

**HOW DIFFERENT ARE UNIVERSITIES FROM COMPANIES?
FINANCIAL REPORTING PERSPECTIVES AND
THE MARKET FOR VICE-CHANCELLORS**

by

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ABSTRACT

The oldest university still in operation is approximately 1,750 years old (wordiQ.com, 2004). When compared to firms, universities have stood the test of time, while firms seem to lack longevity. The oldest listed firm still operating is around 225 years old (O'Hara and Mandel, 2004), a lifespan of approximately one-eighth that of the oldest university. Whilst this comparison involves extremes, it is still the case that the average university is much older than the average company. What distinctive features of universities promote their long lifespans? Summers (2003) argues that it is the importance placed on knowledge and ideas in universities that help them withstand the test of time. He goes further to suggest that corporations may do better in meeting their challenges if they adopt some of the features of the university model.

However, over time, we have seen universities moving away from their traditional positions as nonprofit organisations to institutions that are concerned with their financial viability. To what extent are universities becoming transformed into corporations? There is evidence suggesting that earnings quality for universities has improved over time, consistent with the theory that universities face increased pressure to become more like corporates and for greater public accountability as they seek to raise revenue from non-traditional sources in the face of federal funding cuts to higher education. We look at two dimensions of earnings quality for Australian universities: one based on the adherence of financial statements to prescribed requirements and the second based on accruals and earnings persistence. Although universities are nominally nonprofit organisations, there is evidence that they behave like companies and have incentives to avoid reporting negative earnings results. However, there is little evidence of opportunistic accruals earnings management.

How does leadership affect the dynamics of these organisations? We investigate this by looking at the workings of the market for Vice-Chancellors. A picture of the typical Vice-Chancellor emerges. We see that they are appointed at relatively older ages than CEOs in the private sector, although they do not have shorter tenure. On an international comparison between Vice-Chancellors, Australian Vice-Chancellors enjoy the highest real remuneration, favourable taxation arrangements and a better quality of life relative to their counterparts in the United States and the United Kingdom. There is

also a large disparity between the remuneration of Vice-Chancellors and CEOs, with the discount associated with university top management positions at 60 percent relative to the private sector.

The evidence suggests that on the spectrum of organisation type from nonprofits to corporates, the traditional way in which we view universities as predominantly nonprofits is not consistent with the underlying behaviour of these institutions. This raises interesting implications for the future of higher education in Australia and the quality of the public good provided.

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PREFACE

As the length of this dissertation is unusually long, I would like to provide the reader with some explanation of this length and some guidance that may help in reducing the time commitment needed to digest the document. The length of this dissertation reflects in part four disparate areas covered. These include governance, financial reporting, the market for Vice-Chancellors and other measures of university performance. Each of these have been reviewed separately and put in context within the over-arching themes of this dissertation, to investigate the extent to which university practices are aligned with corporate practices and to uncover the workings of the market for Vice-Chancellors.

In addition, the data collected for this research has also been listed in detail. The dataset is unique and surprisingly difficult to obtain. It has been included for the benefit of future researchers who are interested in uncovering more about this sector.

This dissertation has been written so that each subject area is self-contained. As a result, there are several possible reading strategies that could be adopted, depending on the nature of the reader's interests. These are outlined below in Table P.1. Three different levels of interest are outlined, trying to cover both extremes of the spectrum. For the time-pressured reader, one suggestion offered is to bypass the literature review in Chapter 2, which is rather bulky as it necessarily has to deal with all four subject areas of the dissertation. While this adds to the overall dissertation, the other chapters have been written in a more or less self-contained manner so that they may be read without loss of continuity where Chapter 2 is omitted. Additionally, the Appendices contain material that is peripheral to the main subject matter of the dissertation and again may be omitted without loss of essential context.

Table P.1
SUGGESTED READING STRATEGIES

Nature of Reader	Suggested Reading
1. Person seeking an in-depth understanding of the topic	All Chapters
2. Person with less specific interests seeking a general understanding of the topic	Chapters 1, 3, 4, 5, 6, 7
3. Person seeking a broad overview of the issues	Chapters 1, 4, 5, 7

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To my parents, Choon and Sai Choo Soh, thank you for everything. It's taken 21 years to make it to this particular point in my life and I hope to be able to share all those special moments still to come with you also.

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Lisa Soh
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CHAPTER 1

INTRODUCTION

1.1 Australian Universities: Where from and Where to?

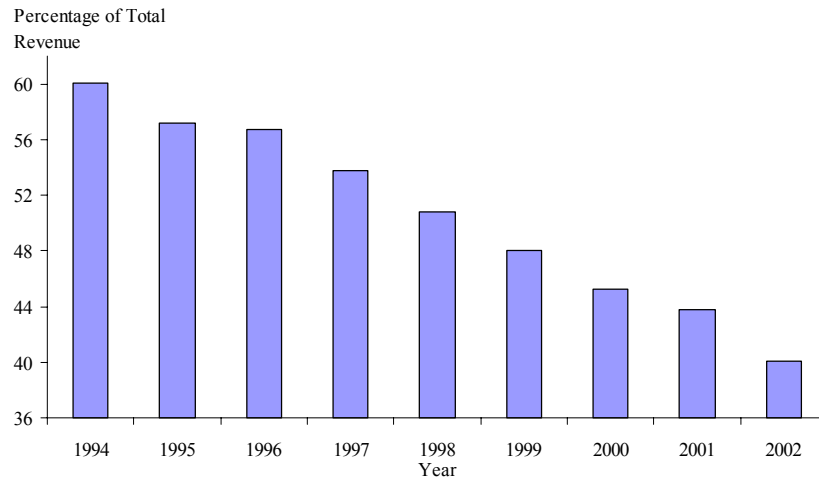
To what extent are universities becoming transformed into corporations? Marginson and Considine (2000) find that the modern university as we understand it today can be thought of as an “enterprise university” characterised by corporate style executive leadership. There is greater pressure on universities to improve their corporate governance practices as they are under increasing revenue pressure to find external sources of funding in the face of federal funding cuts to higher education. The tension lies in universities being seen as essential to the knowledge economy, yet the ability of universities to produce knowledge is threatened by funding cuts (Sargeant, 2001). This is illustrated in Figure 1.1 which shows Commonwealth government funding to universities decreasing from 60 to 40 percent of total funding over the period 1994-2002. In turn, this has led to increased commercial pressure on universities as they look to other forms of funding. An example of universities turning to the market is seen in the case of ANU, who are selling inflation indexed bonds to fund capital building projects (Morris, 2004). Given this pressure and the “corporatisation” of universities, how much of the existing literature related to Chief Executive Officers (CEOs) and firms is applicable to Vice-Chancellors and universities? How are universities responding to this pressure? This dissertation investigates the extent to which Vice-Chancellors and universities are aligned with their corporate counterparts.

Much research has been done to date on CEOs and firms, however very little has been applied to Vice-Chancellors and universities, particularly in an Australian context. Swan (2001) comments on the disparity between remuneration in universities and firms in arguing that the Vice-Chancellor of the University of Sydney appears underpaid relative to the corporate model. Clements (2002) points to the impact of the size of the university on Vice-Chancellor remuneration and examines whether there is any evidence of a Group of Eight effect, finding that membership to this group of institutions adds on average approximately \$145,000 to Vice-Chancellor pay. In view of the importance of universities to society as a whole and the role of the Vice-Chancellor in leading these institutions, this dissertation studies the workings of the

market for Vice-Chancellors. This includes the determinants of Vice-Chancellor remuneration, appointment and turnover.

Figure 1.1

COMMONWEALTH GOVERNMENT FUNDING TO UNIVERSITIES



Source: Department of Education, Science and Training (1995, 1996, 1997, 1998, 1999, 2000, 2001a, 2001b, 2002a).

Source data on Vice-Chancellor remuneration is taken from the annual reports of universities. As they are not bound by strong legislative requirements, reporting practices inevitably differ substantially. Accordingly, when studying issues of Vice-Chancellor remuneration, it makes sense to simultaneously examine in some depth how reporting practices employed by universities change over time and between institutions. Given the funds that universities have at their disposal, it is surprising that this issue has not been investigated extensively in prior research. This dissertation is an attempt to fill this gap. To put this amount of funds in perspective, the budgeted revenue for the University of Western Australia for the 2003 year is approximately \$350 million (University of Western Australia, 2003) and the total revenue for all Australian universities for 2003 is approximately \$12 billion (Department of Education, Science and Training, 2004a), representing approximately $12 / 750 \approx 1.6$ percent of Australia's GDP. This is approximately equivalent to Australian livestock income (\$12 billion), coal mining (\$12 billion), less than that of oil and gas extraction (\$19 billion) and metal ore mining (\$19 billion) and approximately twice that of the gold (\$5 billion) and iron industries (\$5 billion) (Australian Bureau of Statistics, 2004a, 2004b; Trewin, 2004).¹

¹ Grieg (1997) estimates that the total impact of the University of Western Australia's expenditure on the output of Western Australia is approximately \$470 million, which is equivalent to approximately \$560

There is certainly no lack of interest in this area; the publication of some of the results of this dissertation in the Higher Education section of *The Australian* newspaper (O’Keefe, 2004) is an illustration of the relevance of these issues to the wider community (da Silva Rosa, 2004) as well as generating considerable debate and discussion in the sector (Bernstein, 2004).

Nominally, universities are nonprofit public organisations. According to Butler (2001), Australian universities are institutions belonging to the public or the community at large and as such, the community can exert its “ownership” by demanding the institution be accountable to it. Further, they should reflect the values of the community. Lawrence (2004) makes the point that initially, the university was seen as an institution serving the public good, quoting Menzies (1939) outlining the key features of a university:

“that they should be homes of pure culture and learning, which are ‘civilising’ forces;
that they should serve as training grounds for the professions and provide a home for research while linking the academician and the ‘good practical man’;
that they should inculcate good character and train society’s leaders; and
that they should be ‘custodian(s) of mental liberty and the unfettered search for truth.’”

The Senate Employment, Workplace Relations, Small Business and Education Committee (2001) published the *Universities in Crisis* report on higher education, noting that the goal of a university is more than purely economic; universities have a cultural and social responsibility to use their expertise for the well-being of, and to contribute to, the cultural and social development of the community. This theme is also apparent in Bok (1982) and Caves (1984) and is echoed again in the Nelson (2002) paper on higher education. However, it has been acknowledged that the way in which we view universities is undergoing a process of evolution. One issue addressed in the report was the question, “What is a university?”. The Committee noted that universities:

“are being transformed from public...institutions, with a primary role of

million in 2003 dollars. Calabu et al. (2000) estimate that the university sector contributes \$10.6 billion or approximately 2 percent of GDP, with an additional \$9.3 billion of human capital generated per year and benefits to industry of approximately \$2.2 billion, leading to a total sector wide economic impact of \$22 billion per year (4 percent of GDP).

providing education and research for the longer-term benefit of the broader Australian community, into institutions increasingly concerned with meeting the short-term, and overwhelmingly economic, needs of the market and ensuring their own financial survival.”

In Australia, there is no impediment to universities effectively privatising themselves and as public funding to these institutions declines, this appears to be a channel that institutions may have to lean heavily toward in the future.² A possible implication of this noted by the Committee was that the provision of public goods, namely the creation, preservation and transmission of knowledge in the national interest, may be compromised or even subverted to international interests as universities expand their horizons overseas due to commercialisation and corporatisation pressures. In addition, the quality of the public good provided by these institutions may suffer as universities reduce the intellectual demand and content of their courses in order to more effectively compete for students. Nelson (2002) makes the point that universities today face greater competition to attract students, as Commonwealth funding is allocated based on student numbers and course load per student. However, this funding mechanism is distorted, as universities have little control over the number of students and the price each student pays due to restrictions on the number of domestic fee-paying undergraduate students each institution may accept.

As the financial position of universities deteriorates due to commercialisation, their capacity to fulfil this role may be threatened, as they move toward more market oriented goals in order to be financially independent. This raises interesting implications for the future of higher education in Australia as universities face increased corporatisation pressures. In the extreme, universities will be viewed as providing private goods, with the public good perspective, such as having a well-educated and highly skilled population, being seen as having no substantial benefit (Lawrence, 2004). If universities become corporatised, it is also possible that their incentive becomes to generate the greatest *private* benefit to higher education (Butler, 2001). While this may be seen in a negative light, it is possible that this move may be beneficial to universities, given the experience of private universities in the United States. This dissertation attempts to gain some insight into the extent to which universities have moved toward this. Already, total university revenue has grown from \$5.5 billion in 1991 to \$10.4 billion in 2002, equivalent to a compound average annual growth rate of 9.5 percent,

² For example, the University of Melbourne has set up a private institution called Melbourne University Private.

reflecting the greater diversification of funding sources and movement toward more commercial practices over time (Nelson, 2002).

1.2 Research Objectives

The questions this dissertation seeks to answer can be grouped into two broad categories:

A. *University Financial Reporting Practices*

Why is it important for universities to have high quality earnings? At the most basic level, to ensure that resources are used in their highest valued activities. Universities work on an accrual accounting basis. This was adopted in the 1990s with the objective of improving the efficiency and effectiveness of operations through the provision of information for improved decision making, intended to increase the accountability of the government and public sector (Barton, 2003).

This section looks at the financial performance of universities, concentrating on the performance measure of earnings. It investigates whether universities are showing any of the characteristics of firms regarding earnings, focusing on earnings quality.

1. How does earnings quality differ across institutions?
2. What is the distribution of earnings for universities?
3. What is the persistence of earnings for universities?

B. *The Market for Vice-Chancellors*

It is of interest to discover how the market for Vice-Chancellors operates to ensure that the market works efficiently. This includes ensuring that the best individuals lead our universities, that universities do not waste resources (or overpay the Vice-Chancellor) and ensuring universities attract individuals with the necessary talent (and do not underpay for their services).

This section explores this market in some detail. It begins by looking at the participants in the market before moving on to more formally model the processes of appointment and turnover. Finally, comparisons are drawn internationally and with the corporate sector in order to investigate the extent of alignment between the Australian market for Vice-Chancellors, those overseas and the market for CEOs.

1. Where do Australian Vice-Chancellors come from?
2. What are the determinants of tenure in the Australian market for Vice-Chancellors?
3. What is the process through which Vice-Chancellors are appointed? Is there any evidence of what is known in the literature as “outsider handicapping”?
4. What are the determinants of Vice-Chancellor remuneration?
5. How does Vice-Chancellor remuneration in Australia compare with that of other countries?
6. How does Vice-Chancellor remuneration compare with that of CEOs?

1.3 Summary of Data and Findings

The dataset used in this dissertation is unique and (surprisingly) difficult to acquire, despite the expectation that the data is publicly available due to the accountability universities owe to the public, given that they are partly financed by public funds. Predominantly, the data is sourced from university annual reports obtained from the National Library of Australia, with some gaps in the dataset filled from reports obtained from the State Library of New South Wales and in limited instances, the universities themselves. Other data was obtained from the Commonwealth Department of Education, Science and Training (DEST), the Australian Vice-Chancellors’ Committee (AVCC), the Australian Research Council (ARC) and the Housing Industry Association in conjunction with the Commonwealth Bank of Australia.

Looking at the financial reporting perspective and earnings quality, it appears that audit qualifications are not indicative of earnings quality due to distortions caused by inconsistencies between DEST and Australian Accounting Standards (AAS) reporting and recognition requirements for certain items, in particular, the treatment of the university’s contribution toward the unfunded superannuation liability for state superannuation schemes and the recognition of Commonwealth government grants received in advance. DEST did note that the treatment adopted by an institution was a matter of professional judgement for the institution (DEST, 2002b), hence it appears that universities balanced the costs of an audit qualification against the gains from statements more reflective of economic reality, such that where universities deviated from the requirements of AAS and received an audit qualification, this is not necessarily

in itself indicative of poor earnings quality.

The other measure of earnings quality looked at was accruals. Universities appear to be engaging in earnings smoothing over time to report flat or low positive earnings results. The distribution of earnings shows a centre of gravity of 2 cents per dollar of assets with few instances of negative earnings results. There is also a strong negative relationship between earnings and accruals with a correlation of nearly one for one. There is evidence that universities have been improving their earnings quality over time, with accruals becoming more negative. Also, accruals do not seem to be used for earnings manipulation purposes, as they have higher persistence than the cash flow component of earnings.

The results from the analysis of earnings quality are consistent with the thesis that universities are facing increased pressure over time and have responded to this by improving earnings quality. Additionally, they are displaying some of the same characteristics as firms who face incentives to avoid reporting negative earnings results and to smooth earnings over time.

Analysing the market for Vice-Chancellors, it appears that the majority of Vice-Chancellors in Australia come from natural and physical science or society and culture backgrounds. There is an under-representation of Vice-Chancellors from management and commerce backgrounds, which is perhaps surprising, given the view of the role of Vice-Chancellor as one of academic administration and institutional management and the increasing commercialisation pressures on universities. Relative to CEOs, Vice-Chancellors tend to be appointed later in life, do not have shorter tenure and are more highly educated.

Turning to remuneration, there is a positive relationship between tenure and remuneration and size and remuneration. Comparing Australian Vice-Chancellors to those in the United Kingdom and the United States, Australian Vice-Chancellors enjoy the highest remuneration measured in terms of real purchasing power, as well as the best overall conditions after consideration of taxation arrangements and quality of life in each country. Comparing Australian Vice-Chancellors to Australian CEOs, while the remuneration of both groups of executives is responsive to changes in size and the sensitivity of remuneration to size is of comparable magnitude, Vice-Chancellors accept

a discount of approximately 60 percent for working in academia relative to the private sector.

1.4 Structure of the Dissertation

The remainder of this dissertation is structured as follows. Chapter 2 reviews the prior literature on earnings quality and the market for Vice-Chancellors. In particular, it highlights the measures used to indicate earnings quality and the factors found to be significant in explaining movements in the market for Vice-Chancellors. Chapter 3 details the data used, focusing on the unique nature of this dataset. Chapter 4 looks at the financial reporting aspect of universities versus corporations by focusing on earnings quality. Chapter 5 investigates the workings of the market for Vice-Chancellors. Chapter 6 provides some insight into other possible bases for evaluating universities, given the multi-faceted nature of these institutions and Chapter 7 concludes the dissertation.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The literature review is organised under eight subheadings: (1) Theories of Corporate Governance; (2) Corporate Governance: Application to Universities; (3) Earnings Quality; (4) Compensation Theory; (5) Executive Compensation in Nonprofits; (6) Tournament Theory; (7) Insiders versus Outsiders and (8) Executive Turnover.

2.2 Theories of Corporate Governance

Regan (2003) notes that the actual definition of corporate governance is broad and not well defined. The Australian Stock Exchange (2003) suggests the definition of:

“Corporate governance is the system by which companies are directed and managed. It influences how the objectives of the company are set and achieved, how risk is monitored and assessed, and how performance is optimised. Good corporate governance structures encourage companies to create value (through entrepreneurship, innovation, development and exploration) and provide accountability and control systems commensurate with the risks involved.”

Adam Smith (1776) was possibly the first to allude to the concept of corporate governance:

“The directors of companies, being managers of other people’s money than their own, it cannot well be expected that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own.”

Berle and Means (1932) are the modern forerunners of corporate governance, suggesting that tension may emerge between principals (shareholders) and agents (management) in firms when management may be tempted to act in their own self interest rather than in the best interests of principals. This led to the emergence of agency theory, with Jensen and Meckling (1976) formalising the agency problem due to the separation of ownership and control. They suggest that principals may try to limit

the divergent behaviour of agents³ through offering incentives, although to do so incurs monitoring costs to set up mechanisms to observe and measure the behaviour of agents.⁴

McColgan (2001), in his survey on agency theory, discusses the different mechanisms that exist to control agency problems. Himmelberg et al. (1999) argue that firms substitute various mechanisms depending on the unobservable (to the econometrician) characteristics of the contracting environment. There are seven main classes of controls, summarised in Table 2.1. The table shows the different mechanisms through which agency costs are mitigated and the evidence supporting the theory.

Agency theory has been an important basis for the drafting of regulations concerning corporate governance in the private sector. In the past decade or so, the highly publicised failures of large corporations worldwide (such as Enron, WorldCom, HIH and Parmalat) has put corporate governance in the spotlight, leading to international reforms from regulators and recommendations from other parties on how to achieve best practice in the area. In Australia, the Corporate Law Economic Reform Program (CLERP) 3 proposals in the area of directors' duties and shareholders' rights are aimed at increasing investor protection and improving corporate governance (Commonwealth of Australia, 1997). Around the world, additional guidelines and laws to improve corporate governance practices have been made: for example the Cadbury, Higgs and Turnbull Reports and the Combined Code on Corporate Governance (United Kingdom), the Dey Report (Canada) and the Sarbanes-Oxley Act (United States).

While agency theory has been the dominant force, alternative theories have also been suggested. One, stakeholder theory, is an extension of agency theory. Stakeholders are "any group or individual who can affect or is affected by the achievement of the organisation's objectives" (Freeman, 1984). Stakeholder theory differs from agency theory as stakeholders need not be equity holders in the firm, but are purely any party who has interests (whether they be proprietary or otherwise) in the organisation. In the context of a university, one can clearly see the relevance of stakeholder theory with its broader definition. Harrison and Freeman (1999) argue that stakeholder theory has emerged as an important theory of corporate governance due to the increased sensitivity of individuals and institutions to ethical issues. Stakeholder

³ See, for example, Shleifer and Vishny (1997), Dalton et al. (1998).

⁴ Jensen and Meckling (1976) suggest that the use of options in remuneration contracts aligns incentives between agents and principals.

theory argues that firms are concerned about the satisfaction of stakeholder interests, whether this be economically motivated or for intrinsic merit (Donaldson and Preston, 1995). Berman et al. (1999) test the motivations behind stakeholder theory and find support for the strategic stakeholder management approach, where stakeholder interests are important as they are thought to improve performance.

Debate also exists as to what constitutes a stakeholder and the circumstances under which stakeholders and management interact. Mitchell et al. (1997) develop a model that identifies which stakeholders are important to management via salience. Management perceive these parties to possess power, legitimacy and urgency. Agle et al. (1999) find that these attributes increase stakeholder salience. Studies have also been conducted investigating the ability of management to balance the demands of different stakeholders (for example, Weaver et al., 1999; Ogden and Watson, 1999).

Stewardship theory assumes some form of intrinsic motivation and differs from agency theory in that it assumes collective serving behaviour. Here, management acts as trustee over the firm and its operations and motives are aligned with the best interests of principals (Donaldson and Davis, 1991) as utility is maximised through achieving organisational rather than individual self-serving objectives. Under stewardship theory, actions are best facilitated when corporate governance structures give the Chief Executive Officer (CEO) high authority and discretion, which supports a joint CEO-Chair office situation, contrary to agency theory. This gives the individual power over the operations of the organisation as well as the power to determine strategy.

Table 2.1
CONTROLS ON AGENCY PROBLEMS

Mechanism	Theory	Empirical Evidence
1. Managerial Labour Market	Managerial labour markets will discipline poorly performing management through salary revisions (Fama, 1980).	External labour markets use evidence on past performance in defining executive job opportunities and compensation levels (Gilson, 1989).
2. Corporate Boards	Boards should split the positions of CEO and chairman to improve monitoring and prevent one individual dominating the board (Cadbury, 1992). Effective boards should be largely comprised of outside independent directors to ensure better monitoring of management (Fama and Jensen, 1983). Boards are less effective as they grow in size as decision making becomes slower and the CEO is able to dominate with greater ease (Jensen, 1993).	CEOs are more likely to be removed for poor performance on outsider dominated boards (Weisbach, 1988). Performance related top management turnover is strongly related to the proportion of outside directors on the company's board but negatively related to board size (Dahya et al., 2000). Market reaction to appointment of outsiders depends upon the extent of company's agency problems and the characteristics of the appointee (Lin et al., 2000).
3. Corporate Financial Policy	Monitoring from external capital markets when issuing debt reduces agency problems (Easterbrook, 1984).	
4. Blockholders and Institutional Investors	Different types of blockholders perform different functions within organisations (Bethel et al., 1998). Greater need for distinction between different types of block investors (Mehran, 1995).	Positive market reaction to the appointment of an affiliated outsider (including those from blockholders) to the board (Lin et al., 2000). Only activist investors discipline management in poorly performing companies (Bethel et al., 1998).

Continued on next page...

Table 2.1
CONTROLS ON AGENCY PROBLEMS (continued)

Mechanism	Theory	Empirical Evidence
5. The Market for Corporate Control	Threat of takeover not enough to ensure complete alignment between managerial goals and shareholder wealth because of takeover costs (Jensen and Ruback, 1983).	
6. Executive Compensation	Higher managerial incentives lead to higher corporate performance (Jensen and Meckling, 1976).	For every \$1,000 change in shareholder wealth, CEO salary changes by 2 cents (Jensen and Murphy, 1990).
	Equilibrium in managerial labour markets will prevent large salary revisions for poorly performing managers (Jensen and Murphy, 1990).	Higher accounting earnings in year prior to removal of CEO (Weisbach, 1988).
	At some point managers will yield to behavioural notions of fairness and loyalty in their decision making and not be driven by financial incentives alone (Baker et al., 1988).	CEO remuneration significantly changed by 75 cents for every \$1,000 change in firm value (Jensen and Murphy, 1990).
7. Managerial Share Ownership	The level of pay determines where managers work, the structure of their compensation contracts will determine how hard they work (Baker et al., 1988).	
	As managerial share ownership increases so does their incentive to maximise company value (Jensen and Meckling, 1976).	Significant relationship between changes in shareholder wealth and the value of executive shareholdings (Benston, 1985; Jensen and Murphy, 1990).

Source: McColgan (2001).

Resource dependence theory as suggested by Pfeffer and Salancik (1978) suggests that directors' roles are a result of their ability to provide more ready access to the resources needed by an organisation. Under resource dependence theory, the board provides four benefits: (1) advice and council, (2) legitimacy, (3) channels for communication between externals and the firm, and (4) preferential access to commitments or support from important elements outside the firm. The theory argues that the provision of resources by the board is directly related to firm performance through reducing risk and transaction costs (Williamson, 1984). Hillman and Dalziel (2003) argue that board equity compensation has a positive effect on monitoring and provision of resources through incentive alignment (Boyd, 1994; Dalton et al., 2003; Beatty and Zajac, 1994; Zald, 1969). Board dependence, the extent to which those with ties to the current CEO dominate the board, is postulated to have a negative effect on monitoring and a positive effect on resource provision. This model has implications for board structure and explains why a dependent board, although contrary to agency theory, may enhance resource provision, although recent evidence from Australian university councils would suggest that the presence of dominant parties or factions on a board is counter-productive and marked by the pursuit of individual interests rather than those of the institution (Dodd and Marshall, 2004).

Transaction cost economics theory has its beginnings in the papers of Coase (1937) and is extended by Williamson (1979). The transaction within an organisation is the key unit of analysis (Bartho and Jepsen, 1997). Transaction cost economics arises from contract theory (Macneil, 1978) where the corporate governance structure depends on the complexity of contractual relations. The three main factors to consider are asset specificity, uncertainty and frequency. Dissimilar governance mechanisms follow from transactions that differ in these three factors. Transactions characterised by high asset specificity and high uncertainty need a more complex governance mechanism than standard transactions with low uncertainty (Williamson, 1985). Frequency is also important, as costs of governance are spread over all future transactions. If transactions are infrequent, then it is unlikely that players will invest in expensive and complex governance mechanisms.

Relational exchange theory is related to transaction cost economics but instead of looking at the transaction, it focuses on the relationship between parties and how it has developed. There is mutual recognition that the success of each firm depends partly on other firms as a foundation for close co-operation and partnership (Anderson and Narus, 1990) that affects the willingness to make relationship-specific investments (Johanson, 1989). Mutuality and independence are the key variables in this theory (Heide and John, 1992). Parties invest in relationships to favour effective interactions in the future. Factors such as the length of the relationship (Heide, 1994; Johanson, 1989), the efforts of each party to form the relation and the scope of activities (Porter, 1985) affect the governance of ongoing transactions. Relationships are stabilised and safeguarded from opportunistic behaviour through co-operation on a wide range of activities requiring trust, willingness to exchange and to work together for mutual benefits (Macneil, 1980; Heide and John, 1988).

2.3 Corporate Governance: Application to Universities

Is corporate governance an issue of concern for universities? With universities currently reviewing their corporate governance practices, the evidence would suggest yes. Ruth Dunkin, (then) Vice-Chancellor of RMIT says, “the principles of good governance are pretty non-controversial...principles such as accountability and transparent, independent, expert and ethical decision-making...good governance requires good relationships” (Australian Financial Review, 2004). There is also a requirement for an understanding of different stakeholders and the risk tolerance of the institution. Kerry Cox, Vice-Chancellor at the University of Ballarat, believes that there is a need to avoid conflicts of interest: “if you have members on a council who don’t have integrity, but have intelligence and energy, then they are quite dangerous people.” (Australian Financial Review, 2004).

How does good corporate governance improve the performance of a university? To answer this question requires identification of performance measures for universities. Universities satisfy a public interest function (Currie and Vidovich, 2000). The

Department of Education, Science and Training (2002c) note that “it is not easy...to determine the efficiency of university operations in any absolute sense, relative to other institutions or even to measure changes in efficiency over time. There are major difficulties in measuring university outputs and outcomes.” The Business Council of Australia (2002) recommends four performance areas should be measured: student learning, research, resourcing, and community interaction. However, they note that “performance measurement in the higher education system...identifies a dominant focus on measuring inputs and throughputs...rather than a focus on the social and economic outcomes generated by the system. This is a key weakness of the current approach to performance measurement.”

Some research has been done on corporate governance in tertiary education. International studies include Edwards (2003) on New Zealand, Jones et al. (2001) on Canada, Ackroyd and Ackroyd (1999) on the United Kingdom, de Boer et al. (1999) and de Boer and Goedegebuure (2001) on the Netherlands as well as international comparative studies such as Atkinson-Grosjean and Grosjean (2000) who compare Australia, New Zealand, Sweden, the Netherlands, the United States and the United Kingdom and the Department of Education and Training (Victoria, 2002) who look at Australia, New Zealand, Canada, the United Kingdom and the United States. The key theme from these studies is that there is a focus on performance, which is problematic in its application to the higher education sector, as many performance indicators are not quantitative in nature and hence cannot be easily measured (Atkinson-Grosjean and Grosjean, 2000).

Australian studies include Meek and Wood (1997), Coaldrake and Stedman (1999), Department of Education, Science and Training (2002c, 2003a, 2003b) and Marginson and Considine (2000). Dawkins (2001) in his review of Marginson and Considine believes that the mechanism for this change was the introduction of the profile process for resource allocation that established accountability and transferred power to central administration from the (more decentralised) individual faculties. Obviously the topic of corporate governance in higher education is in a state of flux as the sector

evolves, with increased pressure for universities to become more accountable and adopt practices that are more in alignment with those of corporate firms.

2.4 Earnings Quality

Dechow and Schrand (2004) in their monograph on earnings quality define a high quality earnings number as one that does three things: reflect current operating performance; be a good indicator of future operating performance; and better annuitise the intrinsic value of the firm. They argue that on average, earnings is superior to cash flows as it is more persistent, has fewer transitory components and is less volatile (Dechow, 1994; Dechow et al., 1996; Barth et al., 2001; Penman and Sougiannis, 1998). This is due to the use of accrual accounting in calculating the earnings figure. Accruals mitigate volatility in cash flows to produce a number that reflects the underlying variation in operations. However, the use of accruals also gives management the capacity to opportunistically smooth short run income by hiding value relevant changes in cash flows, which reduces earnings quality.

Earnings are on average, more persistent than cash flows, however certain components of earnings are more persistent than others. Sloan (1996) finds that earnings backed by cash flows are more persistent than earnings that represent accruals (Dechow and Dichev, 2002). Earnings are of higher quality for firms with low (or negative) accruals; however the market seems to fixate on earnings and does not seem to understand the more transitory nature of the accrual component (Bradshaw et al., 2001; Richardson, 2003; Bhojraj and Swaminathan, 2003; Beneish and Vargus, 2002).

What determines the quality of earnings? Dechow and Schrand argue that this depends on four factors. The first are the accounting standards followed by the firm (Storey and Storey, 1998). Standards that move toward the “balance sheet” perspective of accounting where assets and liabilities are valued have more transitory (unpredictable) components, while standards consistent with the revenue recognition and matching principles result in higher quality earnings due to better measurement of current performance and permanent earnings. The second factor is the quality of forecasts made

by management imbedded in accruals, relating to intentional and unintentional estimation error. Accruals may be discretionary or non-discretionary and management may behave opportunistically and manipulate accruals. The third factor is where the firm is placed in its life cycle. Firms that are growing and facing sources of competition have greater volatility in their underlying operations and will have greater estimation error, leading to lower quality earnings even when the firm is not acting opportunistically. The quality of earnings is partly a result of the financial reporting system and the way it records (or does not record) transactions. The final factor is the extent of management voluntary disclosure. Firms that disclose more have higher quality earnings as these disclosures supplement the information in earnings.

2.5 Compensation Theory

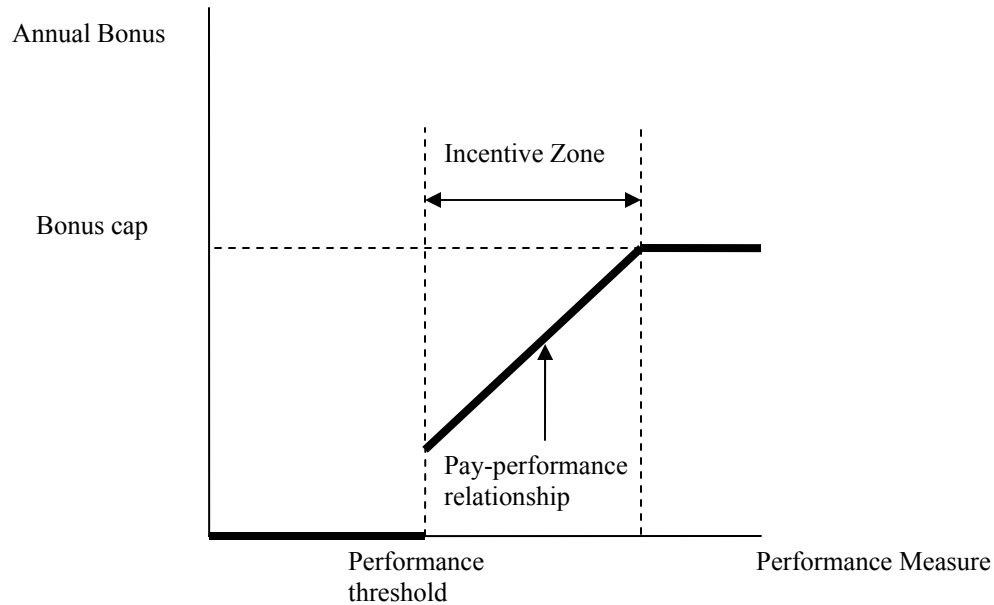
Murphy (1999) provides an extensive review of executive remuneration. He finds that there is heterogeneity in pay practices across firms and industries but the main structural components are constant between them: a base salary, bonus tied to stock performance, stock options and long-term incentive plans. Of these, he finds that stock options are the biggest component for CEOs in the United States although he does note that CEOs in the United States are paid differently to CEOs of other countries, with options making up a larger proportion of their total remuneration (Abowd and Bognanno, 1995; Kaplan, 1997). Murphy also finds evidence of a size effect, with larger firms paying more (Rosen, 1982; Kostiuk, 1990) although the relationship has weakened over time. Of the other components making up CEO compensation, base salaries are determined through benchmarking for competitiveness. Under agency theory, this component represents the fixed component in the contract and agents would prefer to have an increase in this component rather than in the other components making up CEO remuneration.

Agents may prefer an increase in base salary due to risk aversion, but also because of the positive benefits on the bonus component that are often structured as a proportion of base salary. Bonus plans are typically discontinuous as illustrated in Figure 2.1. Figure 2.1 shows that under the bonus scheme, no bonus is paid before the threshold

is reached. Once the threshold is met, the payoffs are proportional to the amount of effort until the threshold cap is reached, where further increases in worker performance are not rewarded. The performance measure used may be financial or non-financial. The most common financial measure used is some measure of accounting profit, while the most common non-financial measure used is a measure of individual performance. This raises an interesting question for universities: what plays the role of profit in a university setting, or more generally, how do we measure individual performance in academia? Murphy also notes the increasing popularity of options for executives to align their interests with those of the principals, as suggested by agency theory. For a university, this is not really an instrument they have at their disposal.

The relationship between pay and performance is of interest. Principal-agent theory (Mirrlees, 1974, 1976; Holmstrom, 1979; Grossman and Hart, 1983) finds that payouts in the optimal contract depend on the likelihood that desired actions by the executive have taken place, as shareholders cannot directly observe the actions taken. Homstrom (1979) argues on the informativeness principle that payouts are based on stock-based measures because these provide information on the actions of the executive. However there are limitations to this principle, as uncertainty over unobservable actions leads to contracts based on principal's best interests rather than measures that are incrementally informative of executive actions.

Figure 2.1
TYPICAL BONUS PLAN STRUCTURE



Source: Murphy (1999).

Jensen and Murphy (1990), Murphy (1993) and Hall and Liebman (1998) show that the sensitivity of pay to performance is attributable more to the explicit part of the contract tied to accounting profitability, rather than the implicit part tied to stock price performance. Murphy (1999) notes that there is no dominant model for executive compensation when attempting to distinguish between the use of sensitivity (use of first order differences or fixed effect methodologies) and elasticity (use of double log methodology) models. Murphy finds that the pay-performance sensitivity varies across industries, is driven by options and stock ownership rather than other forms of compensation and has become larger over time, mainly due to the granting of options. There is also an inverse size effect, where the pay-performance sensitivity is smaller in larger firms.

Given the difficulty in issuing stock based incentives for universities, are incentives important? The literature suggests that these incentives are important drivers of executive actions and corporate performance (see, for example, Brickley et al., 1985; Mehran, 1995). This seems to present a difficulty for universities in achieving the alignment of Vice-Chancellors' interests with those of the university. However,

Himmelberg et al. (1998) find that changes in managerial ownership have no effect on performance.

An alternative to incentive based compensation is the learning hypothesis, discussed by Murphy (1986). Under this hypothesis, managerial ability is initially unknown and revealed over time. Past performance is used to estimate ability and levels of contemporaneous performance. Observing performance over several periods allows Boards of directors to more accurately assess ability and assign capital to executives to maximise the value of the firm. The compensation of the executive is expected to increase with experience as expectations of ability are updated, leading to a more efficient assignment of capital. However, the relationship between compensation and experience is concave as the value of incremental information decreases over time due to more accurate estimates of the individual's true ability. This means that for a given executive, the variance of their compensation declines with experience as estimates of their ability become more precise.

Lazear (1995) discusses different methods of compensation. Piece rates provide incentives independent of the environment. Compensation is dependent only on the individual's absolute performance. In contrast, relative compensation schemes reward workers depending on their performance relative to others. Lazear argues that these schemes provide better motivation and are preferred by firms where it is easier to observe relative, rather than absolute, positions and also where common noise exists, as relative compensation differences out this noise. He argues that it is this scheme that is most relevant in the corporate market for managers, as workers move up the ladder not only by being good, but by being better than their peers. We will explore this in more detail in discussing tournament theory.

The literature is largely supportive of the use of relative performance evaluation in the market for CEOs. Holmstrom (1982) finds that the moral hazard problem can be reduced by relative compensation schemes due to better risk sharing. The value of relative performance evaluation exists where individuals face common uncertainty. An

opposing study is that of Antle and Smith (1986), who extend Holmstrom by investigating whether CEOs are compensated relative to their competitors. They find weak evidence to support the theory of relative performance evaluation.

Gibbons and Murphy (1990) look at the extent to which CEOs are rewarded on the basis of relative performance. They find that CEO compensation is positively related to changes in shareholder wealth and negatively related to market and industry returns. CEOs are also more likely to be evaluated relative to the market rather than industry returns. Extending the analysis to CEO dismissal, Gibbons and Murphy investigate whether relative performance evaluation has any effect on the probability that a CEO will leave office. Their results are supportive of the theory predicting that CEOs are more likely to be dismissed following bad years in the firm, but less likely to leave if the market or industry has had a bad year, holding all else constant. Additionally, they find that CEO turnover is more likely to control for market movements than industry movements. This is discussed further in the section on executive turnover.

The above discussion centres on compensation theory in the private sector, which takes place in a market environment. However, universities are part of the public sector and hence the dynamics of public sector labour market models are also relevant. Gregory and Borland (1999) discuss public sector labour markets where compensation setting occurs in a political environment. Ehrenberg and Schwartz (1986) also discuss public sector labour markets, focusing on the impact of union and collective bargaining laws in wage determination. Applied to Vice-Chancellors, they have little collective bargaining power as there is only one individual in the role per institution, suggesting that the employer may have some degree of monopsony power (Landon and Baird, 1971; Luzier and Thornton, 1986; Gyourko and Tracy, 1989). A comparison of the earnings distribution of public and private sector employees reveals that employees at the top of the public sector enjoy a discount relative to those at the top of the private sector (Organisation for Economic Cooperation and Development, 1996). Gregory and Borland also document a more concentrated distribution of earnings for public sector employees than private sector employees and suggest that this will have implications for how

individuals with different abilities and productivities sort themselves between the two sectors. Beggs and Chapman (1982) find that employees with high levels of ability are more likely to exit from public sector jobs due to the lower dispersion of earnings in the public sector relative to the private sector. While this indicates that there are differences in the way public and private sector employees are remunerated, the literature discussed typically focuses on lower level rather than executive positions and therefore may not be wholly applicable to Vice-Chancellors.

2.6 Executive Compensation in Nonprofits

Universities are a small subgroup of nonprofit organisations that all face the common difficulty of measuring performance. Hallock (2002) looks at compensation of management in nonprofits and finds evidence of a size effect and a negative effect on top management compensation and the number of paid directors, suggesting substitution for managerial talent. Roomkin and Weisbrod (1999) look at the structure of executive compensation in nonprofits and find that for top executives, monetary compensation is higher compared to for-profits. However, contingent payments (bonus schemes) make up a smaller proportion of compensation compared to for-profits, which they argue reflects differences in the goals and incentives provided to the market for nonprofit managerial talent.

In related studies, Dyl et al. (2000) find that corporate governance in nonprofits impacts upon the performance of the organisation. Just as in for-profit firms (Jensen, 1993; Lipton and Lorsch, 1992), management use their control over the board to favour their own self-interest. Brickley et al. (2003) find that board structure is an important determinant of top executive compensation in nonprofits. When nonprofit boards limit management participation (Fama and Jensen, 1983) in governance decisions, top executive pay is lower. This supports the theory that nonprofit boards do a better job at controlling managerial agency problems and limiting excessive compensation when they are more independent.

Little has been done on the modelling of financial remuneration to Vice-

Chancellors. Baimbridge and Simpson (1996) look at this for Vice-Chancellors at United Kingdom higher education institutions. Explanatory variables include institutional and personal characteristics, drawing on the findings of Pounder (1989) that salaries are significantly influenced by institutional characteristics.⁵ They find strongest support for personal characteristics that try to capture the individual knowledge of Vice-Chancellors (Becker, 1962, 1964; Mincer, 1970, 1974; Medoff and Abraham, 1980, 1981) and some support for quantitative institutional factors. Economic and geographical factors are also significant. Baimbridge and Simpson propose that this is suggestive of regionality in wage setting. No factors capturing the quality of the institution are significant. Interestingly, they find some evidence consistent with remuneration committees taking advantage of monopsony power in setting compensation, consistent with the findings of Ransom (1993) and Baimbridge (1995).

Ehrenberg et al. (2001) look at United States college and university President⁶ remuneration from the perspective of the board of trustees who determine the structure of the package. They look at what factors these trustees seem to price into compensation. They find Presidents enjoyed an almost two-fold increase in salary relative to the increase of other faculty members. They also document some evidence that Presidents of private institutions are paid more than their public counterparts. In modelling the determinants of remuneration, they find results that are similar to those of Baimbridge and Simpson (1996). In looking at the path to presidency, they find that Presidents who held a prior presidency receive a moderate pay increase per year of prior presidency. Presidents who are members of the clergy are also paid less than other Presidents, all else constant. The authors suggest that these Presidents are less motivated by market forces. Institutional complexity also affects compensation, with Presidents of research or doctoral universities receiving higher compensation than other Presidents. However when analysing the pay-performance relation, they find that overall, there is a weak relationship between salary, compensation changes and institutional performance.

⁵ See also Gomez-Mejia et al. (1987) and Allen (1981).

⁶ The CEO of universities in the British tradition (Australia, Canada, New Zealand, etc.) are known as “Vice-Chancellors”, while in the United States they are known as “Presidents”.

The forerunners to Ehrenberg et al. are Pfeffer and Ross (1988) and Boulanger and Pliskin (1999) who explain differences in compensation across institutions. However, these studies do not look at whether Presidents' pay is structured to provide incentive alignment with that of the institution. The findings are generally similar, with the interesting finding of evidence of gender discrimination with female Presidents receiving less than males (Pfeffer and Ross).⁷

Sorokina (2003) looks at the pay (not total remuneration) of college Presidents at the top private liberal arts colleges in the United States. Due to their relatively small size (enrolments are usually below 2,500 students) and smaller executive, it is likely that the President has a larger influence on policies, so the pay-performance sensitivity is larger (Schaefer, 1998). She finds limited evidence of this relationship compared to the evidence arguing for the existence of a relationship between pay and human capital variables. She also finds evidence of gender discrimination but in the opposite direction to Pfeffer and Ross. In light of her findings, Sorokina suggests that the relatively weak pay-performance relationship may be due to a stronger correlation with performance to benefits or monetary and non-monetary rewards not connected to pay. This highlights the importance of using a more extensive measure of rewards such as total remuneration or using alternative methodologies that capture the diversity in the role of the college President and different stakeholder relationships.

Related to the personal characteristic determinants of Vice-Chancellors' remuneration, Siegfried (1997) looks at US college and university Presidents or Vice-Presidents (Provosts) with a background in economics. He finds a disproportionate representation of people with backgrounds in economics in the top jobs relative to the number of economics graduates (Margo and Siegfried, 1996; Whitaker, 1993) and faculty members. Surveys by the American Council on Education (Green et al., 1988; Carbone, 1981) have found that the number of Presidents with social science backgrounds (which includes economics) has increased over time.

⁷ See also Chapman and Wagner (1986).

Siegfried finds that economist Presidents believe they have comparative advantage in quantitative and financial analysis. They believe they are more analytical, more results oriented, more realistic, decisive and likely to decentralise than Presidents from other backgrounds, who they perceive as being more sensitive to differences in disciplinary cultures, better public speakers, more idealistic and visionary, better at political infighting and having better interpersonal skills.

While Siegfried did not look at whether economists are more effective academic administrators than non-economists, in an earlier study, Fisher et al. (1988) matched a control group against a sample of US Presidents who were rated by their colleagues as highly effective. The proportion of Presidents with a background in social sciences in the effective group was 18.9 percent, compared to 9.2 percent in the control group. No other discipline had such a disproportionate share of effective Presidents.

Cornell (2002) compares the income of S&P 500 CEOs to that of Presidents of leading US private research universities. He asks the questions: are private universities able to attract leaders with qualifications comparable to that of major corporate leaders and if so, how do they compensate and recruit these candidates? Cornell finds that the backgrounds of Presidents are not inferior to those of the S&P 500 CEOs. On the whole, it is difficult to argue that the calibre of Presidents is lower than that of CEOs.

When comparing remuneration, he finds that the average total compensation for CEOs is a multiple of 32-36 times the average of the university President. Additionally, the compensation of CEOs grew faster than that of university Presidents. In 1994, the ratio of CEO to university President compensation was 15. In 2000, the ratio was 33. This was driven by the much higher growth in CEO compensation relative to that of university Presidents. Part of this increase is also due to the use of executive options for CEOs.

The discrepancy between President and CEO compensation is so large that it is hard to argue that such a large differential is required to attract suitably qualified CEOs.

Cornell suggests that it may indicate that CEOs play major roles in the determination of their own remuneration packages, consistent with the skimming hypothesis of Bertrand and Mullainathan (2000). That universities can also attract highly accomplished candidates at such a large discount relative to corporations also suggests that corporations may be able to do more to maximise shareholder wealth when recruiting and compensating CEOs. It also suggests that there may be a need to extend traditional agency theory models of incentive alignment when applying this to the most senior positions. The individuals in these positions are highly compensated relative to other positions and are likely to place more value on non-pecuniary aspects of the job due to diminishing marginal utility of wealth. While agency theory models ignore these factors, the ability of universities to recruit candidates who typically serve their institutions with energy, enthusiasm and dedication suggests that these other factors play an important role.

One possible explanation for the large multiple between CEO and President compensation is that Presidents and CEOs may now be in different markets. Whatever the reason for the huge discrepancy between President and CEO compensation, the evidence shows that universities have been able to attract accomplished candidates to the role of President, while paying less than 5 percent of the average CEO's compensation. The remuneration package is not designed to provide incentives, being largely fixed and independent of effort and results, yet universities expect that Presidents will expend best effort. The assumption is that candidates are those who value the non-pecuniary aspects of the job and possess a sense of personal pride that provides the motivation to work hard and in the interests of stakeholders. A summary of the papers on this topic is detailed in Table 2.2.

2.7 Tournament Theory

In an influential paper, Lazear and Rosen (1981) look at the relationship between compensation and incentives in the presence of costly monitoring of effort and output. They are the first to put forward the concept of tournament theory and suggest that it may be optimal to set executive compensation in this way. Tournament theory is a form of relative performance evaluation and differs from other incentive schemes in that the

scheme pays prizes to the winners and losers of labour market contests, where the earnings to the individual depends on the rank order of contestants as prizes are set in advance. They argue that it may be easier to observe relative position than to measure the level of each individual's output and effort directly. The incentive to perform is set by attempts to win the contest. Relating this to top administration, they argue that in the firm, the role of CEO is viewed as the prize for the winner. CEOs receive more not because they are necessarily more productive, but because the payment structure makes them more productive over their entire working life. The differential between the remuneration for the CEO and vice-CEO provides incentives for individuals to perform and acquire skills prior to coming into the position.

Table 2.2
SUMMARY OF MAJOR STUDIES OF REMUNERATION
OF PRESIDENTS/VICE-CHANCELLORS OF UNIVERSITIES

Author	Findings
1. Fisher (1988)	Presidents with social science backgrounds make up a disproportionately higher share of Presidents perceived to be effective by their colleagues.
2. Pfeffer and Ross (1988)	Institutional type affects President pay. Positive relationship between pay and length of tenure and size. Overall, a weak relationship between change in salary and management control variables.
3. Baimbridge and Simpson (1996)	Stronger relationship for personal than economic or institution factors. Vice-Chancellor remuneration is positively related to revenue, the number of academic subject categories and the average gross weekly earnings in the region. Higher remuneration for Vice-Chancellors with public honours or previous professorships. Negative relationship to average house prices. Lower remuneration the longer the period of incumbency, for those with science backgrounds or holding a Doctor of Science relative to a Bachelors degree.
4. Siegfried (1997)	Economists (social science backgrounds) are disproportionately represented in the top posts in US colleges and universities.
5. Ehrenberg et al. (2001)	Positive relationship between remuneration and length of tenure, holding of a prior presidency, higher average faculty salaries, endowments, enrolments and entry level scores. Presidents at research or doctoral universities receive higher compensation than those who are not. Presidents who are members of the clergy receive lower compensation. Overall, a weak relationship between changes in compensation and institutional performance.
6. Cornell (2002)	CEO pay is 32-36 times that of President pay. CEO compensation has grown faster than that of Presidents, despite there seeming to be little difference in the calibre of individuals in these positions.
7. Sorokina (2003)	Weak relationship between institution performance and pay. Stronger relationship between

performance and benefits not connected to pay.

Positive relationship between pay and length of tenure. More eminent Presidents are paid more and female Presidents are paid more than males.

In its simplest form, outlined in Lazear (1995), tournament theory supposes that there is one firm and two players competing for two outcomes offered by the firm; a fixed prize W_1 for the winner and W_2 for the loser. No prizes are paid until after the contest is completed. If the two players are denoted j and k and have output functions:

$$q_j = \mu_j + \varepsilon_j, \quad (2.1)$$

$$q_k = \mu_k + \varepsilon_k, \quad (2.2)$$

where μ_j and μ_k are measures of effort of j and k respectively and ε_j and ε_k random luck components making up total output q_j and q_k . The optimisation problem of player j is:

$$\text{Max}_{\mu_j} W_1 P + W_2 (1 - P) - C(\mu_j), \quad (2.3)$$

where P is the probability of winning the tournament dependent on the level of effort chosen. $C(\mu_j)$ is the monetary value associated with any given level of effort μ_j with $C', C'' > 0$. The first order condition is:

$$(W_1 - W_2) \frac{\partial P}{\partial \mu_j} - C'(\mu_j) = 0, \quad (2.4)$$

in other words, the marginal benefit, $(W_1 - W_2) \frac{\partial P}{\partial \mu_j}$, is equal to the marginal cost,

$C'(\mu_j)$. For player k , the probability that j defeats k is:

$$\begin{aligned}
P &= \text{prob}(q_j > q_k) = \text{prob}(\mu_j - \mu_k > \varepsilon_k - \varepsilon_j) \\
&= \text{prob}(\mu_j - \mu_k > \xi) = G(\mu_j - \mu_k)
\end{aligned}
\tag{2.5}$$

where G is the distribution function of the random variable $\varepsilon_k - \varepsilon_j$. Differentiating P with respect to μ_j gives $g(\mu_j - \mu_k)$. Adopting the Nash-Cournot assumptions that each player optimises against the optimum investment of his opponent, j takes μ_k as given in determining his investment. Hence, at the optimum, $\mu_j = \mu_k$, $P = G(0) = 1/2$ and the reaction function of j is:

$$(W_1 - W_2)g(0) = C'(\mu_j).\tag{2.6}$$

Ex ante, each player affects his probability of winning by investing, as the outcome is purely random in equilibrium. The level of investment depends on the spread between the winning and losing prizes. An increase in the spread $W_1 - W_2$ implies a higher equilibrium level of effort as $C'(\mu_j)$ is monotonically increasing in μ . The level of the prize only influences the decision to enter the tournament, which requires expected wealth to be non-negative.

Secondly, the lower is $g(0)$, the lower is the level of effort exerted at equilibrium, as $g(0)$ is a measure of the importance of luck. When luck is very important (that is, the distribution of $\varepsilon_k - \varepsilon_j$ has fat tails), $g(0)$ becomes very small and the amount of effort exerted for any given spread declines. Logically, if luck is the dominant factor in determining the outcome of the tournament, players will not try very hard to win. Large raises must be given in order to offset this tendency.

The problem facing the firm is to maximise expected profit:

$$\text{Max}_{w_1, w_2} \mu - \frac{W_1 + W_2}{2}, \quad (2.7)$$

where μ is the average level of effort of all workers (which drives output and hence revenue to the firm) and $\frac{W_1 + W_2}{2}$ is the expected wage that each risk-neutral contestant can expect to receive, subject to:

$$\frac{W_1 + W_2}{2} = C(\mu), \quad (2.8)$$

that is, players must be paid enough on average to induce them to enter the tournament. The maximisation problem is then:

$$\text{Max}_{w_1, w_2} \mu - C(\mu), \quad (2.9)$$

with first order conditions:

$$\begin{aligned} \frac{\partial g}{\partial W_1} &= (1 - C'(\mu)) \frac{\partial \mu}{\partial W_1} = 0 \\ \frac{\partial g}{\partial W_2} &= (1 - C'(\mu)) \frac{\partial \mu}{\partial W_2} = 0 \end{aligned} \quad (2.10)$$

The solution to (2.10) is that $C'(\mu) = 1$. The tournament scheme induces players to exert effort up to the point where the marginal cost is equal to the marginal benefit to the firm (\$1). Hence tournaments are efficient as they result in the first-best level of effort. The spread is:

$$W_1 - W_2 = \frac{1}{g(0)}, \quad (2.11)$$

which follows from equation (2.6) with $C'(\mu_j) = 1$. Equation (2.11) captures the inverse relationship between the spread and the importance of luck, so that the spread increases as the degree of luck in the game rises.

Nalebuff and Stiglitz (1983) look at the design of contests and the situations where a contest is preferred to a piecemeal wage. They find that contests are preferred where there are larger numbers of contestants and in this case, the best incentive to motivate effort is to provide a penalty to the lowest ranked contestant rather than a prize to the highest ranked contestant. The trap to avoid with penalties is the spiral effect where losers become dejected and fail to continue competing and as a result, continually lose. This will drive other contestants to shirk in the presence of a sure loser. Hence, penalties work best where all contestants are similar, such that an individual's rank is the result of ability rather than luck. Where relative ability is known, handicapping may be more effective than penalising. Contests are also preferred where there is noise in the measurement of output or where high common risk sources exist. In this situation it is more difficult to measure worker effort or output and easier to rank workers relative to each other.

Green and Stokey (1983) look at the usefulness of tournaments in the presence of common shocks. They argue that where there is no common noise in output, the tournament structure is dominated by an independent contract. However, where noise exists, as the number of individuals increases, the tournament structure dominates the independent contract, as the rank of each individual gives an accurate signal of their performance net of the common shock. Relative to an individual contract, the tournament structure reduces the randomness of remuneration by controlling for common shocks but increases the randomness of remuneration by making the prize dependent on the specific shocks of other contestants. The attractiveness of a tournament structure will depend on which effect dominates.

Rosen (1986) looks at the incentive properties of prizes in sequential elimination events where rewards are increasing in survival. This has relevance in career games

where the career path is partly a result of competition among peers to attain higher rankings and positions with higher remuneration. The reward structure will influence the nature and quality of the competition at each stage of the game. He finds that the higher up the career ladder one goes, the larger the prize differential must be to provide incentives to aspire for higher goals, independent of past achievements. Ehrenberg and Bognanno (1990) provide empirical evidence on the incentive effects of tournaments by analysing the European Professional Golf Association tour. They find a positive relationship between performance and prizes as well as the marginal return to effort. Bull et al. (1987) conduct an experimental study on tournaments. Their results are generally supportive of the theory but find that it does not explain the diversity in individual behaviour.

2.8 Insiders versus Outsiders

Chan (1996) looks at the choice of internal versus external appointment in firms via a rank order tournament contest. Human capital theory says that internal appointments tend to be made due to the accumulation of firm-specific human capital (Becker, 1975). It is also likely that it is less costly and noisy for the firm to observe the ability of internal candidates than externals (Greenwald, 1979) so the risk averse firm may choose to go with the less risky option of internal appointment. Chan argues that internal appointment occurs more frequently than external appointment due to the incentive effects on productivity predicted by tournament theory. He notes that the prize differential cannot be used as the sole incentive where internals and externals exist due to moral hazard and industrial politics (Lazear, 1989). Moral hazard results from the employer's incentive to cheat an internal contestant of victory by hiring an external who requires a lower wage, while industrial politics results from the prize encouraging aggressive behaviour and sabotage of opponents' productivity to the overall detriment of the firm. He proposes that these two factors necessitate the existence of competitive handicaps that compensate for the reduction in the prize by raising the probability of winning. A handicap to external contestants may exist to put weaker internal contestants back into the contest, inducing all internal contestants to work harder. He proposes that this situation is one often observed in universities, where junior faculty members are

rarely given tenure unless they are exceptionally talented and significantly superior to externals. Inducing effort by lowering the probability of promotion is relevant when existing workers are strong. The handicap results in a larger difference in ability between a successful external candidate and the losing internals. The implication of Chan's model is that the size of the handicap should be different depending upon where in the hierarchy the position lies. At lower levels, the number of externals is usually large and the average quality of internals relatively low, such that a large and positive handicap is required to induce effort. At top levels, the internal contestants are of higher quality and the number of externals lower, so the handicap is expected to be smaller. This means that at top levels, internal candidates are more likely to have won due to their ability rather than as a result of internal bias.

Agrawal et al. (2003) look at whether firms provide incentives to insiders by handicapping outsiders and whether this leads to firms being more likely to pick insiders as CEOs. While handicapping provides an incentive for insiders to work hard, it may result in an insider being appointed CEO where a superior outsider candidate exists. The trade-off between providing incentives and picking a better CEO is tested here. They develop a model influenced by Parrino (1997)⁸ under the hypotheses that where insiders are more comparable to one another, outsiders are handicapped more and there is greater likelihood of insider succession; where outsiders and insiders are more comparable, outsiders are handicapped less and there is reduced likelihood of insider succession and that as the number of insiders competing increases, the likelihood of insider succession increases. They make no prediction on the effect of increasing the number of outsiders due to the conflicting effects of higher handicapping due to weaker insider incentives from reduced probability of insider succession and the higher probability of insider succession where there are more outsiders.

They find that the results support their predictions. Additionally, poor

⁸ Parrino (1997) examines CEO turnover and finds that outsiders are more likely to be appointed where they are more likely to be better qualified than insiders, as indicated by firm performance. Outsider succession is also more likely when industries are more homogenous as the human capital costs of outsider succession are lower. Industry homogeneity also increases the rate of turnover, as it is easier to identify poor CEOs.

performance increases the likelihood of outsider appointment, as does the situation where the old CEO is forced out. Their results also support the protection of minority shareholders hypothesis of Burkart et al. (2003). Firms with a greater proportion of outside directors are more likely to select outsiders while large firms are less likely to select outsiders. Overall they conclude that the pattern of CEO selection provides evidence on the existence of outsider handicapping.

More recently, Murphy and Zabojnik (2004) propose a theory to explain the trend toward external appointment based on the increasing importance of transferable managerial skills relative to the decreasing importance of firm-specific knowledge. When hiring externally, the firm forgoes the firm-specific skills of an internal candidate but is able to hire from a larger group of potential candidates, allowing for better matching between firms and managers.

In a one period economy, firms produce output by combining the expertise level a of the CEO with the firm's level of capital k such that the profit of a firm of size k is given by equation (2.12):

$$\pi(k, a, s) = f(k)sa - rk - w^M(a), \quad (2.12)$$

where $f(k)$ is an increasing and concave function of k ; r is the cost of capital; $w^M(a)$ is the market wage for a CEO of ability a and $s = 1$ if the CEO possesses firm-specific knowledge (that is, the CEO is an internal hire) and $s = \gamma \in (0,1)$ if the CEO is an external. The term γ is a measure of the importance of general managerial skill versus firm-specific human capital and captures the firm-specific human capital lost when a firm hires externally.

All firms can observe the ability a of all workers in the economy. At the beginning of the period, firms decide whether to appoint an internal or external candidate as CEO. All firms make simultaneous job offers and wage bids to all workers, after

which each worker decides which job to accept. For a firm of size k looking to appoint a new CEO, the profit from appointing an internal candidate of ability \hat{a} is shown in equation (2.13):

$$\pi(k, \hat{a}, 1) = f(k)\hat{a} - rk - w^M(\hat{a}), \quad (2.13)$$

while if the firm hires an external candidate it will choose one with ability a^* , where a^* solves

$$a^* \equiv \arg \max_a [f(k)\gamma a - rk - w^M(a)],$$

such that the profit to the firm from an external hire is shown in equation (2.14):

$$\pi(k, a^*, \gamma) = f(k)\gamma a^* - rk - w^M(a^*). \quad (2.14)$$

If the firm hires internally, it preserves firm-specific human capital of $(1 - \gamma)\hat{a}$ but risks not getting the best CEO for the job. If $\pi(k, \hat{a}, 1) \geq \pi(k, a^*, \gamma)$ then the firm will choose the internal candidate, while if $\pi(k, \hat{a}, 1) < \pi(k, a^*, \gamma)$ then the firm will hire externally. As firms can enter the market freely, if a CEO of ability a is hired externally, he will be hired by a firm of size $k^*(a)$ such that the firm is the best outside match for his ability level:

$$k^*(a) \equiv \arg \max_k [f(k)\gamma a - rk].$$

Competition among firms for managers ensures that the equilibrium wage is equal to:

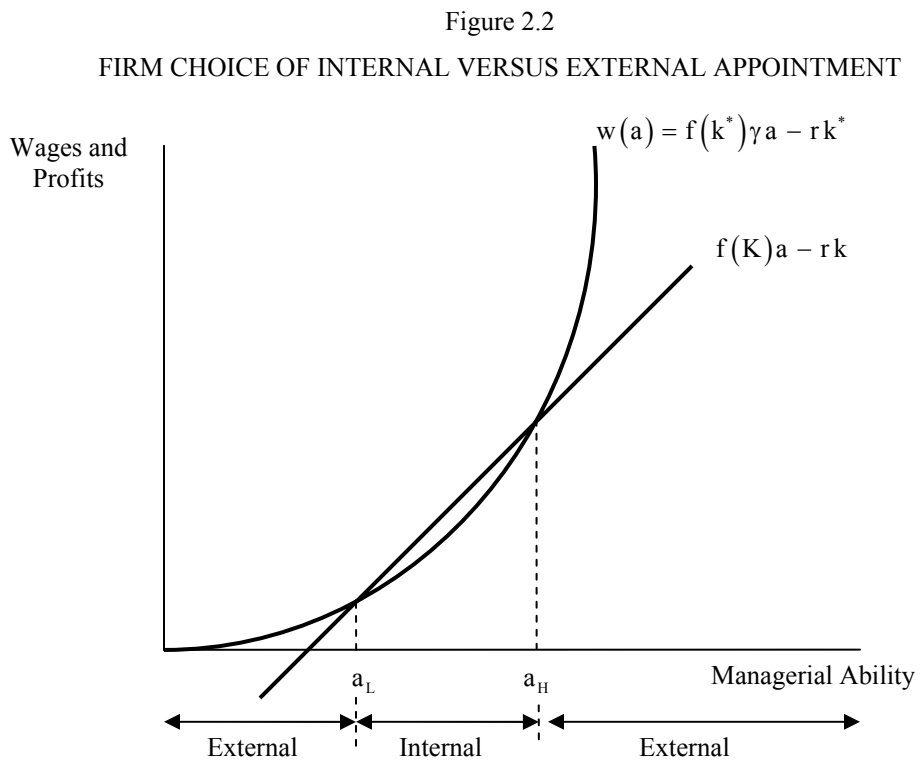
$$w^M(a, \gamma) = f(k^*(a))\gamma a - rk^*(a), \quad (2.15)$$

such that higher ability managers are optimally assigned to larger firms.

Hence, regarding the internal versus external appointment decision for the firm, the firm will choose the internal candidate with ability \hat{a} only if:

$$f(k)\hat{a} - rk \geq w^M(\hat{a}). \quad (2.16)$$

This is shown graphically in Figure 2.2.



Source: Murphy and Zbojnik (2004).

From Figure 2.2, there are two critical levels of ability, $a_L(k)$ and $a_H(k)$ (where $0 \leq a_L(k) \leq a_H(k)$), where the firm will choose an internal appointment only when

$a_L(k) \leq \hat{a} \leq a_H(k)$; that is, the firm will choose an internal appointment where the candidate is a good fit for the firm. If the individual's ability is too low ($\hat{a} < a_L$) or too high ($\hat{a} > a_H$), the firm will choose an external candidate. Where the internal's ability is too low, the individual is cheap but not sufficiently qualified to manage a firm of size k ; in the case of high ability, the internal candidate's option to move to another firm is so good that the firm cannot afford to pay his wage.

If general transferable managerial skills become more productive (that is, γ increases from γ_L to γ_H where $\gamma_L < \gamma_H$), then there is an increase in the market wage of the average CEO as the wage curve shifts leftward from $w^M(\gamma_L, a) = f(k^*)\gamma_L a - rk^*$ to $w^M(\gamma_H, a) = f(k^*)\gamma_H a - rk^*$. The productivity of the internal candidate (given by the curve $f(K)a - rk$) is not affected by an increase in γ . Combined, this means that the firm is less likely to hire an internal candidate (or, equivalently, a_L increases and a_H decreases). Murphy and Zabojnik argue that the increasing importance of general transferable managerial skills relative to firm-specific human capital explains the move toward external appointment of CEOs.

2.9 Executive Turnover

Related to executive appointment is the issue of turnover. Coughlan and Schmidt (1985) and Warner et al. (1988) were among the first to look at the relationship between turnover and performance. They find evidence supporting the existence of performance related executive turnover. Murphy and Zimmerman (1993) look at the behaviour of financial variables surrounding CEO turnover to estimate the extent to which changes in potentially discretionary variables are explained by poor economic performance rather than managerial discretion. They look at three classes of discretionary behaviour, the first being the managerial horizon problem, where CEOs who anticipate their departure increase earnings (and hence earnings based compensation) in their final years at the expense of future earnings (Dechow and Sloan, 1991). The second class is the "cover up", where CEOs in poorly performing firms cover up the deteriorating performance of

the firm to lower the probability of termination. Management will make suboptimal decisions for the firm based on personal considerations (Marris, 1963; Williamson, 1964; Demsetz, 1983; Jensen, 1986; Shleifer and Vishny, 1989; Kanodia et al., 1989; Boot, 1992). The last class is the “big bath” theory, where incoming CEOs boost future earnings at the expense of current earnings by taking large write offs (Healy, 1985; Strong and Meyer, 1987; Elliott and Shaw, 1988; Weisbach, 1995; Moore, 1973; Pourciau, 1993).

Murphy and Zimmerman find that the likelihood of CEO turnover is higher when returns and earnings changes are lower. There is also a positive relationship with age and when the CEO is 64 or 65 (retirement age). However, they find that changes in discretionary expenditures and accounting accruals surrounding CEO turnover are more likely due to poor performance than managerial discretion. Outgoing or incoming CEOs exercise discretion over these variables only in firms where poor performance precedes CEO turnover. However, the effect is asymmetric, as they find no evidence of managerial discretion in strongly performing firms where CEO turnover is a normal part of the succession process. They do, however, find some evidence of the big bath theory: after controlling for performance, accruals are lower in the year in which CEO turnover occurs.

Murphy (1999) finds that the probability of CEO departure is higher following bad performance than good, even though the economic significance of the turnover-performance relation is fairly small. This is consistent with Jensen and Murphy (1990). He also finds that the prevalence of CEO turnover at retirement age has decreased over time and varies with performance. CEOs in poorly performing companies tend to be turned over at younger ages, which he suggests may capture those executives who were implicitly (though seldom publicly) fired for poor performance. He also finds that the turnover-performance relationship is stronger in smaller firms than larger firms, where turnover is primarily driven by age rather than performance.

Mikkelson and Partch (1997) find that the relationship between performance and

turnover has declined.⁹ In contrast to this and a study conducted by Hadlock and Lumer (1997), Huson et al. (2001) find that the frequency of forced CEO turnover and outsider succession has actually increased over time, although despite changes in internal corporate governance mechanisms, the relationship between turnover and performance has not changed significantly.¹⁰ Weisbach (1988) finds that the relationship between turnover and performance is strongest in companies where independent, outside directors dominate.

Related to the literature on turnover, performance and tournament theory (discussed previously), Parrino (1997) finds that poorly performing companies are more likely to replace CEOs with external rather than internal appointments. Murphy (1999) also finds that the prevalence of outsider appointments has increased over time, even though the turnover-performance relation has weakened over time.

2.10 Summary

The literature related to this research is diverse and large, although the dominant focus has been on CEOs and firms, with very little applied to Vice-Chancellors and universities. In part, this reflects the overall complexity of understanding how these roles and institutions function, as well as the fact that the issues addressed in this dissertation have not yet been adequately researched for universities.

⁹ They suggest that this is associated with a less active takeover market.

¹⁰ They refute the hypothesis that a more active takeover market is associated with better internal control mechanisms.