyse the relationship of the regulatory index with organisational performance. According to the regression results shown in Table 6.22 above, the regulatory index did not show any statistically significant influence on the performance of any of the models used in the study: overall performance, teaching performance, research performance and financial performance.

Stakeholder Influence

Stakeholder influence was used as an external governance instrument in the model and as an independent variable in the study. According to the regression results presented in Table 6.22 above, stakeholder influence did not show any statistically significant relationship with overall performance, teaching performance, research performance and financial performance.

Council Size

Council size as an independent variable was transformed into a log form to get the best possible results in the study. This variable did not show any statistically significant relationship with any of the variables used in the teaching, research and financial performance models. The regression results of this study reported that the relationship between council size and the performance of the university was not statistically significant.

Council Independence

The next internal governance mechanism variable used in the study was council independence. As discussed in Chapter 5, council independence was calculated as the percentage of the number of external members to the total number of members in the university council. This variable did not show any statistically significant relationship in the overall performance model, but the council independence variable showed a significant positive relationship at $p < 0.10$ with teaching performance, a negative relationship with research performance, and a further statistically significant negative relationship at $p < 0.01$ with financial performance. Hence, council independence, as an independent variable, moderately explained the variation in the dependant variables teaching performance, research performance and financial performance. This further confirmed that one unit of change in council independence influenced teaching performance to increase by 0.29, research performance to decrease by 0.28 and financial performance to decrease by 0.40.

Council Committees

Council committees were used as an internal governance mechanism variable in this study and this was transformed into a logarithm to get the best form of the variable. This showed a significant negative relationship at $p < 0.05$ with teaching performance, which explained that one unit of change in the council committee index as an independent variable could negatively influenced teaching performance by 0.4 and research performance increased by 0.34 at the level of $p < 0.1$ (positive significance). Financial performance with the committee index showed a statistically significant positive relationship at the level of $p < 0.1$ and one unit change in the committee index will influence financial performance to change by 0.42 units.

Council Meetings

Council meetings were significantly related with council performance in the overall performance model, but this model of relationship between governance and performance was not significant and did not demonstrate that there was a strong relationship between those two variables. Teaching performance did not show any statistically significant relationship with council meetings. Research performance showed a positively significant relationship at $p < 0.1$ with council meetings and this explained that one unit of change in council meetings would influence research performance to increase by 0.34. Results for council meetings did not influence financial performance.

Transparency in Reporting

Transparency in reporting was another variable used as an internal governance mechanism to test the relationship between governance and performance of universities. According to the regression analysis, transparency in reporting did not show a statistically significant relationship with overall performance, teaching performance, research performance nor financial performance. This result suggested that transparency in reporting has not influenced variation in the performance of universities.

Size of the University

Size of the university was used as a controlling variable in this study and this was proxied by the full-time equivalent student load in a given year. The averages of the 2005 to 2007 period were used as the EFTSL in this study. This indicator showed a statistically significant relationship with teaching and research performance of the universities. The size of the university showed a negative relationship at a $p < 0.1$ level of significance with teaching performance and a $p < 0.01$ (0.38) positive relationship with research performance. The regression results did not confirm any statistically significant relationship with financial performance and size of the university.

6.7 Results of Incremental Regression Analysis

Incremental regression analysis was performed to gauge the contribution of each variable in affecting the performance of the model used in the study. The results of these analyses are presented in Table 6.23. These results report the change on R-squared after removal of all the independent variables in all the models on an individual basis. The results revealed that the

removal of all the variables leaving the council meetings constant reduced the R-squared in the overall performance from 0.298 to 0.110, teaching performance from 0.376 to 0.126 and research performance from 0.353 to 0.140. The analysis showed that the variation in the dependent variable was explained to a lesser degree with the removal of other variables in the model leaving council meetings, and the unexplained portion or value of error term was improved to a larger degree. The incremental analysis of council committees and council independence on financial performance also showed a decrease in R-squared from 0.453 to 0.224 and 0.408, respectively, which also led to increases in the unexplained portion or value of the error term.

Table 6.23
Results of the Incremental Regression Analysis

Description	Overall Performance	Teaching performance	Research performance	Financial Performance
R square original	0.298	0.376	0.353	0.453
R-squared for council meetings constant	0.110	0.126	0.140	
R-squared for council committee log constant				0.224
R-squared for council independence log constant				0.408

Source: Authors calculations, 2009.

6.8 Complementarities in Corporate Governance Variables in Affecting Performance

The complementarities in the corporate governance mechanisms were tested to measure the influence of external governance variables on internal governance variables and internal governance variables on external governance variables in the model.

6.8.1 Complementarities of External Governance Variables

Table 6.24 presents the results of the tests for complementarities of the external governance variables on internal governance variables. In this test all the internal governance variables were removed from the test. The results showed that none of the external governance variables became statistically significant after removing the internal governance variables. In the previous regression analysis, external governance variables, regulatory index and stakeholder influence, did not show any significant relationship with performance and even after the test for complementarities, the results of all three models remained statistically

insignificant ($p > 0.1$). This explained that external governance mechanisms were not complementarities of internal governance mechanisms.

Table 6.24
Test for Complementarities for External Governance Mechanism

Variables	Overall performance	Teaching performance	Research performance	Financial performance
(Constant)	0.00 (3.863) 0.000	0.00 (3.853) 0.001	0.00 (1.659) 0.107	0.00 (4.369) 0.000
Regulatory index log	0.007 (0.041) 0.968	-0.084 (-0.493) 0.625	0.034 (0.197) 0.845	-0.046 (-0.276) 0.785
Stakeholder influence	0.079 (0.466) 0.644	0.213 (1.274) 0.211	-0.012 (-0.072) 0.943	0.042 (0.256) 0.799
Size of the university (EFTSL)	0.257 (1.455) 0.155	-0.259 (-1.494) 0.145	0.284 (1.615) 0.116	-0.381 (-2.249) 0.031
R-squared	0.081	0.109	0.086	0.152
F-statistics	(0.968)	(1.344)	1.033	(1.976)

Notes: The values of coefficients are in the first row of the cell.
The values for T statistics in parenthesis in the second row of the cell.
The P values are shown in the third row of the cell.
N = 37.
* Indicative variables are at the 0.1 significant level.
** Indicative variables are at the 0.05 significant level.
*** Indicative variables are at the 0.01 significant level

Source: Authors calculations, 2009.

6.8.2 Complementarities of Internal Governance Variables

Results of the test for complementarities for internal governance mechanism variables are presented in Table 6.25. Both the external governance instruments used in the study, regulatory index and stakeholder influence, were removed from the regression analysis. Table 6.25 shows the results of the internal governance variables after removing the external governance variables from the test, and these results did not show any difference in the relationships to the previous model. The relationship of the internal governance variables with performance remained unchanged after removing the external governance variables, and the results confirmed that internal governance variables were not complementarities of the external governance variables in the present study.

Table 6.25
Test for Complementarities for Internal Governance Mechanism

Variables	Overall performance	Teaching performance	Research performance	Financial performance
(Constant)	0.00 (1.495) 0.209	0.00 (1.183) 0.246	0.00 (0.798) 0.431	0.00 (2.633)*** 0.013
Council size log	-0.079 (-0.446) 0.659	-0.123 (-0.734) 0.469	-0.018 (-0.109) 0.914	-0.147 (-0.944) 0.353
Council independence	-0.240 -1.468 0.153	0.303 (1.963)* 0.059	-0.286 (-1.839)* 0.076	-0.401 (-2.777)*** 0.009
Council committee log	0.244 (1.436) 0.161	-0.412 (-2.570)** 0.015	0.326 (2.018)** 0.053	0.391 (2.612)*** 0.014
Council meetings	0.333 (1.861)* 0.073	-0.269 (-1.590) 0.122	0.346 (2.027)** 0.052	0.086 (0.545) 0.590
Transparency in reporting	-0.219 (-1.284) 0.228	0.070 (0.432) 0.669	-0.191 (-1.174) 0.250	0.039 (0.257) 0.799
Size of the university (EFTSL)	0.376 (1.946)* 0.061	-0.336 (-1.841)* 0.075	0.401 (2.181)** 0.037	-0.114 (-0.668) 0.509
R-squared	0.281	0.358	348	0.441
F- statistics	(1.951)	(2.791)**	(2.669)**	(3.948)***

Notes: The values of coefficients are in the first row of the cell.
The values for T statistics in parenthesis in the second row of the cell.
The P values are shown in the third row of the cell.
N = 37.
* Indicative variables are at the 0.1 significant level.
** Indicative variables are at the 0.05 significant level.
*** Indicative variables are at the 0.01 significant level.

Source: Authors calculations, 2009.

6.9 Conclusion

The chapter presented the results of the analyses. Descriptive statistics of the independent variables of the study, and of the external and internal governance mechanisms were presented. Further, the descriptive statistics of the dependant variables of the study, research performance, teaching performance and financial performance variables were also presented. Factor analysis was performed to identify the factor loading of the variables used here. The correlation analyses for all the five constructs used in the study were performed to analyse the association among variables. Correlation analysis was used to test the reliability of each construct and to obtain the correlation among the variables in the construct. Tests for heteroscedasticity and multicollinearity of the econometric model were performed to analyse the reliability of the model. Incremental analyses of the statistically significant variables were performed to identify the contribution of the each variable in explaining the variance of the

performance of universities. This chapter has also explained the results of the analyses of the relationship of governance with the performance of universities. Regression analysis was performed to confirm the relationship among variables and to test the propositions used in the study. Tests of complementarities of corporate governance instruments were also performed. The results about the complementarities of internal and external governance instruments suggested that none of the variables were complementarities of each other. The implications of the results are discussed in the following chapter.

CHAPTER 7

DISCUSSION AND IMPLICATIONS OF THE RESULTS: GOVERNANCE AND PERFORMANCE OF AUSTRALIAN UNIVERSITIES

7.1 Introduction

The results of the descriptive analyses and the relationship among the governance and performance variables of universities in Australia were reported in the previous chapter. The aim of this chapter is to provide the interpretation of the results, discuss the results of the propositions tested in the study and the implications of those results revealed from the models. The results help to understand which of the internal and external governance mechanisms were the most statistically significant in affecting the performance of universities in Australia. The arguments about the relationships were represented by a number of operationally testable propositions and estimated models. Diagnostics were analysed to check the validity of the propositions established in the analytical model. The process of operationalisation of these propositions was as follows.

Proposition 1 of the study (P1) was that the influence of regulatory authority has a positive relationship with the performance of universities, which was represented by compliance with protocols (regulatory index). The role of the government agencies as main stakeholder (funding body) in affecting the performance of universities, Proposition 2 (P2), was represented by stakeholder influence and states that the influence of stakeholders is positively related with the performance of universities. The role of council size(log) in affecting the performance of universities, Proposition 3 (P3), was that council size has a negative relationship with the performance of universities. The role of council independence in affecting the performance was represented by the Proposition 4 (P4) of the study, council independence has a positive relationship with the performance of universities. The role of council committees in affecting the performance of universities was represented by Proposition 5 (P5) of the study stating council committees have a positive relationship with performance of universities. The role of the council meetings in affecting the performance

was represented by the Proposition 6 (P6) of the study stating council meetings have a positive relationship with university performance. Proposition 7 (P7) was about the role of transparency in reporting in affecting the performance of the university; it states transparency in reporting positively related with the performance of universities. The last Proposition 8 (P8) was about the controlling variable of the study, size of the university in affecting performance represented by equivalent full time student load; and states that size of the university has a positive relationship with its performance.

The effect of external governance mechanisms on the performance of the universities was tested by analyzing the statistical significance of the role of regulatory authority and the majority stakeholder influence. The statistical significance of the effect of internal governance mechanisms in affecting performance specified in this model were council size, role of independent council members (council independence), role of council oversight committees, role of council meetings as the council process and the role of transparency in reporting. The control variable used in the model was the size of the university in affecting the performance and the governance of the universities.

The model used in the study is based on both internal and external corporate governance mechanisms. The influence of the control variable, size of the university was also analysed in the study. The implications of the results of incremental regressions, and the results for complementarities of the internal and external corporate governance mechanisms were also addressed.

This chapter is structured as follows. Section 7.2 presents the implications of the relationships among variables. Section 7.3 presents the implications of the results for financial performance. Section 7.4 discusses the implications of the results of the incremental regression. Sections 7.5 and 7.6 explain the implications of the results of the complementarities of external and internal governance mechanisms respectively. Section 7.7 discusses the implication of the overall results. The conclusions from the results were presented in the Section 7.8

7.2 Implications of Results of the Model

Table 6.22 presented the results of the regression model describing the relationship between the governance variables and the performance variables used in the study. The summary of the results of testing those propositions regarding the relationship of governance and performance variables are presented in the Table 7.1 and their explanations are as follows.

Table 7.2
Summary of the Propositions Tested

Proposition number	Proposition of relationship with performance	Expected relationship	Actual results	Outcome
P1	Regulatory authority and performance	Positive	$p > 0.1$	Rejected
P2	Stakeholder influence and performance	Positive	$p > 0.1$	Rejected
P3	Council size and performance	Negative	$p > 0.1$	Rejected
P4	Council independence and performance	Positive	$p < 0.01()$	Rejected
P5	Council committees and performance	Positive	$p < 0.01(+)$	Accepted
P6	Council meetings and performance	Positive	$p > 0.1$	Rejected
P7	Transparency in reporting and performance	Positive	$p < 0.1$	Rejected
P8	EFTSL(size) and performance	Positive	$p < 0.05(+)$	Accepted

Source: Authors calculations.

The results of the proposition testing in the study as discussed in Chapter 5 were presented in this Section. Different models for teaching, research and financial performance were tried and the final models used were selected on the basis of strong diagnostics. Propositions 1 and 2 were related to the external governance mechanisms of the study. The first proposition (P1) was that the regulatory authority positively influences performance. The second proposition (P2) in the study was that stakeholder influence has a positive relationship with performance of universities. Proposition 3 and 4 address the statistical significance of the relationships among the internal governance variables and performance. Proposition 8 (P8) about the controlling variable of the study, size of the university, suggested that there was a positive relationship between the performance and size of the university.

7.2.1 Influence of Regulatory Authority on Performance

The results on P1 implied that regulatory authorities' influence has no statistically significant relationship with the overall performance of a university. The compliance with the protocols index was used as the variable in analyzing the influence of regulatory authority, but the regression results of the study for the regulatory index did not show a statistically significant relationship with the variation of performance among universities. Teaching performance, research performance and financial performance were analysed separately and none of those

models showed any statistically significant relationship. Hence the Proposition1 (P1) of the study ‘regulatory authority positively influences the performance of universities’ was rejected.

Analysis and Implications

According to the descriptive analyses of the data, the mean value for compliance with National Governance Protocols was 0.92. This results justified the conclusion that the majority of the 37 universities complied with the national governance protocols. The detailed analysis revealed that only 7 universities did not address the risk criteria as outlined in the protocols and this brought the results down to 0.92. The implication of the descriptive results explained, that as the regulatory authority, the Department of Education Employment Workplace Relations (DEEWR) had the ability to influence the universities to comply with the regulatory requirements. Results agreed with the findings of *Higher Education Report 2005*(DEST 2007), which concluded that all the universities have made progress towards complying with 2003 governance protocols. The results from this research further suggested that all the government- funded universities were complying with the 2003 governance Protocols with minor differences. The 2003 governance protocols mainly addressed the best practice governance requirements for universities in Australia, in line with the universal best practice corporate governance requirements. By 2007, all the Australian universities followed governance best practice requirements.

Further, though all the universities complied with the governance best practice requirements, performance results of the universities were different. The implication was that there was no statistically significant linear relationship between the influences of regulatory authority with the performance of Australian universities.

This result was inconsistent with the studies conducted by Doidge, Karolyi and Stulz (2004),Durney and Kim (2002) and Nenova (2006); who argued that a regulatory authority has a positive impact on the performance of a firm as the regulatory authority disciplines the firm and monitors the performance. According to the finance literature, if the regulatory authority had no influence this might lead to high agency costs and reduce the financial performance of the firm;(Kaplan 1994).The main objective of the university should be a high quality teaching and research environment (Guthrie , J & Neumann 2006) P1 was developed from the existing literature, that compliance with protocols leads to better governance. The

results justified that compliance with the protocols has no direct statistically significant relationship with research, teaching and financial performance of the universities in Australia. The results agree with Fielden (2007) who found that Australian universities come under an independent model with minimum influence from the regulatory authorities.

7.2.2 Stakeholder Influence and Performance

The next proposition P2 on external governance mechanism examined in this model was the influence of majority stakeholders in influencing the performance of universities. This second proposition was developed relying on the argument the government, as the main stakeholder, has the ability to influence the performance of the universities (Fielden 2007; Pfeffer & Salancik 2003). The present study used the data from 2005 to 2007 and the results showed that there is no statistically significant relationship between stakeholder influence and performance (teaching, research and finance); hence the P2, that, stakeholder influence has a positive relationship with the performance of the universities, was rejected.

Analysis and Implication

As discussed in Chapter 2, according to available literature (Grossman & Hart 1986; Kaplan 1994), the majority of stakeholders can play an important role in bringing improvement to the performance of a firm. The influence of majority stakeholders can improve the performance of a firm by playing an active role in monitoring them as also argued by Mayer (2008) According to Agle et al. (1999) the majority of shareholders have a responsibility to monitor the performance of a firm. Shleifer and Vishny (1997), Kaplan and Minton (1994) Bebchuk et al. (2004) and Pinkowitz et al. (2003) revealed that role of majority stakeholders positively influences the performance. Rashid, Islam and Anderson (2008) found that majority shareholders affect the performance in a negative manner due to weak regulatory authorities. Hence the influence may be positive or negative. Fielden (2007) argued that although the universities operating under the independent model have academic freedom and autonomy, the government as the main funding body can positively improve the performance of the university sector by exercising their power to direct and control the decisions and activities of government-funded universities. Having a different ownership structure, the results of the proposition that the influence of the stakeholder has a positive relationship with the performance of universities was inconsistent with all the above arguments and findings.

The current proposition developed from the argument that the responsibility of the governing body is looking after the interests of stakeholders, and equally the main stakeholder, which is the federal government, can influence the firm to improve performance as argued by La Porta et al. (1998), Servaes et al. (2003), Fielden (2007) and Pfeffer and Salancik (2003).

The population of all 37 government- funded universities in Australia as used for the study, and according to the descriptive results presented in the previous chapter, on average 57% of the total cash flow of universities comes from government grants (including HECS, HELP and all the other governments grants as mentioned in Chapter 3). The regression results showed no statistically significant relationship between stakeholder influence and research, teaching and financial performance. According to the results of the correlation analysis, stakeholder influence was negatively correlated with the full-time employment rate at the $p < 0.01$ level. The implication of this result proposed another argument: that those universities which were less reliant on government funding offer more job-oriented programs which leads to higher full-time employment rates within four months of graduation.

7.2.3 Council Size and Performance

As discussed in Chapter 4, the proposition that council size influenced performance of universities was built on the argument that a bigger governing body deteriorates performance. The conceptual framework assumes the same argument. Governance best practice requirements for universities in the 2003 protocols for *Our Universities: Backing Australia's Future* (Nelson 2003b) suggested that universities should reduce council size to a maximum of 22 members. According to the regression analysis results of the present study, there was no statistically significant relationship among research, teaching and financial performance and the size of the council the third proposition (P3) of the study that 'bigger council has a negative relationship with performance' was rejected.

Analysis and Implication

Yermack (1996), Eisenberg, Sundgren and Wells (1998), Conyon and Peck (1998) Loderer and Peyer (2002), Hermalin and Weisbach (1988) and Pathan et al. (2007) have reported a negative relationship between board size and the performance of a firm and argued that a large board size leads to the free rider problem where most of the board members play a passive role in monitoring the firm. Furthermore, the council members tend to become

involved in dysfunctional conflicts where the council is not cohesive. Hence, board members who are not working optimally to achieve a single goal, exhibit deteriorating performance. The proposition was developed from the above arguments and the recommendations of the Dawkins Report (Dawkins 1988) for Australian universities to reduce the council size. The empirical results from the analysis of the relationship of council size with the performance of Australian universities did not support the above argument that larger council size is negatively related with performance.

These findings differ from previous research discussed in chapter 2. According to Kyereboah-Coleman and Biekpe (2005), there is a positive linear relationship between performance and board size. Pfeffer and Salancik (1974) and Finkle (1998) argued that larger councils can enhance the external linkages, bringing multiple external resources which lead to long-run better performance of the firm. The result of the proposition also differs from Zahra and Pearce (1989) who also argued that a large board size brings more management skills and makes it difficult for the CEO to manipulate the governing body. Kiel and Nicholson (2003) found a positive relationship between board size and firm performance for large firms in Australia. They further argued that larger boards provide more opportunities for networking and additional skilled personnel - so contributing towards better performance. Similarly, Belkhir (2009) and Adam and Mehran (2005) also found a statistically significant positive relationship between board size and performance. These results suggested that the benefits of better monitoring by larger boards may outweigh the associated costs (Adams & Mehran 2005). The result of this study about the negative relationship between the bigger council size and the performance did not support any of these above studies.

The findings of Yermack (1996) and Kiel and Nicholson (2003) reported average board sizes as 12.3 and 6.6, respectively. These findings may also indicate the possibility of an inverted 'U' shape relationship between board size and performance (Adams & Mehran 2005; Cobham & Subramaniam 1998). The implication of this result was that bigger governing boards may improve firm performance up to a certain point beyond which more members will cause a decline in performance.

The result about the council size and the performance in the current study was different to existing studies due to the nature of the objectives and different corporate governance settings. The average council size of an Australian university is larger than that of other

service sectors. The descriptive statistics for council size of the universities reported the mean or the average council size of an Australian university as 19 members. These results suggested that Australian universities preferred to have larger councils. Another implication of the results of this research was that universities had made an effort to appoint and select members representing each stakeholder group of the university which caused council or boards to be larger. This confirmed the arguments of stakeholder theory. Stakeholder theory suggests that the greater the number of stakeholders involved, the greater the long term performance (of the university) is likely to be.

According to the correlation results of the study, council size was positively correlated with council meetings and the size of the university. This could be explained by the universities with bigger councils having more council meetings and making an effort to monitor the performance of the universities more often, which further implied bigger universities tried to take urgent actions when required, which agreed with the argument of Shivdasan and Zenner (2005). The correlation results further reported a positive correlation with the size of the university and the implication was that bigger universities had bigger councils and this also agreed with stakeholder theory which assumed that the higher the stakeholder involvement, the greater the monitoring of performance.

The strong positive correlation (at a $p < 0.01$ level of significance) with the regulatory authority influence confirmed that determination of council size of universities was highly influenced by the regulatory requirements. The strong positive correlation between the council size and the progression rate implied that bigger councils tend to monitor and influence teaching performance, due to the diversified skills of council members. Kiel and Nicholson (2003) argued that larger boards should provide more opportunities for networking and additional skilled personnel, hence contributing towards better performance. Accordingly, this could have been the reason for a positive relationship between council size and the progression rate of Australian universities. These results somewhat agreed with the findings in the finance literature. Hermalin and Weisbach (1991, 2003), Kyereboah-Coleman and Biekpe (2005) and Pfeffer and Salancik (1974) argued that there was a positive linear relationship between performance and the size of the governing body. Adams and Mehran (2005) and, Belkhir, (2009) also argued that board size and performance was positively correlated.

The correlation results of the empirical study reported the size of the governing body as being strongly negatively correlated with the Assets turnover, which agreed with Yermack (1996). Eisenberg, Sundgren and Wells (1998), Conyon and Peck (1998) and Loderer and Peyer (2002). Small governing boards are considered effective and add value because of their nimbleness and cohesiveness (Forbes & Milliken 1999), together with the perception that they require less communication and less costs spent on coordination, (Mak & Kusnadi 2005). As well, they attract a lower degree of 'free-riding' director problems (Coles, JL, Naveen & Naveen 2008; Coles, JW, McWilliams & Sen 2007; Lipton, P 2003; Masui & De Corte 2005; Pathan, Skully & Wickramanayake 2007). "Members in a larger governing body may face greater difficulties in expressing their ideas and opinions in the limited time available at board meetings" (Lipton, M & Lorsch 1992, p. 65). Moreover, "since an individual board member's incentive to acquire information and to exert effort in monitoring managers is low in large boards, CEOs may find large boards easier to control" (Jensen, M.C 1993, p. 865). The results for Assets turnover and council size of the universities agreed with all the above findings in the finance literature and it was concluded that larger councils are negatively correlated with the Assets turnover of universities.

7.2.4 Council Independence and Performance

Council independence was calculated as the percentage of number of external members to the total number of members in the university council. Regression results reported that council independence and teaching performance have a relationship at $p < 0.1$, a positive but statistically weak relationship. Also, council independence reported a negative ($p < 0.1$) relationship with research performance. This regression result explained that a higher proportion of external members in the council could influence the research and teaching performance to a certain extent, but there are other stronger factors to explain the variation in the teaching and research performance. The regression results showed a statistically strong positive relationship between board independence and the financial viability of universities. According to these regression results, council independence as an independent variable explained the variation in the dependant variables teaching performance, research performance and financial performance, as one unit of change in council independence influenced the teaching performance to increase by 0.29, research performance to decrease by 0.28 and financial performance to decrease by 0.40. Finally, the overall performance model showed a negative relationship with performance of universities.

The fourth proposition (P4) of the study was that council independence has a positive relationship with performance. The above regression results did not support this proposition.

Analysis and Implication

The results found a significantly strong negative relationship between council independence and two of the performance variables, research and financial viability. The exception was the teaching performance measure which was positively related to council independence.

The debate in the literature is between those who found a positive contribution to performance from outside directors and those who disagreed. Dehaene, Vuyst and Ooghe (2001) found that firms with more outside directors perform better. Pathan, Skully and Wickramanayake (2007) argued that more independent board members may enhance the performance, with reference to the Thai banking sector. Holm and Schoeler (2010) found that an independent governing body is an important corporate governance mechanism for dispersed ownership.

According to governance research (Bhagat & Black 2002; Hermalin, B E & Weisbach 1991), there was no significant relationship between the presence of outside directors and firm performance. Krivogorsky (2006) examined the empirical validity of claims that the composition of the boards of directors affect Assets turnover and return on equity, and these results indicated a strong positive relation between the portion of independent directors on the board and the above ratios (AT,ROE). The findings of the present empirical study about Australian universities did not support any of the above arguments.

Council independence showed the extent of external members appointed to the university council. Descriptive statistics for council independence reported the minimum value for the number of independent members as 0.50 and the mean value as 0.60. These results confirmed that all the universities in Australia have complied with the 2003 requirement of a majority of external members in the governing body. Further the implication of the results was that Australian university councils try to attract more external members with a variety of expertise to be more competitive in a demand driven market. This confirmed the argument of Kiel and Nicholson (2003) that more independent members should provide more opportunities for networking and additional skilled personnel. According to *Finance 2007: Financial Report of*

Higher Education Higher Education (DEEWR 2008a), 36 out of 37 universities had an annual revenue of over AUS\$1 million and traditional academic managers may not have the business expertise needed in making strategic decisions to utilise the cash flow effectively. The results explained that universities governing boards try to enhance the strategic links with external parties by increasing the number of external members in the council.

Correlation analyses were performed to explain the relationship of all the variables with each other and according to the results, council independence showed a strong negative correlation with performance. These results reject the existing argument in agency theory that more external members could bring high financial expertise and better performance monitoring. As discussed, under the resource dependency theory more external members bring high skills and better networking which leads to high performance, as argued Dehaene, Vuyst and Ooghe (2001).

However, the results agreed with the argument of stewardship theory which suggests that insider dominated boards deliver better performance due to their special skills in the sector. This gives the implication that as a special sector, internal council member domination could add higher value to the performance of a university.

7.2.5 Council Committees and Performance

Council committees were used as an internal governance mechanism instrument in this study. This was transformed to a logarithm to get the best possible form of the variable. This showed a statistically significant negative relationship at $p < 0.05$ with teaching performance which explained that one unit of change in the council committee index as an independent variable, could negatively influence teaching performance by 0.4 of a unit and increase research performance by 0.34 at the level of $p < 0.1$. Regression results for financial performance with the committee index showed a statistically significant positive relationship at the level of 0.1 and one unit change in the committee index will influence the financial performance change by 0.42 units. Two out of three models used to analyse the relationship of council committees with the performance of universities reported statistically significant positive relationship between the two variables: council committee and performance. Depending on the strongest relationships found in the models, Proposition 5 (P5) of the

study: 'council committees positively influence the performance of universities' was accepted.

Analysis and Implication

A statistically significant positive relationship between the two variables: council committees and financial performance, and council committees and research performance confirmed the findings of John and Senbet (1998) that audit; nomination and compensation committees improve performance through independent monitoring processes. Confirming the above argument, correlation results of the study also revealed that there was a strong positive correlation between council committees and current ratio at $p < 0.01$. This suggests that oversight committees closely monitored the financial performance and hence influenced the performance of universities in a positive manner. Monitoring the financial viability and improving the financial practices of universities to meet best practice requirements are two main responsibilities expected of audit committees (Auditor General Office 2005; Australian National Audit Office 2003). The results of the study supported this argument.

The council committee index refers to the existence, independence and process of audit, remuneration and nomination committees as standing committees in the university council. The maximum value for this index was reported as 76% while the minimum value was 18%. The mean standing committee index of Australian universities was 54%. In analysing the process and independence in these committees, the number of meetings held and the CEOs influence in the committee were also addressed. Whether the CEO is a member of the committee or the chair of the committee as an indicator of analysing the independence in these committees was also considered. Detailed analysis of the results further revealed that every university had an independent audit committee, but only 12 out of 37 universities had remuneration committees and 20 out of 37 universities had nomination committees as of 2007. They were in the process of establishing remuneration and nomination committee in every university. According to Khanchel (2007), independent oversight committees enhance better governance through unbiased appointments and remuneration decisions.

Further analysis of correlation of council committees with all the variables reported a statistically significant negative correlation with the regulatory authority and the size of the university at the $p < 0.5$ level. The implication of the above results was that the influence of

the regulatory authority on having these three committees in universities was positive, but the process of these committees was not linearly related with the regulatory authority. Though the universities showed a high compliance with protocols, having all three committees is not compulsory by the regulations. Further, the negative relationship between the size and the council committees implied that bigger universities tend to have high CEO influence on these committees, which influenced the results.

Regression results suggested that council committees can positively influence the performance of universities. The results agreed with the agency theory which suggests committees monitor the performance of the CEO and the organization, which leads to higher performance. This further agreed with the best practice argument that audit, remuneration and nomination committees are important for best practice governance and high performance.

7.2.6 Council Meetings and Performance

Council meetings were significantly related with university performance in the overall performance model, but as this model of relationship between governance and performance was not significant, it did not demonstrate that there was a good relationship between those two variables. Due to a low R-squared in the overall performance model, the correlation results of the final overall performance model were not statistically strong enough to explain the variation. Teaching performance did not show any statistically significant relationship with council meetings. Research performance showed a positively significant relationship at $p < 0.1$ with council meetings which was also identified as a statistically weak relationship with one unit change in council meetings increasing research performance by 0.34. The results showed that council meetings did not influence financial performance. Though research performance and overall performance showed a statistically significant relationship, statistical outcomes of the correlation results were not strong enough to confirm the proposition of the study that ‘council meetings positively influence the performance of the universities’ and this proposition was rejected.

Analysis and Implication

Council meetings refers to the number of council meetings held during the year and the descriptive statistics varied from a maximum 12 to minimum 4 and the mean value for

council meetings showed as 7. Shivdasani and Zenner (2004) suggested that boards should increase the frequency of meetings if the organization requires high supervision.

Regression results for research performance reported a poor significant positive relationship with council meetings. Teaching and financial performance did not show any statistically significant relationship. These results agreed with the argument of Shivdasani and Zenner (2004). According to the correlation analysis of the study, council meetings were positively correlated with research income and this influenced the positive relationship with research performance. The implication of this result was that a higher number of meetings, provided the council with greater opportunities to monitor research performance outcomes regularly and take corrective action if necessary, which influenced a positive correlation.

Further overall analysis of the correlations of all the variables revealed that bigger universities have a high frequency of council meetings, and that universities tend to increase the number of meetings depending on the regulatory requirements. This finding also agreed with Shivdasani and Zenner (2004). Council meetings was negatively correlated with staff to student ratio and this suggested that universities with a higher staff to student ratio seem to be more cost-oriented, and in an effort to minimize cost, may tend to have lesser numbers of council meetings. The correlation results with transparency showed a positive correlation with council meetings and this confirmed the expectation that a higher number of meetings reduces the information asymmetry (Eisenhardt 1989), and hence leads to better performance and high transparency. Lipton and Lorsch (1992, p.65) mentioned that “directors in large boards may face greater difficulties in expressing their ideas and opinions in the limited time available at board meetings and fewer meetings make this situation even worse”.

7.2.7 Transparency in Reporting and Performance

Transparency in reporting was another variable used as an internal governance mechanism to test the relationship between corporate governance and performance of universities. According to the regression analysis, transparency in reporting had no statistically significant relationship with overall performance, teaching performance, research performance or financial performance. This result suggested that transparency in reporting has not influenced the variation of the performance of universities. The seventh proposition of the study ‘transparency has a positive influence on performance’ was rejected.

Analysis and Implication

Transparency in reporting was measured by using a transparency index. This index, as described in Chapter 5, was constructed to measure the depth and the extent of information disclosed in the annual reports of the universities, in addition to fulfilling the mandatory requirements in reporting for government agencies. Annual reports of universities are considered as one of the main instruments that could be reliably used by external users of information in making informed decisions (Patel, Balic & Bwakira 2002) regarding universities. The minimum value for transparency in reporting was 0.25, whilst the maximum value was 1.00 and the mean value of the transparency index was 0.6. According to the statistical results, on average, Australian universities exhibited 60% transparency in reporting in their annual reports, in addition to fulfilling mandatory disclosure requirements.

Transparency in reporting did not correlate significantly with most variables used in the study. The exception was with meetings, which could be explained by the higher number of meetings enhancing transparency in reporting. The mixed findings suggested the need to carefully include all important variables and appropriate operational measures in this type of research (Gietzmann & Ireland 2005; Williams, R & Van Dyke 2004; Zarowin 2002). Zarowin (2002) introduced an alternative measure of timely disclosure that attempts to capture quality rather than quantity of strategic disclosures. The studies in measuring and reporting of performance indicators by Australian government departments concluded that entities subjected to a greater amount of scrutiny are more likely to disclose information than those subjected to less scrutiny (Hyndman & Anderson 1997; Pendlebury, Jones & Karbhari 1994; Taylor, D & Rosair 2000). The implication of the results of this empirical study suggests that Australian universities are subject to less scrutiny. With the proposed changes in the Bradley Review (Bradley et al. 2009), the Australian university system will face a demand driven funding system and due to the competition in attracting students and funds, there is a very high possibility universities will disclose more information. If so, the statistical results of the transparency index would increase as universities will try to attract more students and social links through disclosures of different performance indicators as a marketing tool (Guadagnolo 1985).

7.2.8 Size of the University and Performance

Size of the university was used as a controlling variable in this study and this was calculated as the number of total student enrolments equivalent to full-time student load (EFTSL) in a given year. This indicator showed a significant relationship with teaching and research performance of universities. Size of the university showed a negative relationship at $p < 0.1$ significance level with teaching performance and explained that one unit change in the size of the university influenced an increase of 0.38 in the research performance (a positive relationship) at $P < 0.01$ significance. The regression results did not confirm any statistically significant relationship with financial performance and size of the university. According to the results of the strongest model of the study, the eighth proposition of the study ‘the size of the university is positively related with performance of the university’ was accepted.

Analysis and Implication

Correlation analyses reported that the size of the university was positively correlated with the council size and council meetings at the $p < 0.05$ significance level, which explained that bigger universities, had more council meetings within a year compared to smaller universities and opted to have bigger councils that allowed the higher representation of many stakeholder groups. The size of the university was negatively correlated with the council committee index at 0.05 confidence level. The negative correlation between size of the university and the council committee index suggested that bigger universities did not score high in the index and even if they had these committees, the CEO’s influence was strong in remuneration and nomination committees.

The negative correlation between size and the current ratio suggests that bigger universities had a lower liquidity position. That might be due to more operational activities or inefficient finance controls and cash flow management. Overall, the financial performance index also reported a significant negative correlation with size at the level of $p < 0.05$, which implied that bigger universities reported a poor financial viability.

The size of the university and the progression rate were positively correlated at $p < 0.01$ suggesting that bigger universities had a higher progression rate may be due to high teaching and learning support, and better student support facilities. At the same time though not considered as a variable in the study, the high enter scores of the students attending bigger

universities (student quality), could have also had an influence on the results. The correlation between the size of the university and the full-time employment rate was negatively significant at the $p < 0.05$ level. The implication may be that employers prefer to hire new graduates from smaller universities rather than bigger universities for some reason that was not considered in this study. The other implication was bigger universities offer various courses some of which have high employment rates (such as medicine) and others have low employment rates such as humanities and social science disciplines), which could have brought the full-time employment rate down in bigger universities.

Further analysis of the correlation results revealed that the internal governance mechanism index of universities was positively correlated with the size of the university, and the implication of this result was that bigger universities had better internal governance mechanisms. This supported the argument that size of the university as a controlling variable had supported better governance of universities.

The external governance index did not show a statistically significant correlation with the size of the university and this suggested that the influence of the regulatory authority and stakeholder influence were not controlled by the size of the university, and that, irrespective of their size, all the universities adhered to compliances. Requirements and the influence of the government as the funding body of universities did not vary with the size of the university. Further the results suggested that during the observed period, bigger universities were more research oriented while smaller universities are highly focused on teaching performance.

7.3 Analyses and Implications of Overall Performance

Correlation among the performance variables and the controlling variable was performed to measure the association of individual performance measures and the size of the university and the correlation results were presented in Table 6.21.

7.3.1 Analyses and Implications of Teaching Performance Variables

Progression rate was positively correlated at $p < 0.05$ with research income and $p < 0.01$ with the size of the university. This was negatively correlated at $p < 0.05$ with the full-time employment rate and $p < 0.01$ levels with the students to staffs ratio. The full-time

employment rate was negatively correlated with the size of the university at $p < 0.05$. Correlation results further revealed that teaching performance and research performance showed a strong negative correlation with each other at the level of $p < 0.01$.

Analysis and Implication

The results that bigger universities have higher progression rates may be due to better teaching and learning facilities and this was further confirmed by the negative correlation results of staff to student ratio which suggested that a higher number of students per academic member had negatively influenced the progression rate. The overall teaching performance was negatively correlated with the research performance index and this confirmed that teaching oriented universities did not perform well in research.

7.3.1 Analyses and Implications of Research Performance Variables

Research and publications per academic was strongly positively correlated at $p < 0.01$ with research degree completion per academic and negatively correlated at $p < 0.01$ as well with staff to student ratio. Research degree completion per academic was positively correlated at $p < 0.01$ with research income per academic, and negatively correlated at $p < 0.01$ with the staffs to student ratio. Research income was negatively correlated at $p < 0.01$ with staff to student ratio.

Analysis and Implication

High correlations between the research degree completion and the research and publication rates confirmed that research degrees had a positive contribution towards research and publications. The negative correlation with staff to student ratio confirmed that if the number of students per academic was higher, the opportunity of an academic contributing to research publications was lower. These results further confirmed that the research degree completion, research and publication per academic and research income were highly correlated with each other while a high staff to student ratio had an adverse impact on the research performance of universities.

Aghion, Dewatripont et al. (2009) investigated how governance affects research output measured by patenting and international university research rankings for European and US universities and they found that university autonomy and competition are positively

correlated with university output, both among European countries and among US public universities. The results of the present study reported that research performance of universities had a significant relationship with council independence, council committees and council meetings which supported the above argument (Aghion, P. et al. 2009; Aghion, Dewatripont & Stein 2008) that strong internal governance or autonomy of Australian universities positively relates with research performance .

7.3.3 Analyses and Implications of Financial Performance Variables

The current ratio was positively correlated at the $p < 0.05$ level with Assets turnover, and have a strong positive correlation with return on equity and staff to student ratio at $p < 0.01$. The current ratio was negatively, but strongly correlated with research and publications per academic and progression rate at the $p < 0.01$ level whilst with the size of the university it was at the $p < 0.05$ level. Assets turnover was positively correlated at $p < 0.01$ with return on equity and staff to student ratio, and negatively correlated at $p < 0.01$ with the progression rate and research and publications per academic. Return on equity did not significantly correlate with any of the other variables used in the study.

Analysis and Implication

The implication of above results was that universities with high liquidity positions showed high efficiency in using assets and hence had better financial viability. However, negative correlations with research and publications and the progression rate suggested that due to tight controls on the cash flow of operating activities of these universities, financial performance ratios adversely influenced the research and publications of academics and the student progression rate. This was further confirmed by the positive correlation result with the staffs to student ratio, which implied that a higher number of students per staff member increased financial viability but reduced teaching and research performance of universities. These results further suggested that bigger universities tried to maintain high quality research and teaching while taking a high financial risk to maintain and upgrade their positions in universal rankings of universities. The worldwide university rankings mainly focus only on teaching and research performance in ranked universities (Marginson 2007; Times Higher Education 2009; Williams, R & Van Dyke 2004) and they do not consider the financial viability of universities. Though Australian universities are considered as publicly-funded universities, financial viability is considered an important performance indicator for

universities (see *Higher Education Report 2005, 2006 and 2007* from DEST 2007; DEEWR 2008b, 2008c). The mean of the current ratio was 1.63 and these results suggested that Australian universities maintained a satisfactory liquidity position. The *Higher Education Report 2005, 2006 and 2007* (DEEWR 2008b, 2008c; DEST 2007) considered this ratio less than 1 as an indication of potential liquidity risk, while the finance literature considers the optimum ratio as 2 times current assets to 1 time current liabilities (Simons, Dávila & Kaplan 2000).

Overall the financial index did not significantly correlate with overall teaching and research performance of the universities and this confirmed that financial viability should be analysed separately. This further agreed with the literature of the performance measurement of universities which suggested that research and teaching are the main variables in measuring performance of universities (Pollitt 1990; Warning 2004, 2007; Worthington & Lee 2005, 2008).

7.4 Implications of the Results of Incremental Regression in Affecting the Performance of Universities

The tests for the incremental regression were performed to identify the role of the individual variables in affecting the performance of universities. The results were presented in Table 6.24. The results of the tests for incremental analyses reported the change on R-squared after removal of all the independent variables in all the models on an individual basis. The results of the council meetings after removal of all the other significant variables reduced the R-squared of the overall performance from 0.298 to 0.110, teaching performance from 0.376 to 0.126 and research performance from 0.353 to 0.140. R-squared represents the portion of the dependent variable explained by the independent variables in the models. The analyses showed that the variation in the dependent variables were explained to a lesser degree with the removal of other variables in the model, leaving council meetings, and the unexplained portion or the value of the error term improved to a larger degree. The incremental analysis of council committees and council independence on financial performance also showed a decrease in R-squared from 0.453 to 0.224 for council committees which led to increases in the unexplained portion of the error term. The above results suggested that the role of those individual variables in affecting the performance of universities was not statistically significant. R-squared of council independence decreased from 0.453 to 0.408 suggesting that

as an individual variable it had a moderate influence on explaining the change of the performance of universities.

7.5 Implications of the Results of Complementarities of Corporate Governance

Instruments

As discussed in Chapter 4, the tests of the complementarities of the internal corporate governance mechanisms in affecting the performance of universities were performed for the individual models. Similarly, the roles of complementarities in affecting the performance for both the internal and external corporate governance mechanisms were also tested. Those tests were performed to ascertain whether the internal corporate governance mechanisms (council size, council independence, council committees, council meetings and transparency in reporting) were Edgeworth complements of each other and also whether external (regulatory index and stakeholder influence) and internal corporate governance mechanisms were Edgeworth complements of each other.

7.5.1 Implications Complementarities of External Governance Variables

Table 6.24 presented the results of tests for complementarities in the external governance variables. Test of complementarities was performed to analyze the influence of internal governance variables on external governance variables. In this test, all the internal governance variables were removed from the test and the results showed that none of the external governance variables became statistically significant even after removing all the internal governance variables. In the previous regression analysis, external governance variables of the study (regulatory index and stakeholder influence) did not show any statistically significant relationship with teaching, research and financial performance or overall performance of Australian universities. The regression results of all three models remained statistically not significant ($p > 0.1$) after the complementarities tests. These results confirm that the external governance mechanism variables were not Edgeworth complementarities of internal governance mechanism variables for Australian universities.

7.5.2 Complementarities of Internal Governance Variables

Results of the test for complementarities for internal governance mechanism variables were presented in Table 6.25. Both the external governance instruments (regulatory index and the

stakeholder influence) were removed from the regression analysis and the results in the Table 6.25 showed the regression results of the internal governance variables after removing the external governance variables. The results showed that none of the internal governance variables which were significant in the previous model became non-significant in the new test and the non-significant variables in the previous model did not become significant in the present analysis either. The relationship of the internal governance variables with the performance remained unchanged after removing the external governance variables and the results confirmed that internal governance mechanism variables were not complementarities of the external governance mechanism variables in the present study.

7.6 Summary and Implications of Results from the Management and Policy Perspective

The summary of the results about the relationship between corporate governance and performance of a university could be shown as follows.

1. **Proposition 1** in the study was related to the regulatory authority and stated that regulatory authority was positively related with the performance of the universities. The empirical results did not support this proposition. The findings also did not support the institutional theory and stewardship theory which suggested that a regulatory authority disciplines the governing body to improve the performance for stakeholders.
2. **Proposition 2** about the role of majority stakeholders in affecting the performance of the university, which suggested that majority stakeholders create better performance through increased monitoring, was rejected. The results also did not support the stakeholder theory or stewardship theory. According to stakeholder theory, involvements of a majority of stakeholder improves performance, and according to stewardship theory members of the governing body (board of directors), as stewards are responsible for enhancing the performance for stakeholders.
3. **Proposition 3** about the negative relationship between council size and the performance of a firm is rejected. The results did not support agency theory which suggested that the board members, being agents tend to look after their own interests. and a greater number of them does not improve performance
4. **Proposition 4** about the positive relationship between Council/ (board) independence and the performance was rejected. The results did not support the stakeholder theory

which suggested that majority of stakeholder involvement improve the performance and the resource dependency theory which suggests external members bring more skills to improve the performance.

5. **Proposition 5** about the role of council committees in affecting the performance of the universities was accepted. The results were consistent with corporate governance principles. Oversight committees monitor performance and close monitoring enhances the performance which supported stewardship theory.
6. **Proposition 6** about the role of council meetings in affecting the performance of the university was rejected. The result was inconsistent with corporate governance principles which suggested that better management improves the performance according to the stewardship theory and agency theory which suggested it is the responsibility of the board to monitor the performance as the agent of stakeholders.
7. **Proposition 7** about the role of transparency in affecting the performance of universities was rejected and the results did not support finance theory which suggested that transparency improves the accountability, which imply improvement in performance.
8. **Proposition 8** about the role of size in affecting the performance of the universities was accepted and the results supported the resource dependency theory that larger universities have more resources which positively influence the performance

Filially the tests for complementarities for corporate governance instruments in affecting the performance of the universities suggested that internal and external governance mechanisms were not Edgeworth complementarities of each other. The result supported the agency theory as the internal and external instruments in combination did not improve the performance.

7.7 Conclusion

The current chapter discussed the results and implications of the relationships between governance and the performance of Australian universities, and the tests for the significance of propositions. The propositions regarding the relationship between performance and governance were based on two external governance mechanism variables (regulatory authority and stakeholder influence) and five internal governance variables (council size,

council independence, council committees, council meetings and transparency in reporting) This study used size of the university as the controlling variable used in the econometric model. Eight propositions were tested in line with the conceptual framework in incorporating the factors affecting the relationship between the performance and governance of Australian universities. The results of the descriptive statistics and correlation analyses were also used to determine the implications of the propositions. The implications of econometric results on corporate governance theories and financial theories were also discussed. Incremental analysis was also performed to identify the influence of individual variables in affecting performance of universities. The results and implications of complementarities of external and internal governance mechanism variables were discussed and the results revealed that they were not complements of each other. The summary, conclusions and scope for further research will be discussed in Chapter 8.

CHAPTER 8

SUMMARY, FINDINGS AND CONCLUSIONS

8.1 Introduction

This chapter summarised the discussion about governance and the performance of the Australian universities. A short summary of the literature review, methodology, development of propositions, testing of propositions and econometric results are presented, followed by the conclusions from the results discussed in the previous chapter. The chapter was structured as follows. Section 8.2 introduces the governance and performance variables and their relationships. Section 8.3 discusses the complementarities of corporate governance instruments. Section 8.4 presented the existing literature on governance and performance. Section 8.5 explains the proposition development of the study. Sections 8.6 and 8.7 present the methodology and the results of the study, respectively. Section 8.8 discusses the process by which governance instruments affect the performance of universities. Policy implications are presented in Section 8.9 and the contribution to the literature is documented in Section 8.10. Section 8.11 discusses the limitations of the study. Section 8.12 describes the scope for future research and concludes the study.

8.2 Governance and Performance of Universities

The aim of this section is to summarise the relevant definitions in the existing literature (as various researchers have defined governance in different ways) and to classify the definitions used in the study. As discussed in chapter 2, some definitions including from the ASX Corporate Governance Council describe corporate governance as a framework, while others define it as a mechanism to safeguard the interest of stakeholders.

According to the data presented in the Chapter 3, 36 out of 37 government-funded universities generate multi-million dollar revenues. As a consequence of the analyses in this study, an appropriate definition for university governance in Australia, would conform with the definition of ASX Corporate Governance Council, and, following the findings in this study, could be presented as follows:

University governance is the framework of rules, relationships, systems and process within and by which authority is exercised and controlled in institutions. It encompasses the mechanisms by which institutions, and those in control, are held to account. Governance influences how the objectives of the institutions are set and achieved, how risk is monitored and assessed, and how the performance is optimized

The key variables used in this study to measure the performance of universities were teaching performance, research performance and financial performance. Additional factors affecting the performance of universities were identified in Chapter 2, but the scope of this research was limited to these. Governance of the universities was assessed by their compliance with external and internal governance mechanisms. The variables used to gauge the external governance mechanism were a regulatory index comprised of the involvement of principals and stakeholder influence. The variables used to measure the internal governance mechanisms were council size, council independence, council meetings, council committees and the transparency in reporting. The size of the university was used as the controlling variable in the study.

8.3 Complementarities of Governance Instruments

As discussed in Chapter 2, the governing body of the universities could use internal and external governance instruments ‘in combination’ or ‘in isolation’ to improve the performance of universities. The role of internal and external governance mechanisms in combination was tested as complementarities of the study. Governance literature (Rashid & Islam 2008; Rashid, Islam & Anderson 2008) suggested that it is important to perform econometric studies to analyse the role of these complementarities, and the process by which the combination of corporate governance instruments affects performance.

8.4 Limitations in Existing Literature

The usefulness of the governance literature in explaining the relationship between the performance of universities and different governance instruments is limited by the diverging views held by the researchers in this area. These views were discussed in detailed in Chapter 2. The role of principal involvement as the regulatory authority and the stakeholder influence as external governance instruments, and council size, council independence, council

meetings, council committees and transparency in reporting as internal governance instruments in affecting the performance of universities in Australia, were addressed as independent variables in the study. The above independent variables used have not been considered together in any of the prior studies on university governance. Due to these limitations in the literature, the conceptual framework considered all the above mentioned important factors affecting the governance and performance relationships. The results of the study were also interpreted in light of corporate governance, management and finance theories.

8.5 Methodology of the Current Study

As discussed in Chapter 4, the propositions in this study were based on variables relevant to the university sector in Australia. The dependent variable in the study, performance, was evaluated separately as teaching performance, research performance and financial performance. The independent variables used were council size, council independence, council meetings, council committees and transparency in reporting as internal governance variables and the influence of regulatory authority and stakeholder influence as external governance variables.

The secondary method of data collection was used to collect data. Data for the variables were collected from the websites of the universities and published sources such as annual reports of universities. It was also collected from the higher education data collection of the Department of Education Employment and Workplace Relations (DEEWR), the Department of Innovation and Science (DIS) and the Graduate Careers Council Australia GCCA.

SPSS software was used for the purpose of analysing the data of the study. Multiple regression analyses were performed to test the propositions for the study as described in Chapter 4. Further, the results of the correlation analysis of the external and internal governance mechanisms suggested that all the instruments of these and internal governance mechanisms should be used as independent variables in this study, instead of an index of governance and research, teaching and financial performance as separate dependent models. Different functional forms were tried, and diagnostics of all the functions were analysed. Treatments were given and variables were transformed by taking a natural logarithm. Regulatory index, council size, progression rate and research and publications per academic

were transformed into logarithms: progression log, research and publications per academic log, regulatory index log and council size log. The variables such as progress rate, overall satisfaction and full-time employment rate were transformed into percentage form to bring the coefficients in line with the other variables.

8.6 Results and Implications of the Study

The results of the proposition testing and complementarities explained the differences in the nature of the process by which the teaching, research and financial performance of universities was affected by the independent variables used in the study.

8.6.1 Results of Descriptive Statistics

Descriptive statistics of the internal governance variables were presented in Table 6.2. Compliance with National Governance Protocols was used as the variable that described the influence of the regulatory authority in this study. The descriptive statistics results of 92% justified the conclusion that the majority of the 37 universities complied with the protocols. The detailed analysis revealed that the few universities which did not address the risk criteria as outlined in the protocols brought the results down to 92%.

Dependency on government funds was used as the proxy for the influence of majority stakeholders in influencing the performance of universities. The descriptive results revealed that 57% of the total cash flows of universities were from government grants (including HECS, HELP and all the federal and state government grants).

The descriptive statistic for council size of the universities in Australia was reported to have a mean value of 19 members, which suggested that Australian universities preferred to have larger councils.

Independence of the councils of universities showed the extent of external members in the university council and descriptive statistics for council independence, measuring the number of independent members, reported the minimum value as 50% and the mean value as 60%. These results confirmed that 37 universities complied with the 2003 requirement of a majority of external members in the governing body.

Council committee examined the existence, process and independence of audit, remuneration and nomination committees as standing committees of the university governing body. In analysing the process, the number of meetings held and the VC's influence in the committee, were addressed. The descriptive results of council committees reported a maximum value of 76% percent with committees and a minimum value of 18%, whilst the mean value was 54%. The universities with the lower scores either did not have remuneration and nomination committees by 2007 or were in the process of establishing those committees at the time of the study.

Council meetings referred to the number of council meetings held and the descriptive statistics varied from a maximum of 12 to a minimum of 4 and the mean value for council meetings showed as 6.8, which confirmed that Australian universities have a satisfactory number of meetings during the year to monitor the performance of university operations as discussed in Chapter 2.

Transparency in reporting measured the depth and the extent of information disclosed in the annual reports of the universities, in addition to fulfilling the mandatory requirements in reporting for government agencies. Annual reports of universities are considered as one of the main instruments that could be reliably used by external users of information in making informed decisions regarding universities. The minimum value for transparency in reporting was 25%, the maximum value was 100% and the mean value of the transparency index was 60%. According to the statistical results of the study, Australian universities exhibited 60% transparency in reporting on average in their annual reports.

8.7.2 Results and Implications of the Relationship of Governance with Performance of Australian Universities

The results of the econometric tests helped to ascertain the influence of independent governance mechanism variables on the performance of universities in separate models of teaching, research and financial performance of universities. As discussed in Chapter 5, testing of the propositions was carried out for the study. The results of the propositions stated in the Table 7.1 are discussed below.

P1: The regulatory authority positively influences the performance of universities.

The first proposition of the study (P1) was about the influence of a regulatory authority and stated the regulatory authority positively influences the performance of universities. The results found there was no statistically significant relationship between regulatory authority and research performance, regulatory authority and teaching performance, and regulatory authority and financial performance of universities. According to agency theory regulatory authority should closely monitor the performance and discipline the agency for the benefit of stakeholders (Fama & Jensen 1983a), and institutional theory suggests that the regulatory authority can influence the performance. Results of the proposition testing did not support any of the above arguments and the proposition was rejected.

P2: Stakeholder influence was positively related with the performance of universities.

The second proposition (P2) was about the role of stakeholders and stated that ‘stakeholder influence was positively related with the performance of universities’. The results of the second test suggested that there was no statistically significant relationship between stakeholder influence and the performance of universities and rejected the proposition. According to Fielden (2007), a government as the main funding body can improve the performance of universities by exercising their power to direct and control the decisions and activities of government funded universities in a positive manner. The results of the study did not support agency theory nor the argument in the existing literature, so the proposition was rejected.

P3: Council size was negatively related with the performance of universities.

The third proposition (P3) was that ‘council size was negatively related with the performance of universities’, depending on the argument that bigger boards lead to inconsistency and inefficiency of decisions due to lack of cohesiveness among members, and the free rider problem as discussed in Chapter 2.

The regression results did not show statistically significant relationship between council size and performance of the universities, so the proposition was rejected and a further finding of no correlation between those two variables rejected the arguments of both agency theory and stewardship theory.

P4: Council independence positively relates with the performance of the universities.

The next proposition (P4) of the study was that ‘council independence positively relates with the performance of the universities’, which was constructed to support the argument that performance improves through better networking, and closed and unbiased monitoring.

The results reported a poorly significant positive relationship with teaching performance. This supported the argument that external members monitor performance (Klein, 1998), which supported agency theory. Council independence showed a statistically poor negative relationship with teaching performance which did not support the argument presented in the study. Council independence reported a significant negative relationship with financial performance. Krivogorsky (2006) examined the empirical validity of claims that the composition of boards of directors affects firms' profitability ratios (ROE, AT, profit margin). Results indicated a strong positive relation between the portion of independent directors on the board and profitability ratios. The overall results rejected the fourth proposition of the study that council independence positively influences the performance of universities in Australia. The strong negative correlation with the council independence and performance strongly supported stewardship theory which argued that internal members of the council have a better understanding of the environment and insider dominated councils positively influences the performance.

P 5: Council committees have a positive relationship with the performance of universities.

The fifth proposition (P5) was about council committees and it was suggested that council committees have a positive relationship with the performance of universities due to their role in providing expert and independent advice on financial decision making, reporting and nomination and remuneration of executives of universities.

Regression results for council committees reported a statistically significant negative relationship with teaching performance and statistically significant positive relationship with research and financial performance. The overall results supported the argument that council committees positively influence the performance of universities and the fifth proposition of the study was accepted.

The results supported the argument of agency theory which suggested that independent audit, remuneration and nomination committees monitor the performance of the institute and the CEO, and hence positively influence overall performance.

P6: Council meetings were positively related with the performance of universities.

The sixth proposition (P6) of the study suggested that council meetings were positively related with the performance of universities, as the higher frequency in meetings provides more opportunities to monitor the outcomes and take corrective action when necessary. Further, it was suggested that a higher number of meetings provides more opportunities for members to contribute their ideas and participate actively in decision making. According to stewardship theory, council committees provide advice when necessary and monitor and control operations (Klein 1998; John and Senbet 1998), which improves performance.

The regression results reported a poorly significant positive relationship with research performance and no statistically significant relationship with teaching and financial performance, which resulted in rejecting the sixth proposition of the study.

The results did not support the monitoring aspect of agency theory nor the accountability to stakeholders' requirement in stakeholder theory.

P7: Transparency in reporting has a positive relationship with the performance of universities.

The seventh proposition (P7) suggested that transparency in reporting has a positive relationship with the performance of universities. It was suggested that transparency in reporting leads to lesser information asymmetry and better accountability which improves performance.

The seventh proposition of the study was constructed in light of the corporate governance literature, which states that better transparency leads to higher accountability and reduces the information asymmetry. The regression results for transparency in reporting did not show a statistically significant relationship with teaching, research and financial performance, hence the proposition was rejected. The implication is that transparency in reporting has no influence on the performance of Australian universities.

P8: Size of the university is positively related with the performance of universities.

The last and the eighth proposition (P8) of the study was about the controlling variable, size of the university, and it was proposed that size of the university was positively related with the performance of universities.

Size of the university showed a negative relationship with teaching performance and a positive relationship with research performance, which suggested bigger universities perform better in research than teaching. This result further suggested that smaller universities are more teaching oriented and are strongly focused on delivering high quality teaching, while bigger universities are more research oriented may be due to having more resources.

Size of the university did not show a statistically significant relationship with the external governance mechanisms since irrespective of their size, all the universities comply with regulatory requirements.

The statistically significant positive relationship between size and the internal governance mechanisms confirmed that bigger universities had better internal governance practices.

8.8 Results of Complementarities and their Implications

The results were generally inconsistent with the literature presented in Chapter 2. The results for the tests of complementarities of external and internal corporate governance instruments in affecting the performance of universities showed that the internal governance instruments were not the Edgeworth complement to the external governance instruments used in the study and did not contribute to improving the performance of universities in combination with each other, supporting agency theory. The results also suggested that the internal corporate governance mechanisms were not substitutes of the external corporate governance mechanisms for Australian universities, which supported the argument of stewardship theory.

8.9 Policy Implications of the Study

The results about the governance and performance relationships were different in the research, teaching and financial performance models, and implied that different governance policies should be used to improve the research, teaching and financial performance of Australian universities. Conversely, some of the results in the three models were similar and implied that the same governance policies should be used to improve overall performance of universities. Similarly, the results about the complementarities of external corporate governance instruments and internal governance instruments in affecting the performance of universities suggested that they were not compliments of each other. The funding system

proposed by the Bradley Review (2009) requires an appropriate public accountability framework to ensure that governments and the community can have confidence in higher education and to ensure the efficient and effective use of public funding. Transparency in reporting plays a very important role in ensuring confidence in the effective use of funding and accountability. There have been increasing concerns among universities over the last few years about the nature and cost of accountability requirements (Birrell et al. 2009). The results of this study did not support the argument that universities should be encouraged to disclose their performance in research, teaching and financial aspects which influence accountability in a positive manner according to the governance literature.

8.10 Contribution to the Literature

This study highlighted the role of governance in improving teaching and research performance and financial viability through effective utilisation of financial and human resources of universities in Australia. In addition, the role of the regulatory authority and the majority stakeholders as external governance mechanisms in disciplining the council and CEO of universities was addressed. The result suggested that stakeholder theory and stewardship theory held an important role in university governance in Australia. The study has also extended the findings about the role of complementarities of the governance instrument in affecting the performance of universities. The results of the study did not support the central argument in the thesis, that governance of universities has a positive relationship with the performance of universities in Australia. It appeared that agency theory could provide more insights into explaining the relationship between governance and performance of universities. Nevertheless, this thesis failed to find any consistent significant relationship between external governance mechanisms and firm performance. This diversity of findings may be attributed to the endogeneity problems with the selected variables, such as reverse causality (Kole 1997), joint-endogeneity (Hermalin and Weisbach 1991, 2003; Zhou 2001) and unobserved heterogeneity (Himmelberg et al. 1999). The mixed findings of the study suggested the need to carefully analyse and include all important variables and appropriate operational measures in this type of research as suggested by Gietzmann and Ireland (2005), Williams (2004) and Gelb and Zarowin (2002).

8.11 Limitations and Recommendation for Future Research Directions

This section presents limitations and recommendations for future research. There were some limitations of the current study which should be borne in mind when interpreting its findings. The data used for the current study was derived from 37 government funded universities in Australia which included all the members of Universities Australia, excluding two private universities. Only secondary data were used for this study and this limited the opportunity of obtaining some special information needed in analysing certain information such as student perception and staff perception of the governance mechanism of the universities. Regression analysis was performed to analyse the influence of governance on the variation of performance of universities and, unfortunately, the model did not reveal statistically significant strong relationships among the governance and performance variables used in the study. A larger dataset over a longer time period would allow researchers to construct a model that explains the relationship between the variation of governance and performance of universities. Also, the business cycles in the economy have an impact on governance and the funding of universities, such as boom and slump periods of the economy which could be one factor to consider in analysing performance. This aspect has not been addressed in this thesis since the data necessary for covering the empirical evidence over a number of business cycles was not available. Future research could test the relationship in different business cycles. Also corporate social responsibility of universities has not been addressed in this study as a performance factor, due to lack of secondary data. This is something that could be analysed in depth in future studies.

This study was undertaken from 2005 to 2007 and it is likely that the adoption of best practice has increased since 2005 with the introduction of the National Governance Protocols (2003) and longitudinal analysis would enrich the findings or change the findings. Further, the contextual variables such as political, economical and social structures, and financial and legal systems have an impact on both performance and governance. Larger data set may result in a different model of the relationship between governance and performance. The inclusion of new corporate governance instruments could result in additional Edgeworth combinations of the internal corporate governance mechanisms.

Areas for future research include testing of the repeatability of these results among other publicly funded universities abroad, giving special reference to OECD countries and a

comparison of developed and developing countries. Another area is to apply this model separately for research and teaching universities and universities branded as elite and non-elite.

Increased diversification in funding decreased the monopoly power of the stakeholders. This may have led to better balance of stakeholder power in the Australian university sector which was emphasised in the model proposed by Fielden (2007). This could be another area for future research.

This study was focussed on publicly funded universities in Australia and another focus in future research could be a comparison of publicly and privately funded Australia and international universities. It is important to understand the most important factors in influencing the performance of universities, giving special attention to future sustainability in a competitive, market-driven higher education sector. Universities worldwide are becoming more and more competitive nationally and internationally.

Governance is an important factor in sustainability of any organization and it is important to study in detail the influence of regulatory authorities and stakeholders as external governance agents in influencing the performance of universities, as this study did not show any significant relationship with these two variables using the available data. Compliance with National Governance Protocols was used as the proxy for regulatory authority and for the involvement of principals in this study, and the influence of the Australian University Quality Agency, Australian National Audit Office and university ranking agencies, as external governance instruments could reveal different associations between the performance and governance of universities. According to Klein et al. (2005), the elements of measured governance are not equally important, and the effects of governance do differ by principals. In fact, ownership structures seem to matter for a number of corporate governance issues examined in prior studies (Dwivedi and Jain 2005; Gorton and Schmid 1999; Klein et al. 2005; Krivogorsky 2006; Seifert et al. 2005), and it could be important to apply the same framework to test the relationship of governance and performance for private sector higher education institutions.

Prior studies suggest that the relationship between good governance and good corporate performance may be mitigated by firm specific circumstances. Corporate governance

principles suggest that the role of the CEO is important in improving the performance of a firm as they have the most responsibility in managing the firm. In addition, the performance and governance of universities could improve by linking the CEO's performance with the performance of the institutions, assuming that the presence of a powerful CEO provides leadership to the institution and sends the right signals to its stakeholders who could encourage the attraction of more funds and the creation of better image in a market driven higher education system. Similarly, internal governance instruments such as CEO skills, tenure of the CEO, executive remuneration and incentives to the management, staff tenure, and staff qualifications can be used as internal governance instruments to test their relationship with the performance of universities. Furthermore, governance tests relevant for an insider model and tests for complementarities of governance instruments in the insider model, are still an open ground for research as the models used in this study was based on corporate governance instruments relevant for hybrid and outsider models.

In addition, tests of performance could be performed by including new variables such as equity and diversity, operating surplus, global ranking, student demand, graduate starting salary. Finally, different data analysis models such as data envelopment analysis and structural equation modelling could be used to analyse the governance and performance of universities.

8.12 Conclusion

This final chapter discussed governance and performance of universities, and their relationship giving special reference to Australia. Factors important for effective governance in improving the performance of universities in Australia have also been discussed. Furthermore, discussion about the literature review, methodology, proposition development and testing, statistical results of the models and proposition testing results of the model were also reported. Policy implication and conclusions of the study have been presented. Analysis of the governance structures and process of Australian universities were performed for the year 2007 by using descriptive analysis. All the universities comply with the National Governance Protocols (2003) requirements of maximum council size and majority external members. Results also suggested that Australian university councils opted to attract more external members with variety of expertise to be more competitive in a demand-driven market, which confirmed the argument of Kiel and Nicholson (2003) that more independent

members provide more opportunities for networking and additional skills. A council committee index suggested that universities are moving towards universal best practice by establishing most needed oversight committees in the university governing bodies. According to the results of 2007, every university did not have a nomination and a remuneration committee, but all the government-funded universities in Australia had an independent audit committee. Though the number of meetings held during the year 2007 was varied among universities the average of seven meetings per year suggested that councils made an effort to screen and monitor the performance of the universities regularly.

The reforms in higher education governance in recent years have been driven by the internal and external pressures. Some remarkable changes have taken place in the governance systems of universities where by every university has been established as an autonomous independent entity by its enabling legislation with the withdrawal of the commonwealth and the state government from certain control and management functions, devolution of responsibility to university councils and adoption of funding models which gives more autonomy and freedom to universities. In other words, universities are encouraged to develop new sources of income. And there is the development of new forms of accountability through performance and outcome based funding for universities. The results of this empirical study revealed that governance structures of Australian universities are becoming more independent and are moving towards governance best practice.

Effective governance structures play a very important role in attracting most needed funds and stakeholder confidence to be competitive in the demand driven Australian university sector. The study did not support the argument that there is a positive relationship between governance and the performance of Australian universities, but the analysis of teaching, research and financial performance as separate performance models showed statistically significant strong positive relationships with some of the individual independent internal governance variables of the study: council independence and teaching performance; council committees with research performance and financial performance; and council meetings with overall performance and research performance. In contrast, council independence showed a significantly negative relationship with research and financial performance, and council committees showed a negative relationship with teaching performance.

As observed by Guthrie and Neumann (2006), some variables such as the performance indicator of universities could vary for a number of reasons. For example, factors such as location of regional universities could affect performance due to labour supply issues. The Graduate Destination Survey (GDS) and Course Experience Questionnaire (CEQ) rating indicators for a university could vary between years for reasons associated with sample sizes or differences in the mix of course areas, rather than university teaching quality which was also suggested by Neumann and Guthrie (2006). Further, the indicators for tertiary entrance scores and over and under allocations in the Research Training Scheme (RTS) are acknowledged by the government (Neumann & Guthrie 2006) as unreliable due to difficulty in obtaining accurate data. Guthrie and Neumann (2006) and Carrington, Coelli and Rao (2004) argued that there is a confusion of processes, inputs and outputs, and lack of defined criteria in determining performance indicators for the higher education sector. The results of the current study showed that smaller universities do better at teaching and it is worth studying whether there is a reason why young smaller universities do better at teaching, but worse at other aspects of university performance.

Various economic and management theories have different relevance and reflect the real changes in the governance and performance relationships. Following this study, econometric tests should be carried out on a larger dataset covering an extended period of time for an insider corporate governance model. The finding of this thesis agreed with Guthrie and Neumann (2007; 2006) who concluded that it is important to understand that the teaching and research activities of a university and the quality of its academic staff represent highly complex challenges for the formulation of performance indicators and their measurements. Governance of universities and the role of governing bodies of universities are unique and regulators have to be careful in stretching the parallels with the business sector too far (Harman, K & Treadgold 2007) as the university governing body is different to the board of directors of any other service sector organization.

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APPENDIX 1

COMPLIANCE WITH NATIONAL GOVERNANCE PROTOCOLS FOR HIGHER EDUCATION

Name of the University	Yes	No
Objectives in the legislation	1	0
Council statement of primary objective	1	0
Duties of council members clear	1	0
Sanctions of breeches	1	0
Induction program for council members	1	0
Regular assessment of members	1	0
Size not exceed 22	1	0
Finance and commercial expertise	1	0
Systematic process to nominate of members	1	0
Internal grievance procedure	1	0
annual report of high level of outcomes	1	0
Oversee the controlling entities	1	0
Assessment of risk including from part ownership	1	0
Compliance Total	13	

APPENDIX 2

COUNCIL COMMITTEES

Name of the University	Yes	No
Existence of the audit committee	1	0
Chair external	1	0
Majority of external members	1	0
6 < audit committee meetings	1	0
Existence of the nomination committee	1	0
CEO not the chair	1	0
CEO not a member	1	0
Existence of the remuneration committee	1	0
CEO not a member	1	0
CEO not the chair	1	0
Total	10	

APPENDIX 3

TRANSPARENCY IN REPORTING

Does the annual report show the following?

Item	Yes	No
COUNCIL STRUCTURE		
Council size	1	0
Council appointment process clear	1	0
Expertise and skills of council members	1	0
Council members are evaluated at regular intervals	1	0
Roles and responsibilities of council members	1	0
Duties of members and breeches	1	0
Training program for existing members	1	0
Training for new members	1	0
COUNCIL PROCESS		
Meetings and attendance of meetings	1	0
COUNCIL COMMITTEES	1	0
List of council committees	1	0
Council committee meetings and attendance	1	0
COMPLIANCE		
List of compliances and disclosure	1	0
Disclosure of significant event	1	0
Strategic plan	1	0
Mission	1	0
Strategic goals	1	0
Information of other business entities	1	0
Risk statement	1	0
Joint venture Risk analysis	1	0
KPIs (1 for each year, max up to five)		
Student load statistics	5	
Staff load statistics	5	
Research grants	5	
Research and publications	5	
Graduate destination (full-time employment etc.)	5	
Graduate outcome (overall satisfaction etc.)	5	
Average enter score/student demand	5	
Financial performance	5	
Financial position	5	
Total	65	

APPENDIX 4

TESTS OF NORMALITY

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Progress rate	.164	37	.013	.928	37	.020
Overall satisfaction	.112	37	.200*	.982	37	.791
Full-time employment	.097	37	.200*	.976	37	.577
Staff to student ratio	.103	37	.200*	.979	37	.713
Research income	.196	37	.001	.900	37	.003
Research & publication	.211	37	.000	.624	37	.000
Research degree completion	.120	37	.200*	.924	37	.015
Stakeholder Influence	.090	37	.200*	.965	37	.288
Comply with protocols	.469	37	.000	.534	37	.000
Transparency in reporting	.110	37	.200*	.980	37	.729
Council size	.197	37	.001	.869	37	.000
Council independence	.101	37	.200*	.970	37	.402
Council meetings	.201	37	.001	.879	37	.001
Board committees	.156	37	.024	.949	37	.092
Current ratio	.127	37	.136	.884	37	.001
Assets turnover	.169	37	.009	.879	37	.001
Return on equity	.136	37	.080	.959	37	.184

Notes: a. Lilliefors Significance Correction.

* This is a lower bound of the true significance.

APPENDIX 5

TESTS OF MULTICOLINEARITY

		Coefficients ^a						Collinearity Statistics	
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Tolerance	VIF	
		B	Std. Error	Beta					
1	(Constant)	.673	.153		4.410	.000			
	EGM1	.000	.085	.000	.002	.999	.564	1.774	
	EGM2	-.027	.144	-.028	-.190	.851	.927	1.079	
	IGM1	-.094	.116	-.135	-.811	.424	.743	1.346	
	IGM2	-.360	.111	-.482	-3.237	.003	.924	1.082	
	IGM3	.060	.176	.058	.342	.735	.724	1.381	
	IGM4	-.309	.133	-.388	-2.324	.027	.736	1.358	
	IGM5	.033	.131	.041	.249	.805	.765	1.307	

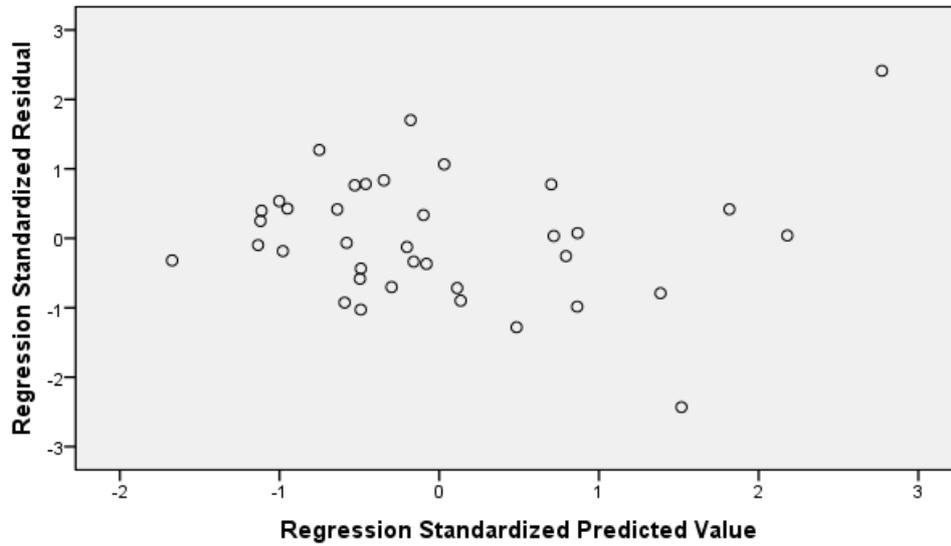
a. Dependent Variable: F1

APPENDIX 6

TESTS OF HETEROSCEDASTICITY

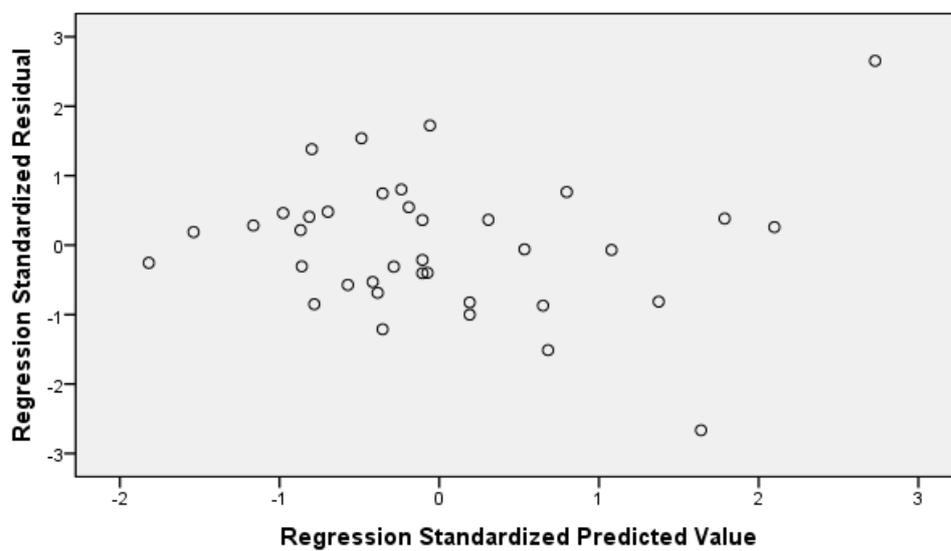
Scatterplot

Dependent Variable: F1



Scatterplot

Dependent Variable: F1



APPENDIX 7

DESCRIPTIVE STATISTICS

	N	Minimum	Maximum	Mean	Std. Deviation
current ratio 05	37	.61	4.86	1.7692	.97483
current ratio 06	37	.35	4.67	1.5114	.83908
current ratio 07	37	.32	4.95	1.5957	.90262
current ratio	37	.46	4.83	1.5903	.84453
Return on Ass 05	37	.27	1.00	.4673	.13430
Return on Ass 06	37	.07	.95	.4578	.13889
Return on Ass 07	37	.30	.76	.4730	.10888
Return on Ass	37	.31	.90	.4659	.11403
Return on Equity 05	37	-.02	.14	.0338	.02861
Return on Equity 06	37	-.01	.12	.0459	.03460
Return on Equity 07	37	-.06	.11	.0449	.03694
Return on Equity	37	-.02	.09	.0414	.02540
reserach income 05	37	731.00	254441.00	49345.6486	62079.07826
reserach income 06	37	1024.00	309489.00	59576.5676	78610.75065
reserach income 07	37	2050.00	310660.00	67266.1622	87630.37667
reserach income	37	1268.00	281021.00	58729.3514	75753.02749
publications05	37	88.08	3877.98	1181.6943	1039.28093
publications06	37	119.32	3852.00	1242.7478	1078.46237
publications07	37	121.60	4069.25	1281.4735	1118.76169
publications	37	109.67	3865.24	1235.3062	1024.43110
RD completion05	37	101.00	7473.00	2029.2162	2075.57600
RD completion06	37	109.83	8340.66	2062.3238	2156.19690
RD completion07	37	94.26	8271.10	2072.8214	2161.63481
RD completion	37	110.81	6574.24	1791.0046	1713.60631
progress rate 05	37	78.87	94.36	86.2078	3.46239
progress rate 06	37	73.64	90.71	84.3186	4.12366
progress rate 07	37	75.07	90.02	84.6868	3.34629
progress rate	37	76.37	90.43	85.0708	3.22996
overall satisfaction 05	37	60.12	80.81	69.1708	4.50061
overall satisfaction 06	37	52.13	78.41	69.5589	5.14770
overall satisfaction 07	37	62.23	80.59	70.5665	4.71197
overall satisfaction	37	59.15	78.81	69.7649	4.30199
full time employment 05	37	65.77	91.56	76.9638	5.85159
full time employment 06	37	68.15	90.29	79.7684	4.69926
full time employment 07	37	73.37	90.57	82.3081	4.86459
full time employment	37	70.14	88.58	79.6797	4.34731
Total revenue 05	37	50576.00	1088017.00	384562.2432	2.61757E5
Total revenue 06	37	23993.00	1210487.00	421288.6757	3.03288E5
Total revenue 07	37	79021.00	1429020.00	464264.5676	3.27866E5
Total revenue	37	65558.00	1235971.33	423371.8288	2.96605E5

Government assistant 05	37	36233.00	542326.00	210668.5135	1.36914E5
Government assistant 06	37	44085.00	587944.00	232621.1622	1.54789E5
Government assistant 07	37	57054.00	662339.00	249746.4595	1.60798E5
Government assistant	37	45790.67	597536.33	231012.0450	1.50361E5
EFTSL 2005	37	2931.00	40429.00	17800.0000	9061.26815
EFTSL 2006	37	3081.00	40576.00	18148.4054	9149.65291
EFTSL 2007	37	3451.00	41665.00	18642.8649	9399.55682
EFTSL	37	3154.33	40890.00	18197.0901	9184.70007
accedemic 2005	37	57.00	1514.00	553.8919	401.11184
accedemic 2006	37	62.00	1566.00	560.6757	408.58442
accedemic 2007	37	76.00	1629.00	577.0000	435.28994
accedemic staff	37	65.00	1569.67	563.8559	414.66703
ETF05	37	134.00	2690.00	1036.0000	724.08912
ETF06	37	139.00	2762.00	1061.4054	730.37732
ETF07	37	158.00	2831.00	1053.5946	762.07059
ETF	37	143.67	2761.00	1050.3338	735.60369
Comply with protocols	37	.92	1.00	.9395	.03480
Transparency in reporting	37	.25	1.00	.6043	.18072
Board size	37	12.00	22.00	19.2432	2.76290
Board independence	37	.50	.70	.6000	.05185
Board meetings	37	4.00	12.00	6.8378	1.48162
Board committees	37	.18	.76	.5424	.14090
Government assistance/ total revenue	37	.33	.94	.5684	.12210
Valid N (listwise)	37				