

A Critical Examination of New Zealand  
Tertiary Education Policy Development since 2000  
and its Relationship to Graduate Outcomes

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## **Abstract**

Since 1999, the New Zealand government has actively encouraged tertiary enrolments to its citizens in order to create a knowledge-driven society that is economically prosperous. The political rhetoric states that by participating in tertiary education, better employment opportunities will be accessible to the participants. As a result, the expectations for tertiary education shifted over time as gaining qualifications are increasingly associated with economic success.

Using an interpretative approach, this study of higher education policy examined the development of contemporary policy in tertiary education, and the expectations of graduate outcomes that were evident in these policies. This study drew upon key concepts from the existing literature, and aimed to provide a comparison between actual graduate outcomes from different disciplines using data extracted from official statistics.

This study found that around half of New Zealand bachelor-level graduates failed to obtain employment within one year of graduation, therefore questioning the implied linearity from education to employment. This study also found that graduates had varying outcomes based on their fields of study, ranging from education graduates having the highest employment rate to science graduates having the lowest. This study also showed that gaining employment shortly after graduation did not guarantee a sustainable increase in earnings for these graduates. In addition, the failure to achieve employment was noted to have detrimental effects on the individual and the economy. Therefore this study ultimately questions the endless pursuit for further tertiary enrolments by the New Zealand government.

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## **List of Abbreviations**

AUT	Auckland University of Technology
BGA	Business Growth Agenda
EFTS	Equivalent full-time students
GDP	Gross Domestic Product
GIF	Growth and Innovation Framework
ICT	Information communication technology
IDI	Integrated Data Infrastructure
KIS	Knowledge intensive services
MBIE	Ministry of Business, Innovation and Employment
NEET	Not in employment, education or training
NZQF	New Zealand Qualification Framework
OECD	The Organization for Economic Co-operation and Development
PhD	Doctor of Philosophy
R&D	Research and Development
STE	Science, technology, and engineering
STEM	Science, technology, engineering, and mathematics
TEC	Tertiary Education Commission
UK	United Kingdom

## **Attestation of authorship**

“I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.”

Signed by:

Andrew Hartley Yee

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## **INTRODUCTION**

There are many reasons to conduct research on particular social phenomena. It can be inspired by curiosity and ultimately leads to better understandings of the particular phenomenon. We, as social researchers, are often driven by these inspirations and our social obligations, to analyse and explain a specific phenomenon through our selected methodology. This research is focused on the links between graduate employment and government policies. From a previous literature review on youth unemployment and NEET (not in employment, education or training) youth, the researcher found that further training and education are often perceived to be the best protection against the risk of unemployment. However, education policies often fail to address the structural problems of the labour market, and under certain ideologies they place the responsibility on the individual. Because of these findings, the researcher is concerned about the impact of education policies on the labour market, and whether international evidence of ‘over-education’ among the unemployed may be by-products of these policies. The researcher is also interested in how these policies were first introduced into New Zealand’s political climate, and how the notion of the knowledge economy led to the proliferation of tertiary credentials amongst the country’s population today.

Since the adoption of the notion of a ‘knowledge society’ in the New Zealand policy framework, there has been the suggestion of an implied social contract between the state and its citizens. The state plays an active role in facilitating changes to create a knowledge driven economy, one that ultimately brings prosperity to the society. In order to maintain a knowledge driven economy, an educated and skilled workforce is required. The population becomes more adaptive to the economy through widely accessible tertiary education and specialized research. While this implied agreement has generated a more skilled workforce, there are considerable side effects from this policy direction, ranging from skills mismatch, graduate underemployment, and even unemployment for some graduates.

### **1.1 Related research**

This research originally aimed to address graduate unemployment in New Zealand because of the focus on skills mismatch and graduate unemployment in international literature. This led the researcher to be interested in examining whether this phenomenon is apparent in New Zealand. Early investigation showed, however, a

shortage of literature and data collected on graduate unemployment. Existing research in this space has focused on different aspects of graduate experience.

An article by Coulon noted the drastic increase in education participation in recent decades across industrial nations, and argued that it had resulted in a population of over-educated graduates who were unable to secure employment at their expected credential levels, hence creating a perception of graduate underemployment, where graduates identified gaps between their qualifications and the work they performed. (Coulon, 2002). Using an overview of existing literature and research, Coulon debated whether increased participation in tertiary education in New Zealand also increased the likelihood of underemployment among the country's graduates. The article provided an essential overview on existing theories and literature in the topic prior to 2002.

Similarly, later research by Cockroft described an explicit relationship between graduate underemployment and their job attitudes. Cockroft noted the recent increase of highly educated workers in the work force, and using a series of self-reported questionnaires, she investigated how the attitudes of these graduates influenced their perception of underemployment (Cockroft, 2011). Cockroft found that graduates who considered themselves to be underemployed also reported low levels of job satisfaction, lower life satisfaction, lower affective commitment, increased intentions to quit, and increased job searching behaviour (Cockroft, 2011). These findings provided insights into the negative effects of underemployment and informed organizations how to manage levels of underemployment and job attitudes.

In relation to the issues examined by Coulon and Cockroft, research by Kaliyati focused on graduate migration. Kaliyati reviewed economic and non-economic factors that influenced an individual's decisions to stay in or leave New Zealand (Kaliyati, 2009). By using surveys collected from undergraduates and postgraduate students who represent New Zealand's future workforce, Kaliyati found that one in eight New Zealand students intended to leave New Zealand after graduation, based on both economic and non-economic factors such as perceptions of New Zealand's business climate, lifestyle choices, and career development (Kaliyati, 2009). The research by Kaliyati aimed to inform future policy makers when addressing the issue of graduate migration.

While these related pieces of research provided valuable insights in terms of graduate underemployment and graduate expectations, most of the research used series of self-reported surveys as their data collection, which made it difficult to generalize their

findings to the wider New Zealand population. In addition, these related pieces of research fail to provide any longitudinal view on the phenomenon of graduate underemployment.

In examining graduate outcomes in general terms, there are numerous graduate surveys conducted by universities. Most New Zealand universities conduct their own graduate survey annually to evaluate the effectiveness of their programmes, plan their future courses and predict labour outcomes. For example, Auckland University of Technology (AUT) conducts their graduates survey to ‘provide insights into graduates’ initial destinations’ after graduation, and their experience of transitioning into the labour market (Auckland University of Technology, 2014). Some of this research by universities is publicly displayed in general terms, but the details are not publicly available. While these results could be beneficial to investigate the phenomenon of graduate unemployment by providing information on graduates’ initial experience in the labour market, universities often use a range of different metrics in their surveys, so their findings are not comparable. These surveys do not include the total graduate population in New Zealand, also making it difficult to generalize their findings.

It is important to acknowledge the ongoing longitudinal study by the National Centre for Lifecourse Research that was started in 2011. The Tertiary Education Commission (TEC) is currently partially funding a Graduate Longitudinal Study to identify ‘the factors that make New Zealand graduates successful’ (National Centre for Lifecourse Research, 2014). By investigating how tertiary education affects New Zealanders, this study should be highly beneficial in future as it becomes more complete. It should provide greater evidence on whether, and to what extent, graduate unemployment affects New Zealand. The longitudinal study was only started in 2011, however, and their data is not yet considered conclusive. While these pieces of research provide valuable knowledge in the wider discourse of graduate employment and graduate outcomes, most of them do not consider graduate outcomes in the policy context.

## **1.2 Focus and approach of the research**

Given the limited amount of previous research and data in the area of graduate unemployment, it was decided that this research would focus more on analysing the policy context of tertiary education and the expectations of employment outcomes for New Zealand tertiary graduates. The aim has been to provide insights into how and why current tertiary education policies were developed, what the impacts have been, and the

extent of government responses to graduate outcomes. To achieve this, the research was informed by three main questions:

- 1) How has New Zealand's current policy on tertiary education developed?
- 2) What expectations of graduate outcomes have been evident in these from tertiary education policies?
- 3) What are the actual outcomes and what are the governmental responses to them?

This research employed a three-part approach to answer these questions. Using an interpretive approach, these involved a review of relevant literature, interpreting related government agency reports and Ministerial policies, and statistical analysis of associated official data. The literature review and documentary interpretation complemented each other in creating an overview of graduate employment and affiliated New Zealand policies. The official data was then used to investigate whether tertiary education outcomes have met policy expectations, and to consider how policies were influenced by the existing data. This approach provided both qualitative and quantitative evidence for analysing and evaluating existing New Zealand tertiary education policies, and allowed triangulation of findings from different sections. An interpretative approach was chosen because 'interpretation brings meaning and coherence to the themes, patterns, and categories, developing linkages and a story line that make sense' (Marshall & Rossman, 2011, p. 219). This approach was therefore the most appropriate method for answering all three of the main research questions. The three parts of this analysis are outlined in more detail below.

The first part of the analysis involved a review of relevant literature. This research examined various literature on graduate labour market, the conception of knowledge, and the changing roles of universities. These areas were examined because they provide insights into different discussions around graduate employability, and generated a historical context to highlight how the concept of the knowledge economy influenced international policy directions since the 1990s. In addition, these areas of literature provided a framework for the rest of the research, and contributed to understanding how the current tertiary education policies are developed in New Zealand. The literature review highlighted that since the late 1990s, there has been a strong focus on constructing a knowledge-based economy in New Zealand, which has followed international policy approaches. The notion of competing globally through tertiary education has been seen as a method to achieve this goal.

The second part was an interpretive analysis of different Ministry reports and policy statements. This part of the research comprised of analysing a range of policy statements by New Zealand government ministers and Ministry reports. Statements by specific Ministers were analysed based on their portfolios. The Ministerial statements with portfolios related to tertiary education, economic development, research and technology, and finance were examined to address the second key question of this research. Similarly, reports from the Department of Labour, Ministry of Education and the Ministry of Business, Employment and Innovation were interpreted and analysed because of their relevance to the second and third research questions. Due to the scarcity of policies on the issue of graduate employment or unemployment by the government ministers, interpreting more general statements on tertiary education and the expected outcomes for New Zealand's economic development was necessary. This part of the research illustrated the political discussions around tertiary education in New Zealand under the influence of a commitment to a knowledge economy.

The third part of this analysis involved a critical examination of statistical data on tertiary enrolment and the data on graduate employment outcomes. Two specific data sets were referred to, which are the tertiary enrolment data and the graduate outcomes data on destinations and earnings. The first data set was used to observe the change in enrolment numbers, which may suggest a changing perception and expectations of tertiary education. The second data set was used to determine the actual outcomes of tertiary graduates and allowed comparative analysis of graduates from different disciplines and qualifications levels. These data sets are both produced by New Zealand government. The Ministry of Education extracted these data from the Integrated Data Infrastructure (IDI) managed by Statistics New Zealand. Statistics New Zealand linked together each individual's tertiary education enrolment and completion data with data from Inland Revenue, Ministry of Social Development, and Immigration New Zealand (Mahoney, Park, & Smith, 2013).

These data sets provided the best overview of the entire New Zealand graduate population because they offer a longitudinal view of graduates in terms of their enrolment numbers and destinations. In addition, there are three main features of this data that made it useful for this research. First, the data can be separated by different subjects, so employment outcomes can be viewed by disciplines. Secondly, the data separates the sample between levels of tertiary qualification, so employment data can be accessed by different qualification levels. Finally, the data sets also provide a

longitudinal view of graduates outcomes and employment earnings, thus can be used to consider how policies may have impacted across the different academic disciplines and levels of qualifications over the last decade. As a result, this research could ultimately provide evidence on how specific policy directions affect different graduates, hence providing a much more extensive analysis on the governments' positions on the issue.

### **1.3 Scope and contribution of research**

It is important to acknowledge that there are limitations in what this research can achieve. The research by Kaliyati showed that there are multiple economic and non-economic factors that influence individual choices upon graduation, and while policy directions plays a major role in shaping societal discourse on tertiary education, it does not alone influence education outcomes. This research focused only on considering the links between political context and tertiary education enrolments and outcomes. It is acknowledged that it cannot provide a conclusive explanation of what causes specific education outcomes, due to potential contributing factors such as population growth. It can, however, provide a basis for understanding the links between policy development and outcomes, which can inform future policy decisions. This research is intended to serve as a foundation for future studies on the issue of graduate outcomes and contribute to the wider conversation on New Zealand graduates by highlighting the role of our government institutions.

### **1.4 Structure of the dissertation**

The following dissertation is divided into three sections; the literature review, an overview of the New Zealand context, and statistical analysis of graduate outcomes. The next chapter comprises the literature review that addressed and examined several key concepts in relation to the research question. Firstly, literature around the role of knowledge and universities were reviewed to establish the importance of tertiary education in society, and then literature around the changing roles of tertiary education was addressed to illustrate how the changing expectations of graduates influenced the literature around graduate employability.

Building on the literature review, the overview of the New Zealand context in chapter three aims to address how tertiary education was closer aligned to national development under the notion of knowledge economy. Through the interpretation of specific Ministerial statements and government reports by the Labour-led government and the

National-led government, related aspects such as the role of innovation on New Zealand economy and different expectations of tertiary education would be addressed.

The second part of chapter three presents the statistical analysis, which assessed the tertiary enrolment numbers since the political emphasis on tertiary education in the late 1990s. The actual outcomes of graduates from different disciplines were also explored to determine whether specific fields of study provide better outcomes for its graduates. The findings will be acknowledged and evaluated in the discussion and conclusion, in the final chapter.

# **LITERATURE REVIEW**

## **2.1 Introduction**

The following chapter presents the review of literature, and aims to highlight how current policy on tertiary education developed internationally, and how the general expectations of tertiary education and graduates developed from these policies.

Literature featuring the main concepts, such as the knowledge society and the roles of universities were reviewed, and various studies relating to these were examined, including consideration of the methods used in different pieces of research. It was found that research focused in these areas was wide-ranging, from semi-structured interviews to specific case studies in different countries. This review was necessary to provide a foundation of understanding the international trends in tertiary education policies prior to developing an interpretation of the New Zealand context.

## **2.2 Conceptualising the knowledge society**

The drive for an innovative economy has been a prominent focus in economic development policies over time, but understandings have differed about how innovation might be achieved. During the 1990s, the term ‘knowledge economy’ was developed as a means to achieving economic development. Political actors embraced this concept and argued that a knowledge economy would serve as a foundation of prosperity for nation states, and should be embraced as a template for education and economic policies (Brinkley, 2006; Brooks & Everett, 2009; Liagouras, Protogerou, & Caloghirou, 2003; Smith, 2002; Tomlinson, 2008). Since the 1990s, the concept ‘knowledge economy’ has become deeply integrated within education policies and discourse (Brinkley, 2006; Smith, 2002).

While it has been embraced widely, the underlying challenge with the knowledge economy concept has been its abstract nature. Since the term first appeared in OECD reports, different theorists have attempted to provide a precise definition for the term (Brinkley, 2006; Peters, 2004; Smith, 2002). The difficulty in defining the term was best illustrated in a statement by Brine, who stated that the ‘knowledge economy is a concept that lacked standard philosophical and analytical distinction’ because different disciplines had contributed to the concept (Brine, 2006, p. 649). Because the concept has been so loosely defined, the construction of a knowledge economy has depended on the interpretations of the term by policymakers. Nevertheless, a common approach has been in the emphasis on up-skilling the population through tertiary sector reforms. The

reasoning is that by obtaining a skilled and educated work force, the economy will maintain its competitiveness (Peters, 2004; Tomlinson, 2008). The interpretation of this into policy frameworks has, however, been varied across different countries and political contexts.

Crothers and Harvey attempted to answer some of the questions of how the knowledge economy emphasis affected policies in their paper on the knowledge society developed in 2003. They examined how the indicators around the concept of knowledge society were constructed in New Zealand, and aimed to use these indicators to describe the concept (Crothers & Harvey, 2003). Using the existing literature, governmental papers and international comparative data, Crothers and Harvey determined that the knowledge society was not well defined in New Zealand policies. The term was often used to advocate the development of a knowledge economy, and 'its failure to define and differentiate the two terms added the possibility for future semantic slippage' (Crothers & Harvey, 2003, p. 126).

The most prominent critique of the knowledge economy has been in the understanding of knowledge itself. Amongst the various forms of literature focused in this area, researchers have stated there are different types of knowledge (Brinkley, 2006; Muller, 2012; Olssen & Peters, 2005; Peters, 2004). In modern 'globalised' economies embracing the notion of a knowledge economy, specific types of knowledge have tended to be preferred over others, with these preferences consequently affect expectations of tertiary education and outcomes.

### **2.3 Understandings of knowledge**

The notion of knowledge has been traced historically by Muller (2012). He attempted to understand how knowledge has been perceived differently over time and through varying contexts. Knowledge, from Muller's perspective, has always been categorised into distinct disciplines and associated with institutions, such as religious structures or universities (Muller, 2012). Certain disciplines of knowledge have tended to be preferred over others. Muller highlighted how historically humanities were deemed more prestigious than other types of knowledge, but that over time its status diminished because of the change in societal structures and preferences (Muller, 2012).

In the contemporary context, Muller argued that there is now a distinction between 'hard' and 'soft' knowledge, associated with different disciplines. Hard disciplines, such as science, often follow a universal paradigm, where new knowledge can be applied

universally across these disciplines. This universality is considered to have allowed easy application and transfer of knowledge to other similar disciplines. By comparison, he argued that humanities subjects have now come to be identified as ‘soft’ disciplines which are individualized and often subject to differing interpretations, making new knowledge in these disciplines difficult to be applied universally (Muller, 2012).

Andrews and Higson also distinguished hard knowledge and soft skills in their research into business graduate employability. In their study, hard knowledge was defined as business related knowledge and skills, while soft skills often includes interpersonal competencies, such as time-management and communication skills (Andrews & Higson, 2008). Through a series of semi-structured interviews with employers and employees, they aimed to identify whether graduates possessed the necessary skills required for employment. Despite the different definitions of ‘hard’ and ‘soft’ in the two studies, graduates claimed that the distinction between soft skills and hard knowledge influenced their choices of degrees, and employers have noted this same distinction when hiring graduates. In addition, graduates perceived that acquiring hard knowledge through a business degree would increase their employability (Andrews & Higson, 2008).

Muller’s study demonstrated the categorization of different knowledge, which related to that of Andrews and Higson, who also explained why different forms of knowledge receive different status and recognition in society (Andrews & Higson, 2008; Muller, 2012). The different status for certain disciplines could explain the increased enrolments for these preferred training programmes, along with the expectations among graduates. In addition, these researchers also highlighted the underlying issues with the knowledge economy; with knowledge being difficult to define, how have policymakers determined which disciplines were beneficial to the economy? And how would their interpretation affect the entire tertiary education system and their expectations? These issues were further addressed in the literature and will also be examined in the next chapter on the New Zealand policy context. In his discussion paper on the knowledge economy, Smith brought forth an interesting question. He stated that utilization of knowledge has always been crucial in economic development, so how did the emergence of the ‘knowledge economy’ change the expectations of knowledge among developed nations (Smith, 2002)?

## 2.4 Roles of universities

Many researchers noted the recent focus on knowledge economy coincided with globalization (Crothers & Harvey, 2003; Liagouras et al., 2003; Peters, 2004; Smith, 2002; Teichler & Kehm, 1995).

From their research, Crothers and Harvey (2003) concluded that a knowledge society was conceptually linked to technological change and globalization, and that tertiary education had been developed into a means to produce knowledge-able workers for the economy (Crothers & Harvey, 2003). These findings suggested an implied relationship between the knowledge economy and the roles of tertiary education, and linked with Muller's conclusions that knowledge had always been associated with institutions (Muller, 2012). Amongst the literature, other researchers noted that the roles of knowledge and universities had changed in a knowledge economy. They argued that in a knowledge economy, education was prioritized for economic development, and government tended to actively promote education as a method to access better quality of life (Brinkley, 2006; Smith, 2002). As part of an implicit agreement, citizens should invest in education provided by the state and equip themselves with new skills and knowledge, and in return they would have a lower risk of unemployment (Brine, 2006). Peters (2004) analysed the historical context of the knowledge economy and concluded that the emergence of the knowledge economy coincided with the Washington Consensus after the end of the Cold War. The Washington Consensus was originally a policy to restructure public expenditure through tax reforms and promote property rights in developing nations, however the Consensus was gradually integrated with the neo-liberal reforms to encourage monetarism and supply-side economics. By 1990s, the renewed focus on graduate skills allowed criticism of the existing educational models and encouraged education reforms (Peters, 2004). Educational institutions became corporatized through these reforms, and universities became more research and skills driven to seek increased funding from different governments and other sponsoring institutions.

As an attempt to enhance efficiency, governments implemented market mechanisms to encourage further competitions between universities (Marginson, 2006; Newman, Couturier, & Scurry, 2004; Peters, 2004; Slaughter & Rhoades, 2004). As a result, universities competed against each other for funding (Olssen & Peters, 2005; Peters, 2004; Teichler & Kehm, 1995). Researchers noted that the focus on efficiency and expansion of higher education became prominent issues in contemporary education

policies (Marginson, 2006; Newman et al., 2004; Slaughter & Rhoades, 2004; Stanley, 2012).

The expansion of higher education under the knowledge economy has been noted by a number of researchers. These researchers argued that higher education was once seen as a public service, and universities served as fora with multiple purposes, including preparation for labour participation, opportunities to increase social mobility, platforms for intellectual debates over social issues, and encouraging the discourses of different disciplines (Marginson, 2006; Newman et al., 2004; Stanley, 2012; Young, 2012).

Higher education was given a prestigious status in societies because of these functions, and it was deemed integral for collecting knowledge. In addition, universities played a direct role in implementing government policies (Marginson, 2006; Peters, 2004). Apart from the vital role they play in modern societies, universities were also driven by the competitive nature of the globalized world, and creating a sense of self-interest for these institutions. Therefore there was a balancing act between demand for further recognition for these institutions and the aforementioned social roles (Marginson, 2006; Stanley, 2012).

By combining universities with business models of management for efficiency, higher education systems have tended to be restructured to operate more like a corporation led by business-like goals, visions, and operational mechanisms. Some theorists such as Young argued that the corporatization of universities affected their roles, that universities no longer serve as the moral conscience of society, and research was no longer conducted for the interest of the society (Young, 2012). Young referred to the traditional role as the 'voice of knowledge'. Under the business model of management, he argued that universities are increasingly losing their voice of knowledge because of competition between institutions (Young, 2012).

Under the education reforms pursued by developed nations, theorists also argued that qualifications now serve as a mechanism to categorize the population, and this was enabled by the convergence of higher education (Slaughter & Rhoades, 2004; Tomlinson, 2008; Young, 2012). In his article to discuss the voice of knowledge in higher education system, Young (2012) stated that universities are becoming more similar, and the convergence of higher education systems allowed a more linear hierarchy between institutions. He argued that with the corporatization of higher education, the distinction between production of knowledge and acquisition of knowledge becomes blurred, and the rationale for conducting research became less

distinctive, hence universities losing the aforementioned voice of knowledge. This notion stated that universities no longer serve the role of respected moral actors in societies, but instead they become merchants of knowledge through business transaction, and students and graduates become consumers in the modern educational paradigm (Young, 2012).

The same neoliberal approaches that affected how universities worked also impacted student populations. The mobility of human capital has been seen to increase through globalization, and has encouraged the practice of students studying abroad (Stanley, 2012). As the result of both convergence of tertiary education system and mobility of international students, higher education has been argued as having become commodified goods, and different tertiary institutions aimed to attract students from different countries as a source of revenue (Marginson, 2006; Stanley, 2012). In contemporary higher education, institutions measure success with graduate numbers, the quantity of research conducted, number of awards received and international rankings (Marginson, 2006; Newman et al., 2004; Olssen & Peters, 2005; Stanley, 2012). This merit system continued to legitimize competition between universities and encourage competition among their students and faculties. Much like Young, theorists like Newman et al. (2004) argued that universities now have two competing functions: to secure further funding through enrolment and research, or using research to pursue truth and knowledge.

Under the new paradigm in tertiary education, knowledge became a form of capital (Muller, 2012; Smith, 2002). Some theorist have used the terms ‘knowledge capitalism’ or ‘academic capitalism’ to describe this modern system of higher education (Peters, 2004; Slaughter & Rhoades, 2004), where education has been commodified and ‘reconfigured as a massively undervalued form of knowledge capital that would define the direction of world economy’ (Peters, 2004, p. 36). The changing roles of universities also have a direct impact on graduate outcomes and expectations, as noted by a number of researchers. These will be addressed in the next section.

## **2.5 Graduate outcomes and expectations**

Contemporary higher education policies have been built around the assumptions of a clear and linear relationship between tertiary education and employment (Olssen & Peters, 2005; Stanley, 2012; Tomlinson, 2008). After analysing a series of White Papers by the Commission of European Communities, Brine stated that ‘economic competitiveness and social cohesion would be achieved by increasing and creating jobs,

and by raising levels of education' (Brine, 2006, p. 651), therefore arguing that those who lack education are at a higher risk of social exclusion, and suggesting an implied social contract between the citizens and the state, that suggests participation in higher education would ensure opportunities to participate socially (Brine, 2006). Researchers have debated, however, the reality of such assumptions. Under knowledge capitalism, students became consumers of knowledge, and the success of tertiary institutions has come to be measured by numbers of graduates and international rankings.

Consequently, the acquisition of specific knowledge has become less important (Slaughter & Rhoades, 2004; Stanley, 2012; Young, 2012). This new narrative has been highlighted by a number of writers across the world as affecting the expectations of graduate outcomes. Some specific studies in this regard are described below.

Brine (2006) used a textual analysis of European Commission documents from 1993 to 2006 to identify the political discourse around the knowledge economy. She found a consistent narrative in distinguishing two types of learners in a knowledge economy; the high knowledge-skilled learners (graduates) and the low knowledge-skilled learners (non-graduate) (Brine, 2006). Within the source documents, Brine discovered the lack of tertiary qualification was increasingly described as a risk in a knowledge economy. This discovery by Brine demonstrated how perceptions and expectations for tertiary education had changed over time, and these were reflected in the increased tertiary education enrolment.

In the United Kingdom (UK), Brooks and Everett (2009) aimed to summarize the experience of UK graduates upon completion of their degrees. From their interviews with ninety graduates, they found that qualifications had become less valued by participants because they only considered a degree to be a basic minimum for the labour market. At the same time, however, these participants continued to perceive tertiary education as a method to secure employment advantage over the general population (Brooks & Everett, 2009); an attitude which explained the continued demand for tertiary education.

Some scholars have argued that if demand for skilled workers has increased, then graduates should be employed without difficulties, otherwise this would indicate a market failure (Pauw, Oosthuizen, & Van der Westhuizen, 2008). In their analysis of the South African labour market, Pauw et al. found that unemployment among tertiary graduates had grown at a faster pace than other cohorts in their analysis (Pauw et al., 2008). By using a series of labour and household surveys, a literature review and results

from the Development Policy Research Unit, they aimed to investigate the cause of this phenomenon. Similar to the findings by Brooks and Everett, they found that tertiary education was considered by students as a method to secure better employment opportunities, but that graduates were often ill-prepared for the labour market, often lacking soft skills and work experience (Pauw et al., 2008). Three possible reasons were suggested for this. Firstly, tertiary enrolments in South Africa had increased significantly in the decade during 1995-2005, resulting in large amounts of graduates entering the labour market. Secondly, the majority of graduates only received a diploma or certificate from tertiary institutions, and the unemployment rate for these graduates increased substantially while the unemployment rate for degree holders tended to remain the same. The chosen fields of study by these graduates often did not reflect demand in the labour market. Lastly, Pauw et al. (2008) identified a strong preference amongst business leaders for hiring certain ethnicities over others. All these factors contributed to increase unemployment among graduates, and led Pauw et al. to question the efficiency of the South African tertiary education system. They referred to the constant policy emphasis on higher education for employment as a paradox.

## **2.6 The tertiary education-employment paradox**

The paradox identified by Pauw et al. had been noted by Coulon in her 2002 study in New Zealand. The paradoxical nature of policy in relentlessly emphasizing higher education in order to improve economic competitiveness was identified as problematic, especially when there were graduates unable to secure employment that matched their credential levels. Coulon (2002) stated that most people chose to study to improve employment opportunities, however with the competitive market driven economy, increasing amounts of graduates struggled to secure graduate level employment upon completion of their studies (Coulon, 2002). Using a series of self-reported surveys from over 500 New Zealand graduates, Coulon aimed to provide personal insights into underemployment in New Zealand. She found that the continuing emphasis on higher education had a significant impact on the graduates' expectations and their outcomes. A large amount of graduates with similar qualifications led to the inflation of tertiary credentials, meaning (similar to Brooks and Everett's findings) that their tertiary qualifications could no longer provide them with a competitive edge over others (Coulon, 2002). Credential inflation also affected the wages of graduates, and resulted in significant proportions of graduates becoming disillusioned with the idea of their tertiary credentials delivering them better employment opportunities.

The sense of disillusion noted by Coulon was also found among the participants in a more recent study by Cockroft (2011). Cockroft (2011) aimed to investigate how underemployment related to the attitudes of New Zealand graduates. Much like the other scholars in the literature, this study argued that most people studied at tertiary level to increase their employment opportunities, but increased tertiary enrolments decreased the likelihood of graduates finding jobs that utilized their skills and qualifications. This created a discrepancy between their current jobs and their desired jobs, hence generating a perception of underemployment (Cockroft, 2011). Using a series of self-reported surveys with 568 alumni, Cockroft aimed to determine the relationship between underemployment and individual attitudes. She found that underemployed graduates reported lower levels of job satisfaction, lower life satisfaction, lower affective commitment, increased intention to quit employment and increased job search activities (Cockroft, 2011). These findings tend to contradict what is emphasised in political statements that higher education enrolment will lead to better qualities of life, and led Cockroft to conclude that underemployment could destroy motivation and affect overall productivity of the organisations; which could ultimately affect the New Zealand economy (Cockroft, 2011).

Underemployment was considered from a different angle by Kahn, in her attempt to analyse the long-term consequences of 'bad' economy on American graduates (Kahn, 2010). Similar to the findings by Coulon and Cockroft, Kahn also noted that underemployment has a negative effect on graduates. From a longitudinal survey with over seventeen years of records, Kahn (2010) found that graduating in a bad economy had persistently negative effects on graduates' wages, with wage loss ranging from one percent to 20 percent each year. In addition, graduating during economic recessions was also found to affect work experiences, with graduates feeling underemployed due to a mismatch of skills and available occupations. This was considered to ultimately result in lower productivity and lower occupation attainment (Kahn, 2010). Graduates were often found to remain in lower levels of occupations even when the economy recovered. Kahn's research also highlighted that people generally had longer tenures in tertiary education (Kahn, 2010). The longer tenure in tertiary education was considered a way to avoid unemployment.

Kahn's findings were supported by a similar research conducted by Bárcena-Martín, Budría and Moro-Egido (2012) in Europe. They used a series of comparable international data to examine how graduate wages were affected by skills mismatches in

Europe. They found that changing labour market demands resulted in reports of skills mismatch and underemployment from a significant proportion of European graduates, and these mismatches were reflected in their wages and productivity (Bárcena-Martín et al., 2012). Bárcena-Martín et al. explained that lower productivity was evident as a result of workers not achieving their potential in their current occupations, hence creating a perception of underemployment among these graduates (Bárcena-Martín et al., 2012). The lower productivity also led to lower wages, and large and statistically significant wage effects from skills mismatches, with an average of 11.7 percent across all European countries (Bárcena-Martín et al., 2012).

In Greece, Liagouras, Protogerou and Caloghirou (2003) aimed to explore how the wider economy influenced Greek attitudes towards tertiary qualifications, in a country with high graduate unemployment rates and high proportions of PhD holders in the population compared to other OECD countries. They found a large gap between the skills demand in the labour market and the skills possessed by graduates. The skills deficit significantly affected the employability of these graduates, but tertiary enrolments continued to rise despite high graduate unemployment rates in Greece. Liagouras et al. questioned the rationale for a lack of reforms in the higher education sector and attributed this to a number of factors. Firstly, they noticed a strong resistance for higher education reforms, and attributed this to a very influential public sector. They found that the Greek public sector has been the main employer for tertiary graduates, therefore the tertiary education sector had a significant role in influencing the wider Greek economy. This, they said, explained their reluctance to reform (Liagouras et al., 2003). Secondly, the Greek private sector mainly comprised of small businesses, and these businesses tend to lack sufficient resources for R&D activities, therefore the private R&D sector was deemed to have underperformed for decades when compared to other OECD countries, resulting in continued economic reliance on the public sector. Thirdly, Greek business leaders often claimed that Greek graduates lack applicable skills for their businesses, and deemed them overqualified for employment, hence further limiting employment opportunities for tertiary graduates in the private sector. Lastly, the limited amount of graduate jobs in the Greek economy encouraged participation in postgraduate studies, hence further raising enrolments in tertiary education sector. (Liagouras et al., 2003). All these factors were considered to have contributed to a high graduate unemployment rate in Greece, and this case study on

Greece highlighted the argument that economic structures can have significant influence over tertiary education outcomes.

The Greek case study also hinted a problem with the knowledge economy. Liagouras et al. (2003) found the implementation of the knowledge economy is affected by economic factors and societal factors, such as different economic structures and dependency on the public sector. This was similar to Peters' (2004) argument that the United States and Europe had had varying success in implementing a 'knowledge economy'. He attributed the variation of success to two main factors. Firstly, the higher education sector in the United States had a tradition of privatisation before the knowledge economy, and they continued to operate using business management models under knowledge capitalism (Peters, 2004). By comparison, Europe attempted to implement reforms by privatising higher education and introducing business management models in higher education institutions. The reforms were, however, difficult to implement due to the complex political structures across Europe, and strong resistance from some interest groups. The result was limited success.

Peters (2004) also noted that the implied relationship between tertiary education and productivity was not always clear. Peters argued that there had been a drive for a knowledge economy in both the United States and Europe, but productivity has only increased in the United States, and there has been a lack of improvement in Europe by comparison. He attributed this to different market conditions between the United States and Europe, and stated that the labour market flexibilities in the United States had encouraged a culture of entrepreneurship, while the labour market was less flexible in Europe, which stagnated entrepreneurship (Peters, 2004). As a result, this led to weak economic growth in Europe despite being an economy based on knowledge. (Peters, 2004). Peters ultimately questioned whether the knowledge economy can generate economic growth in the twenty-first century, or whether this is a case of American exceptionalism (Peters, 2004).

## **2.7 Conclusion**

Across the literature focused on the knowledge economy, most researchers argued that policies for a knowledge economy were largely based on faith; a belief that economic prosperity will come with a well-educated population. Even though theorists criticized the concept, and the usage of the term diminished, the political rhetoric of a knowledge economy remained popular among policymakers because it resonated with the public, and the relic of the knowledge economy continues to influence contemporary policies.

As a result, the ill-defined concept has a long-lasting effect on tertiary education systems and the graduate labour market. The next chapter will examine how this concept has developed and applied in the New Zealand context.

## **NEW ZEALAND CONTEXT**

### **3.1 Introduction**

This chapter examines how New Zealand developed its current policy on tertiary education using the key concepts found in the literature. It focuses on how the policies for a knowledge economy transformed the role of universities and our subsequent expectations of graduate outcomes. The analysis of the New Zealand context is developed through interpretation of a series of Ministry reports and Ministerial statements, originated from Ministries related to the topic, ranging from Science and Technology, Economic Development, Education, and Finance. After addressing these Ministerial sources, the impacts on the tertiary education system are examined using the tertiary enrolment data, and the outcomes for graduates are analyzed through examination of the graduate outcome data provided by Statistics New Zealand and the Ministry of Education.

### **3.2 A knowledge economy in New Zealand**

Reflecting international trends, the concept of ‘knowledge economy’ emerged and became prominent in New Zealand policies since the late 1990s. The concept was based on thinking that a successful twenty-first century economy requires a more adaptive and skilled workforce, and tertiary education will be a viable method in achieving this goal. This concept was acknowledged in a Ministry of Education White Paper in 1998, and was illustrated by the statement that ‘(A) high performing tertiary sector is a key to a forward looking, cohesive, creative and innovative society in the twenty-first century.’ (Ministry of Education, 1998, p. 2). There was considerable bipartisan support for the concept by the 1999 election, and the Labour-led government elected that year was committed to improving New Zealand tertiary education by aligning education policies closer to the concept (Crothers & Harvey, 2003). A report on tertiary education policy in New Zealand also found that the tertiary sector had become more involved in nation-building capacity since the changing ideology around the role of tertiary sectors (McLaughlin, 2003).

Under the Labour-led government (1999-2008), tertiary education was emphasized in policy as having a crucial role in the economy by supplying knowledge and skills (Crothers & Harvey, 2003). This emerging role reflected the wider narrative of economic changes by the late 1990s.

The ill-defined concept of ‘knowledge economy’ became less popular in New Zealand policies by 2005, but the concept remains influential in contemporary discourse on economic development in New Zealand. In a speech to the Parliament, current Prime Minister John Key emphasized the importance of tertiary education on the economic wellbeing of the individual, and how the economy benefits from innovation through a skilled workforce (Key, 2010). These views are repeated in the policies by the National government, with a specific focus on sectors that include science, technology, engineering and mathematics (STEM) (Joyce & Parata, 2013b). These policies are focused on obtaining a skilled workforce through the growth in tertiary student numbers, but they sometimes lead to unintended consequences in the graduate labour market.

Even though the report on tertiary education policy was conducted in 2003, the illustration by McLaughlin still reflected the primary issues around contemporary education policy that ‘tertiary policy in New Zealand is made too often on ideology, rhetoric and anecdote’ and ‘funds are likely to be used ineffectively’ (McLaughlin, 2003, p. 8). The following sections will address the dynamics between New Zealand government policies and graduate employment outcomes using a range of resources, including governmental and international reports, press releases and speeches by different political representatives, government ministers and policy statements.

### **3.3 The role of knowledge in economic development in New Zealand**

Traditionally, the agriculture and primary export sectors have had strong ties to the wider New Zealand economy (Crocombe, Enright, & Porter, 1991; Ministry of Business, 2014b; O'Reilly, 2012). There was also a recognized trend of low domestic savings (Cullen, 2000a; Hodgson, 2002) and ‘low level of private sector research and development’ when the Labour-led government was elected (Cullen, 2000b). Overall the New Zealand economy was heavily reliant on dairy export prices, and it was largely a commodity-based economy.

Arguments for the need to change were supported by a number of economists and economic surveys conducted by the OECD (Crocombe et al., 1991; OECD, 1999, 2000). Back in 1991, a group of economists attributed the underperforming New Zealand economy to the existing economic structure. Crocombe, Enright and Porter (1991) noted that the New Zealand economy has been heavily reliant on the agricultural sector, and the low level of research and development in the private sector made it difficult for New Zealand to compete internationally. Similarly, the OECD economy

survey on New Zealand stated that the New Zealand economy relied heavily on agricultural production and processing (OECD, 2000). As a result, the New Zealand economy was considered vulnerable to world prices fluctuations and protectionist policies from the international markets. In addition, the OECD also found low domestic saving records in New Zealand, and the economy was heavily dependent on foreign capital from its major trading partners, and prone to international financial shocks. This was illustrated by the negative economic impact on the New Zealand economy from the Asian Finance Crisis in the late 1990s (OECD, 1999).

The OECD also stated that public research and development (R&D) spending was around the OECD average, but the ‘private-sector R&D is low’ by international standard (OECD, 2002, p. 17), and coupled with low productivity growth over two decades. The reports from both the OECD and Crocombe et al. recommended that the New Zealand government invest in human capital, build a strong domestic R&D base and foster innovation through a knowledge economy (Crocombe et al., 1991; OECD, 2000, 2002).

### **3.4 Policy directions by the Labour-led government (1999-2008)**

After two decades of neo-liberal governance in New Zealand, a Labour-led coalition government was elected in 1999 having campaigned using the rhetoric of building a knowledge society (Crothers & Harvey, 2003). In his speech on “Strategies for Growth in New Zealand”, the new Minister of Finance Michael Cullen described the economic vision for New Zealand as ‘a high technology, value-added economy, adaptive and responsive’ to the global market (Cullen, 2000b). Cullen acknowledged that New Zealand has been ‘poor savers’ and ‘poor at developing skills’, and ‘not been good at moving out of commodity production’ traditionally. However the Labour-led government was ‘committed to transforming New Zealand from a commodities dependent economy to one where knowledge not only adds value but creates value’ (Cullen, 2000b). In order to achieve this goal, Cullen planned to ‘strengthen the knowledge, technology and skills base of the economy’ and emphasized what he saw as the crucial role of tertiary education and research in the economy, where ‘quality of the intellectual capital in an economy is the major factor in its production and use of technology’ (Cullen, 2000b). Cullen argued that it was in the interest of New Zealand to invest in creating skilled and knowledgeable workers. The speech by Cullen echoed most of the OECD’s recommendations at that time on investing in human capital.

Pete Hodgson, the Associate Minister of Economic Development, repeated the commitment of the Labour-led government during an address to ‘The Capital Business Show’ in 2000. Hodgson stated that the government aimed to transform the New Zealand economy, and economic transformation meant ‘moving into more value-added and knowledge-based production’ (Hodgson, 2000b). The Minister claimed New Zealand’s ‘economic performance is lagging’ compared to other developed countries, and the difference as being under laid by levels of use of ‘knowledge and technology’, with New Zealand achieving a lower growth rate than others. He also stated that ‘productivity and job growth depend more and more on the conditions for the spread of knowledge and technology throughout an economy’ and that the level of skills and education within the workforce are crucial (Hodgson, 2000b). Accordingly Hodgson argued that, in order to improve the spread of knowledge and the skills of the workforce, the Labour-led government made ‘tertiary education cheaper for students by changing the loans scheme’, hence increasing accessibility to tertiary education. This change of student loan scheme was crucial because it effectively abolished interest charges for all full-time students (Parliament Library, 2013). Hodgson also encouraged ‘effective cooperation between businesses, research and universities’ to stimulate innovation in the economy (Hodgson, 2000b). The speech highlighted the role knowledge was expected to play in the economic development of New Zealand, and how tertiary education can lead to wider social and economic participation for New Zealand citizens.

Speeches by Steve Maharey, the Associate Minister of Education in 2000, highlighted the importance of tertiary education in a knowledge economy. He stated that the knowledge economy is ‘fundamentally about the application of new technologies, new information, and new competencies’ and that the success of New Zealand knowledge economy would be determined by its ability to move from ‘low-technology to high-technology’ (Maharey, 2000a). Maharey stated that in order to achieve this goal, New Zealanders need continuous up-skilling (Maharey, 2000b), and ‘a strong and responsive public research capability’ through the universities and Crown Research Institutes working together. Building on the assumed role of tertiary education in the knowledge economy, Maharey expanded his argument in later speeches between 2001 and 2002. In 2001, Maharey affirmed his position of how important the tertiary sectors were to the New Zealand economy. He stated his understanding that the tertiary system is both an education system and a skills system, and that it needed to produce both knowledge and

skills for the economy (Maharey, 2001b). He further argued that New Zealand required ‘researchers and innovators, training to the highest levels of postgraduate study’, but that the economy could only fully benefit if there were ‘a broad diffusion of skills throughout the workforce’ to apply the new knowledge (Maharey, 2001a), therefore implying the importance of cooperation in different sectors of the society.

Maharey developed his arguments further in a speech in 2002. When discussing the importance of partnership between education and business in a knowledge economy, Maharey stated that a ‘workforce of continuous learning’ could respond to ‘changing skills need, and new technology and global competition’ (Maharey, 2002). This statement underscored the perceived significance of continued education in the twenty-first century economy, which could be achieved through tertiary education provision.

In February 2002, the Labour-led government published the Growth and Innovation Framework (GIF), where the Prime Minister Helen Clark ‘set out the direction in which the government is moving to advance New Zealand’s growth prospect. The priorities it sets will impact on the 2002 and future budgets’ (Clark, 2002). The GIF aimed to return New Zealand’s per capita income to the top half of OECD ranking over time, however Clark acknowledged that it would ‘require the growth rate to be consistently above OECD average for a numbers of years’ (Clark, 2002). Therefore, in order to accelerate growth, the GIF had four key features: ‘Enhancing innovation system’, ‘Developing skills and talent’, ‘Increasing global connectedness’ and ‘Focusing government’s resources’. All these features echoed the previous recommendations by the OECD and Crocombe et al.; they were all expected to play a role in accelerating economic growth in New Zealand. Only the first two of the GIF feature are related to this research, and will be discussed separately below.

According to the GIF, developing skills and talent in the New Zealand population would play a crucial role in economic development of New Zealand (Ministry of Economic Development, 2003). In order to develop the necessary skills for a successful economy, the New Zealand government needed to ‘keep investing as much as it can in education and industry training’. That included increasing tertiary education funding to encourage more active research and training in New Zealand (Clark, 2002). In addition, the Tertiary Education Commission (TEC) was established in order to better align tertiary education with the developmental goals of New Zealand, thereby strengthening the importance of the tertiary education sector in New Zealand’s economic development.

The emphasis on tertiary education by the Labour-led government was reflected in increases in total tertiary enrolment numbers over the early 2000s. According to the enrolment data from the Ministry of Education (Table 1), there was a substantial increase of tertiary education enrolments between 1999 and 2008. The enrolment numbers peaked in 2004, and began to level off at around 2004-2005. They then gradually decreased for the next three years until 2008.

Table 1.

*Number of full-time student units (EFTS) enrolled with tertiary public providers from 1999-2008*

<b>Year</b>	<b>Domestic</b>	<b>International</b>	<b>Total</b>
1999	161,195	7,779	168,974
2000	163,391	9,461	172,852
2001	169,774	14,568	184,341
2002	187,473	22,174	209,647
2003	206,550	29,783	236,333
2004	208,898	34,210	243,108
2005	207,189	31,996	239,184
2006	198,098	27,257	225,355
2007	201,114	23,646	224,759
2008	198,974	22,243	221,217

*Note.* Adapted from ‘Provider-based-equivalent-full-time-students-EFTS’ file. Retrieved from Education Counts (2014a)

It is worth noting that the drop of total enrolments coincided with the sharp decline of international students enrolling in New Zealand tertiary education system from 2004. Interestingly, the growth rate of domestic enrolments also increased significantly from 1999, and enrolment numbers also peaked at 2004, then gradually decreasing from 2005. However, domestic enrolment numbers never dropped back to the same enrolment numbers as back in 1999, which suggests a link between the policy pushing for the knowledge economy and greater enrolments. It may be assumed that these policies influenced increases in tertiary enrolments to a certain extent.

The enrolment peak in 2004 and its subsequent decline coincided with the discussion and diminishing reference in political discussions of the knowledge economy in New Zealand economic development and educational policies. By 2005, the term ‘knowledge

economy' was rarely found in new policies introduced by the Labour-led government, and instead the political discourse shifted towards innovation and skills of graduates, instead of the previous focus on the knowledge of the graduates.

Maharey's reflections in 2003 possibly best explained this shift of discourse. He maintained that tertiary education is important in 'nation building', and New Zealand was following the worldwide trend by linking tertiary education with national goals. He also acknowledged that knowledge society was a 'buzzword' that could be vague but that its concept was important. The concept was based on the notion that a well-educated, skilled and adaptive work force was required to enable a successful twenty-first century economy; and that New Zealand could only transform its economy through acquiring knowledge and skills. Ultimately Maharey argued that research and innovation should be the key drivers of the New Zealand economy (Maharey, 2003). Subsequent policies by the Labour-led government had placed a heavier emphasis on innovation.

### **3.5 The role of innovation**

Prior to the diminishing reference to the knowledge economy, the term 'innovation' came to be increasingly used in conjunction with the concept of a knowledge economy. The political rhetoric claimed that in a knowledge economy, innovation could occur and better the economy by introducing new and improved methods to existing sectors, or introducing new sectors for generating revenue. These arguments are found in the policies by the Labour-led government.

Recognizing that private R&D had been low compared to the OECD average, the Labour-led government spent 'a record injection of \$20.8 million' to provide R&D grants to private firms as an effort to partner private R&D in 2000 (Hodgson, 2000a). In a later speech focusing on transforming the New Zealand economy, Hodgson stated that the success of a New Zealand knowledge economy depended on 'whether we have a society that promotes innovation', hence stating the importance of innovation in a knowledge economy. Hodgson admitted however, that innovation itself was 'not easy' and it was 'more than just R&D' (Hodgson, 2000b).

Hodgson explored the concept of innovation further in a speech in 2002. The Minister stated that 'our future depends on the creation and creative deployment of knowledge', and reaffirmed Labour's commitment to the knowledge economy (Hodgson, 2002). He also warned that 'an innovation system is self-evidently centered on and dependent

upon people', therefore even if research, science and technology were seen as the core of an innovative system, tertiary education and a skilled workforce would be equally important for fostering innovation.

While the term 'knowledge economy' diminished within political discourse in New Zealand, the term 'innovation' remained prominent in policy statements. In a speech in 2005, Maharey stated that 'research, science and technology are the key drivers of innovation in New Zealand's economy' and these are 'important contributors to health and wellbeing of our nation'. He asserted that strong interest in innovation is 'vital to New Zealand's continued economic success' (Maharey, 2005).

According to the Growth and Innovation Framework's 2003 indicators report, 'successful innovation depends on having people who can come up with new ideas and have the entrepreneurial drive to develop, manage and market them' (Ministry of Economic Development, 2003, p. 14). This statement illustrated the importance of having a successful tertiary education sectors, and the need for multiple sectors that are co-dependent in an innovative economy. A speech by Trevor Mallard, the Minister for Economic Development in 2007, reinforced this argument; he stated that potential growth sectors, such as 'biotechnology, ICT and the creative sector' should not be seen as 'winners' in an innovative economy, but 'they were seen as generic enablers of activity across the economy' (Mallard, 2007). This statement highlighted the importance of knowledge-intensive industries in New Zealand, which will be explored in a later section below.

### **3.6 The contemporary New Zealand economy**

In order to assess whether the implementation of the knowledge economy affected the New Zealand economy, it is important to consider the structure of the contemporary New Zealand economy. Today New Zealand's economic structure has been recognized as being more complex in composition than traditionally. According to a recent Ministry of Business, Innovation and Employment (MBIE) report on the New Zealand economy, the contemporary New Zealand economy is comprised of a complex and varied range of sectors, from service sectors to agricultural, food and beverage and high technology manufacturing sectors (Ministry of Business, Innovation & Employment, 2014b). Almost all sectors of the economy grew over the decade 2001-2011 (with the exception of wood and paper), but these were at varying paces of growth. The sector that experienced the fastest growth was the petroleum and mineral sector.

While the traditional New Zealand export sectors remained important for growth, increasingly there has been strong GDP growth in export sectors such as information technology services, high technology manufacturing and processed food sectors (MBIE, 2014b). Meanwhile sectors such as petroleum and minerals contributed to 12.1 percent of GDP growth in the past decade, but only contributed to 2.5 percent of the overall New Zealand GDP, emphasizing the complex economic structure in New Zealand.

Much like other developed countries, the decline of the New Zealand manufacturing sectors coincided with the growth of important service industries (Bertram, 2009). Service industries generated most of the New Zealand's GDP (59 percent) in 2011 (MBIE, 2014a). The growth of the service sector in the past decade has not necessarily meant an increase in 'knowledge production' because the majority of service sector workers have been employed in labour intensive sectors instead of knowledge intensive sectors (MBIE, 2014b). Labour intensive sectors, such as the retail trade and tourism sectors (Abbott, 2007), tend to have lower labour productivity compared to knowledge intensive sectors, such as chemical and plastic refining, but they continue to generate high job growth. High productivity sectors tended to show reduced employment in the decade of 2001-2011. However, there is an increasing trend of applying knowledge in the specific service industries, as explained in the section below.

### **3.7 Knowledge intensive service sectors**

Knowledge has come to be recognized as important for developing all sectors in the economy. Primary industries such as agriculture remain prominent in the New Zealand economy, but these industries rely on knowledge intensive services (KIS) sectors to remain competitive in the global market (MBIE, 2014a). According to the Ministry report published in 2014, KIS sectors produced around 20 percent of GDP in New Zealand economy in 2011 (MBIE, 2014a). In the same year, these industries generated 4 percent towards total exports. In the same report by the Ministry, they stated only 22 percent of New Zealand firms are classified as 'knowledge intensive' in 2012, and their workers comprised of 19 percent of the total New Zealand employment in 2012 (MBIE, 2014a). This suggests a supportive role for these industries in the wider economy where they remain important for innovation and economic development in New Zealand, especially in areas that can be traded internationally (Lattimore & Eaqub, 2011).

It is worth noting that KIS itself is not a sector, but rather 'a broad and diverse range of services with varying degrees of knowledge intensity' (MBIE, 2014a, p. 10), such as media and telecommunications, financial sectors, online retailing, photography

processing, software publishing, and pest control. A range of private and public organisations can be involved in the delivery of knowledge intensive services (OECD, 2006). The large number of knowledge intensive sectors often only relate through their investment in ICT, their practice of applying specialised knowledge, and the supportive role they play in the wider New Zealand economy (MBIE, 2014a). The levels of salaries paid to individuals in these knowledge intensive sectors vary, but are on average recognised as being about 40 percent higher than the average New Zealand salary. These industries all require particular sets of skills that can be acquired over long periods of training or tertiary education. Unlike high technology manufacturing that can be defined by R&D intensity, KIS industries perform relatively limited amounts of formal R&D by comparison (MBIE, 2014a). Because of this, definitions by MBIE of KIS include other measurements, such as workforce skills composition and the level of investment in information communication technology (ICT) (MBIE, 2014a). These classifications provide a more complex description of knowledge intensive industries, and as a result, broaden the number of sectors that fall under the term ‘knowledge intensive industries’, as demonstrated above.

According to the New Zealand sector report 2014, 54 percent of knowledge intensive firms are ‘innovating’ in 2011, which is above the New Zealand average of 46 percent in 2011 (MBIE, 2014b). The innovation rate is measured by the percentage of firms in a sector which undertook activity that resulted in the development or introduction of new or improved products in the past two years. Using this definition of innovation, MBIE found varying self-reported rates of innovation across all sectors. The variations showed that innovative activities are not concentrated in those sectors recognised as knowledge intensive sectors alone, but that in 2011 there were also high levels of innovation reported in sectors such as education (62 percent), and arts and recreation (62 percent) (MBIE, 2014b). The Ministry argued, however, that there are spillover effects to all sectors from innovation. Because low innovation industries rely on knowledge from other sectors, the investment on knowledge intensive sectors can be considered to benefit all parts of the economy (MBIE, 2014a; 2014b).

### **3.8 The current policy context**

Despite a change of government by the end of 2008, it is evident that tertiary education retained its vital role in New Zealand economic development policies. In a statement to the Parliament in 2010, the current Prime Minister John Key stated that the New Zealand education system is ‘a fundamental tool for creating an egalitarian society

where all New Zealanders have an opportunity to succeed' (Key, 2010). In order to achieve this goal, Key emphasized the importance of a 'high performing education system' in providing New Zealanders with 'the skills they need to acquire the jobs of the future' (Key, 2010). Key expanded his argument in a speech to the Parliament the following year, when he stated that New Zealand needed 'a tertiary education system that can be accessed by a wide range of New Zealanders wanting to improve their skills and knowledge' (Key, 2011). As is evident in these statements, tertiary education continued to be perceived as having an important role in supporting economic development by up-skilling the New Zealand population, just as they had for the previous Labour-led government. This position was reiterated in subsequent statements. For example, in 2010 the New Zealand government invested \$55 million extra to create more undergraduate places, as an attempt to deal with the increased demand for tertiary education and 'lift performance of industry training organizations' (Key, 2011).

In a speech to Victoria University in 2010, the Minister of Tertiary Education Steven Joyce stated that the tertiary education sector is 'crucial to our plan to make the country grow faster' and that he would like 'to see a tertiary education system that supports our economy at all levels' (Joyce, 2010a). These statements illustrated the expected role of tertiary education in contemporary New Zealand society; to support the economy by enhancing growth. Joyce aimed to achieve this goal by linking tertiary funding to employment outcomes, and argued that 'tertiary institutions should be chosen on the merit of which institutions offer the best career prospects' (Joyce, 2010c). Even though there were attempts by the previous Labour-led government to facilitate partnerships between business and the tertiary education sector, this statement by Joyce is important because he made a more explicit link between tertiary sector and employment outcomes. The suggestion is that tertiary institutions should be accountable for graduates' outcomes. Using this language, the government is formally linking the tertiary institutions to the New Zealand labour market.

The current government's thinking of the dynamic link between tertiary education and the labour market has been further demonstrated in the New Zealand Business Growth Agenda (BGA). The BGA represents the National-led government's policy position on economic growth (MBIE, 2013). The New Zealand BGA is 'an ambitious programme of work that will support New Zealand business to grow' by focusing on six different features; generating export markets, encouraging capital market, managing natural resources, building infrastructure, creating a skilled and safe workplace, and fostering

innovation. These six features are key policies of the National government to create jobs and ‘a more productive and competitive economy’ (Joyce, 2010c). According to the BGA progress report in 2013, ‘it is business that drives economic growth and builds a more successful economy with more jobs for Kiwis’ (MBIE, 2013, p. 4). This highlights the emphasis the National-led government places on the importance of business sectors. Even though the six features of BGA all play a role in supporting economic growth, the two most relevant to this research include the skilled and safe workplace and innovation. Attempts by government to implement these features will be discussed below.

Attempts by Joyce and the National government to enact the BGA objectives have been reflected in a number of policies relevant to tertiary education. Joyce established the new rules for the New Zealand Qualification Framework (NZQF). According to the Business Growth Cabinet Paper, this is part of the reforms to improve ‘the performance and efficiency of tertiary institutions’ (MBIE, n.d.). The changes to the NZQF required that all qualifications should refer to graduate profiles, which lists the ‘skills, knowledge, and attributions of a graduate’ (MBIE, 2012). The New Zealand Qualification Authority would introduce new regulations to ‘ensure new qualifications do not duplicate existing ones’ and suit the needs of the market through formal consultation with industry (Joyce, 2010b).

Joyce justified these changes by claiming that the final result will be a system that delivers ‘better results for students, employers and the economy’ (Joyce, 2010b). In a separate statement on the new qualification framework, Joyce stated that the changes would be implemented to ‘improve the performance of the qualification system to ensure it is flexible and responsive to students and industry needs’ (Joyce, 2010b). These changes were designed to contribute to creating a skilled workplace for the BGA by further integrating tertiary institutions directly with employment outcomes as an attempt to increase graduate employability in New Zealand.

### **3.9 Expectations of tertiary education**

The importance of tertiary education for employment has been prominent in subsequent National government policies. The way these policies have been framed appears to imply a direct and linear relationship between tertiary education, employment and high earnings. For example, Statistics New Zealand demonstrated that tertiary graduates consistently have a lower unemployment rate than non-graduates, as in Table 2 below,

therefore reinforcing the idea that tertiary graduates will have better employment opportunities than those without tertiary qualifications.

Table 2.

*Unemployment rate of the population aged 15 and over by highest qualification 1999-2012*

Year	Highest qualification			
	No qualifications	School qualifications	Other tertiary qualifications	Bachelors or higher
1999	12.4%	7.4%	5.7%	3.2%
2000	10.7%	6.3%	4.7%	3.6%
2001	9.2%	6.0%	3.8%	3.3%
2002	8.1%	5.4%	4.2%	3.6%
2003	7.3%	5.0%	3.9%	3.4%
2004	6.6%	4.6%	3.1%	2.7%
2005	6.7%	4.4%	2.6%	2.2%
2006	5.4%	4.1%	3.0%	2.1%
2007	6.0%	4.2%	2.7%	2.2%
2008	6.1%	4.5%	3.2%	2.0%
2009	8.6%	7.4%	4.6%	3.6%
2010	9.4%	8.3%	5.8%	4.1%
2011	10.1%	8.8%	5.2%	3.0%
2012	9.9%	8.5%	5.7%	3.6%

*Note.* Adapted from Statistics New Zealand, Household Labour Force Survey. Retrieved from Statistics New Zealand (2014)

A Ministry of Education report in 2013 highlighted the better earnings prospects for tertiary graduates. Their report showed that tertiary graduates often have higher median earnings than non-graduates, with doctorate graduates five years after graduation tending to have over twice as much in earnings than the national median earnings. Graduates with bachelor level degrees were shown to have around one and a half times the national median after five years. These findings are illustrated in Table 3 below.

Table 3.

*Median annual earnings of graduates, one, two and five years after study, as a percentage of the national median earnings by qualification level.*

Qualification level	Years after study %		
	One	Two	Five
Doctorate	168	194	221
Masters degree	137	155	186
Level 8 – Bachelors honours, PG dip or certificate	139	151	183
Graduate certificate or diploma	139	145	173
Bachelors degree	119	133	153

*Note.* Reproduced from *Moving on Up. What young people earn after their tertiary education* (Mahoney et al., 2013)

Joyce used the findings from the Ministry of Education report to emphasise his view that such findings would be ‘useful for students of all ages considering their career paths’ and he encouraged ‘young people to take every opportunity to obtain the skills to compete in the modern world’ (2013). This illustrated his view that choices towards tertiary education were solely focused on employment opportunities and incomes. On the other hand, the National government has introduced some limitations to tertiary education access in 2011, through the implementation of lifetime borrowing limits for tertiary students (Parliament Library, 2013). Joyce justified this change in 2010 by arguing that ‘these measures strike a fairer balance between supporting students and respect for taxpayers that supply that support’ (Joyce, 2010d).

The policies of the current National-led government suggest that the tertiary education sector is perceived as a direct tool to deal with skills shortages in the labour market. An example of this is an increase in funding for engineering students in 2013. In late 2012, Joyce stated that ‘New Zealand has an undersupply of engineers. Historically the numbers we have been training is about half the OECD average’ (Joyce, 2012). The government pledged to directly fund 700 extra places for engineering students to meet additional engineering demand in the labour market. Joyce justified this targeted funding by stating that ‘if we want faster economic growth for New Zealand, then we need to invest skills that will help grow the economy’ (Joyce, 2012). Even though Joyce did not explicitly state which particular skills were necessary for economic growth in this statement, the preference by the National-led government towards science,

technology, engineering and mathematics disciplines (STEM) has become more apparent in general speeches and statements.

### **3.10 The focus on STEM**

Under the notion of innovation, there have been several attempts by the National-led government to increase private R&D through employment of STEM graduates since 2009. An example of this is the introduction of a postgraduate internship programme with the Foundation for Research, Science and Technology in 2009. Wayne Mapp, the Minister for Research, Science and Technology, stated that this programme highlighted ‘the need for a continued focus on building and developing New Zealand’s capacity’ by encouraging private firms to employ postgraduate students from science, technology and engineering (STE) disciplines (Mapp, 2009). This programme was aimed to encourage companies to ‘identify graduate vacancies’, and ‘improve industry collaboration’ (Mapp, 2009). This preference towards STE students has been reaffirmed in similar policies in more recent years. A similar program was introduced in 2011 to spend \$1.7 million to support business to employ STE students, and was supported by the statement that ‘New Zealand’s future innovators will need a head start in their careers’, hence specifically linking the concept of innovation with the STEM subjects (Mapp, 2011) .

The explicit preference for STEM subjects in tertiary education policies has become increasingly apparent more recently. In 2013 a joint statement by Joyce and Parata stated that ‘New Zealand needs more people with maths and science skills in our workforce to help us be internationally competitive and to meet future labour market needs’ (Mapp, 2011). In particular, Joyce listed disciplines such as ICT, engineering, health, and agricultural science as important for the future New Zealand economy (Joyce & Parata, 2013b). In a later statement, it was argued that ‘the reality is New Zealand needs more people with fundamental skills in STEM, and that is a strong focus of this government’ (Joyce & Parata, 2013a). This focus was reflected in a funding boost targeted for STEM subjects at primary and intermediate school levels, which was presented as an attempt to better prepare students with STEM skills (Joyce & Parata, 2013a).

In 2014, the Ministry of Education updated their previous report on graduate earnings and destinations, and found that the earnings variation between STEM and non-STEM subjects remained high, suggesting a growing demand for STEM skills (Park, Mahoney, Smart, & Smyth, 2014). Using the findings from this 2014 Ministry of Education report, Joyce emphasized the higher earnings achieved in fields involving STEM subjects, and

recommended to those secondary school students ‘who enjoy maths and science study these subjects through to year 13 at school and seriously consider studying them at tertiary levels’ (Joyce, 2014).

The particular focus on STEM subjects by the current National government is reflected in an increase in enrolment numbers in these disciplines since 2008, as shown in Table 4. While there was a general increase of enrolment from 2008 to 2012 (10.9 percent), this was particularly pronounced in the faster pace of growth in some STEM subjects such as information technology (19.8 percent), engineering (35.9 percent), agriculture (26.0 percent), and health (29.8 percent). At the same time, non-STEM subjects experienced lower than average growth, for example in disciplines such as creative arts (3.8 percent) and society and culture (4.6 percent).

Table 4.  
*Students enrolled by fields of study and percentage change since 2008 to 2012*

Year	2008	2012	2008-2012 (%)
Natural & Physical Sciences	34,790	37,130	6.7%
Information Technology	17,230	20,640	19.8%
Engineering & Related Technologies	5,430	7,380	35.9%
Architecture & Building	4,350	3,790	-12.9%
Agriculture, Environmental & Related Studies	3,650	4,600	26.0%
Health	21,800	28,300	29.8%
Education	13,420	17,950	33.8%
Management & Commerce	41,890	44,910	7.2%
Society & Culture	72,680	76,000	4.6%
Creative Arts	24,380	25,310	3.8%
Food, Hospitality & Personal Services	390	730	87.2%
Mixed Field Programmes	370	400	8.1%
Total	134,760	149,430	10.9%

*Note.* Adapted from ‘Provider-based-Enrolments-Field-of-Study’ file. Retrieved from Education Counts (2014b)

Despite the consistent increases in overall tertiary enrolments since 2008, there was a slight drop in enrolments since 2012, as noted by the Tertiary Education Commission (2014). Joyce addressed this drop in domestic enrolments in a policy statement, and attributed it to a number of factors including, ‘the total number of people aged 18-22 peaked at 2012’; ‘people moving to work-based study’; changes to the Qualification Framework; and economic recovery (Joyce, 2013a). However in an earlier statement, the peak of the 18-22 demographic in 2012 was not acknowledged when he claimed that there was a 3.2 percent increase in qualification completions from 2011 to 2012 (Joyce, 2013a, 2013b). Nevertheless, Joyce (2013c) stated that enrolments for higher qualification has increased by 11 percent since 2008, which is reflected in Table 4 above.

Table 5.

*Unemployment rate in September from 2000-2009*

<b>Year</b>	<b>Unemployment rate (percent)</b>
Sep/2000	5.9
Sep/2001	5.2
Sep/2002	5.4
Sep/2003	4.4
Sep/2004	3.8
Sep/2005	3.7
Sep/2006	3.7
Sep/2007	3.5
Sep/2008	4.1
Sep/2009	6.3
Sep/2010	6.2
Sep/2011	6.4
Sep/2012	7.1
Sep/2013	6.2

*Note.* Adapted from Key Labour Force Measure. Retrieved from Statistics New Zealand (2014)

It is worth noting that the increase in enrolments coincided with the Global Financial Crisis and correlated with the sharp rise of the unemployment rate in 2009, as shown in Table 5 above. These trends support Kahn’s theory that tertiary enrolment generally

reflects the state of the economy so that longer education attainment and increased enrolment generally correlates with a poor economy (Kahn, 2010). Given the evidence from these statistics, it is debatable whether the increases in enrolment were either a product of national policies or a reaction to wider economic circumstances, or other reasons.

### 3.11 Statistical analysis on graduate outcomes

The 2014 report on graduate outcomes by the Ministry of Education shows variations in employment outcomes among graduates from different disciplines, as illustrated by Table 6.

Table 6.

*Sorted by fields of study, percentage of Bachelor graduates who are employed, one, two and five years after study*

<b>Field of study</b>	<b>Year1</b>	<b>Year2</b>	<b>Year5</b>
<b>Natural &amp; physical sciences</b>	35%	42%	59%
<b>Information technology</b>	66%	72%	79%
<b>Engineering &amp; related technologies</b>	54%	62%	72%
<b>Architecture &amp; building</b>	44%	54%	77%
<b>Agriculture, environmental &amp; related studies</b>	50%	56%	69%
<b>Health</b>	61%	69%	73%
<b>Education</b>	77%	82%	79%
<b>Management &amp; commerce</b>	63%	74%	76%
<b>Society &amp; culture</b>	41%	57%	67%
<b>Creative arts</b>	63%	69%	72%
<b>Total students</b>	54%	64%	71%

*Note.* Adapted from ‘Earnings-and-destinations-detailed-national-report-to-2012’ file. Retrieved from Education Counts (2014c)

Overall, the Ministry of Education statistics show that 54 percent of bachelor graduates were in employment in their first year after graduation, and that their rates of participation in employment increased gradually to 71 percent over five years. The highest employment rates for bachelor graduates in their first year are from education (77 percent), while the lowest employment rates while from natural & physical science (35 percent). After five years the same patterns were evident with the highest

employment percentage among graduates from education and graduates from information technology (79 percent), while graduates from natural and physical science (59 percent) have had consistently lower employment percentages compared to other fields of studies.

The high percentage of employment among education graduates could indicate high graduate employability, where the skills possessed by these graduates are closely aligned to the skills demanded in the labour market. As was demonstrated in Table 4, student enrolments for education also increased substantially from 2008 to 2012 (33.8 percent), which could indicate a strong demand in the labour market. In conjunction with Table 6 this serves as an example of the implied linear relationship between tertiary education and employment. By contrast, the low percentage of employment among natural & physical science graduates hints a problem with this implied linearity.

An alternative approach to examine tertiary education outcomes would be to assess the earnings of different graduates. It was stated earlier in relation to Table 3 that tertiary graduates generally enjoy higher earnings than the national median. Table 7 examines this in more detail. As is shown, the annual median earning of all bachelor graduates is \$37,959 in the first year after graduation, and the median earnings gradually increase by 36 percent over five years to \$51,627. As was shown in Table 6, education graduates have the highest employment percentage among its graduates, and Table 7 showed these graduates have the second highest median earnings compared to other graduates, only lower than bachelor graduates from health discipline. Amongst the median earnings of all bachelor graduates, health graduates have the highest median earnings while creative arts graduates have the lowest median earnings. This could reflect high demand for health graduates in New Zealand. After five years, the same pattern persisted with health graduate possessing the highest median earnings compared to other graduates, while creative arts graduates continued to have the lowest median earning. Interestingly, while all bachelor graduates experience an increase in median earnings five years after their graduation, their experiences vary in that period. In contrast to Table 6, education graduates receive the lowest median earning increase (15.8 percent) compared to the other graduates over that five year period, while natural and physical science graduates have the highest median earning increase overall (50.7 percent). However, it is worth noting that the median earning for natural and physical science graduates are significantly lower than education graduates in their first year of employment, therefore implying the lack of demand for natural and physical science graduates. Nevertheless

this suggests that assessing employment rates alone is not sufficient in analysing tertiary education outcomes.

Table 7.

*The annual median earnings of Bachelor graduates from different fields of study, one, two and five year after study*

Field of study	Year 1	Year 2	Year 5	Earning increase
Natural & physical sciences	\$34,391	\$42,754	\$51,843	50.7%
Information technology	\$40,355	\$46,306	\$59,433	47.3%
Engineering & related technologies	\$38,478	\$46,078	\$55,485	44.2%
Architecture & building	\$34,376	\$40,198	\$47,439	38.0%
Agriculture, environmental & related studies	\$35,417	\$42,071	\$51,166	44.5%
Health	\$46,573	\$52,217	\$61,581	32.2%
Education	\$45,034	\$47,164	\$52,148	15.8%
Management & commerce	\$38,993	\$43,699	\$54,026	38.6%
Society & culture	\$35,539	\$42,268	\$50,191	41.2%
Creative arts	\$29,208	\$33,874	\$42,949	47.0%
Total students	\$37,959	\$43,486	\$51,627	36.0%

*Note.* Adapted from ‘Earnings-and-destinations-detailed-national-report-to-2012’ file. Retrieved from Education Counts (2014c)

Table 7 also shows that graduates from certain STEM sectors such as health, information technology, and engineering, all enjoy higher levels of earnings than the median earnings of all bachelor graduates in the first year after study. This appears to reflect perceptions of labour market opportunities. This may also relate to the higher rates of employment in the same sectors evident in Table 6, with the exception of lower percentages of employment amongst agriculture, architecture, and natural and physical science graduates, which are also classified as STEM sectors. By comparison, the median earnings for creative art graduates is significantly lower than graduates from other fields of study in spite of their moderate percentage of employment (63 percent). In comparison with those gaining employment, there are also slight variations evident among different graduates who report as on a welfare benefit after graduation. Table 8 below shows that 2 percent of all bachelor graduates were recorded as being on an

unemployment benefit in their first year after graduation, and that percentage remained at 2 percent after five years. The highest unemployment benefit rates reported among bachelor graduates in their first year are from creative arts (4 percent), and the lowest benefit rate are from natural & physical science (1 percent), and health (1 percent).

Table 8.

*Percentage of Bachelor graduates who receive the benefit, one, two, and five years after study, by field of study*

<b>Field of study</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 5</b>
<b>Natural &amp; physical sciences</b>	1%	1%	2%
<b>Information technology</b>	4%	3%	2%
<b>Engineering &amp; related technologies</b>	2%	3%	1%
<b>Architecture &amp; building</b>	2%	1%	2%
<b>Agriculture, environmental &amp; related studies</b>	S	S	2%
<b>Health</b>	1%	1%	1%
<b>Education</b>	2%	1%	2%
<b>Management &amp; commerce</b>	2%	1%	1%
<b>Society &amp; culture</b>	2%	2%	2%
<b>Creative arts</b>	4%	4%	4%
<b>Total students</b>	2%	2%	2%

*Note.* Adapted from ‘Earnings-and-destinations-detailed-national-report-to-2012’ file. Retrieved from Education Counts (2014c) An ‘S’ indicates the value is suppressed as it has not met Statistics New Zealand’s confidentiality requirement.

Despite their lower rates of employment, it should be noted that graduates from natural and physical sciences are also least likely to be on an unemployment benefit after graduation. Graduates from other fields of study either maintained or decreased their percentage of benefit recipients five years after study, but benefit recipients among natural and physical sciences graduates increased five years after graduation (2 percent). This increase could reflect the low employability of science graduates in New Zealand, or the limited labour demand for them. Nevertheless, the low percentages in those two groups imply a high percentage in other tertiary outcomes such as going on to further study, as demonstrated in Table 9.

Table 9.

*Sorted by fields of study, percentage of different Bachelor graduates who did further study, one, two and five years after study*

<b>Field of study</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 5</b>
<b>Natural &amp; physical sciences</b>	60%	52%	32%
<b>Information technology</b>	24%	18%	11%
<b>Engineering &amp; related technologies</b>	38%	31%	21%
<b>Architecture &amp; building</b>	50%	40%	12%
<b>Agriculture, environmental &amp; related studies</b>	47%	40%	23%
<b>Health</b>	36%	27%	18%
<b>Education</b>	19%	14%	12%
<b>Management &amp; commerce</b>	30%	20%	13%
<b>Society &amp; culture</b>	52%	36%	23%
<b>Creative arts</b>	28%	22%	15%
<b>Total students</b>	40%	30%	19%

*Note.* Adapted from ‘Earnings-and-destinations-detailed-national-report-to-2012’ file. Retrieved from Education Counts (2014c)

Some fields of study are more associated with further study than others. Table 9 above shows that only 40 percent of all bachelor graduates return to further study one year after graduation, but that percentage varies across different fields of study. Of the natural and physical science bachelor graduates, 60 percent are noted as returned to further study one year after graduation, which may explain the lower benefit rate among these graduates. That rate drops to 32 percent after five years, but is still considerably higher than the total graduates (19 percent). Graduates from other fields of study, such as society and culture (52 percent) and architecture & building (50 percent), also have a higher percentages of bachelor graduates returning to further studies. The high percentages of returning graduates could suggest a demand for specialized knowledge from these fields of study, or that graduates from these fields have aimed to increase their employability through further studies. This may be supported by the lower proportion of education graduates who return to further study straight after graduation, given the high percentage of employment in that discipline soon after graduation as was shown in Table 6.

To determine how returning to further study influences the employability of graduates, the percentage of Masters graduates employed are addressed in Table 10 below.

Table 10.

*Sorted by fields of study, percentage of Masters graduates who are employed, one, two and five years after study*

<b>Field of study</b>	<b>Year1</b>	<b>Year2</b>	<b>Year5</b>
<b>Natural &amp; physical sciences</b>	67%	60%	60%
<b>Information technology</b>	62%	68%	67%
<b>Engineering &amp; related technologies</b>	70%	75%	77%
<b>Architecture &amp; building</b>	80%	84%	75%
<b>Agriculture, environmental &amp; related studies</b>	72%	82%	69%
<b>Health</b>	75%	65%	71%
<b>Education</b>	65%	75%	60%
<b>Management &amp; commerce</b>	69%	73%	72%
<b>Society &amp; culture</b>	58%	60%	65%
<b>Creative arts</b>	76%	71%	73%
<b>Total students</b>	68%	67%	67%

*Note.* Adapted from ‘Earnings-and-destinations-detailed-national-report-to-2012’ file. Retrieved from Education Counts (2014c)

Compared to all bachelor graduates in employment (54 percent), a generally higher percentage of Masters graduates are in employment in their first year after graduation (68 percent). The employment percent varies across different fields of study, with 80 percent of Masters architecture graduates in employment in their first year after study, to 58 percent of society and culture graduates in employment in their first year after study.

Out of the three groups with the highest percentage of bachelor graduates returning to study in their first year after study - natural and physical science, society and culture, and architecture - Masters graduates from these fields of study all have higher employment percentages than their bachelor counterparts. This suggests that returning to further studies could have a positive effect on improving employability for graduates from these fields.

In addition, Table 11 shows that Masters graduates generally have higher median earnings than their bachelor counterparts. However it is worth noting that most Masters graduates experience a lower rate of increase in median earnings over the first five years of employment compared to their bachelor counterparts, with the exception of architecture graduates (85.3 percent), society and culture graduates (45.3 percent), and creative arts graduates (49.2 percent). Interestingly, Masters graduates from health disciplines have a much lower median earning increase (32.2 percent; Table 7) and median earning (\$61,581; Table 7) than their bachelor graduates counterpart after five years of employment. This data provides evidence that returning to further studies can improve employability for all bachelor graduates initially, but would not guarantee a substantial increase in earnings for all graduates. This shows that changes in earnings over time are not affected by qualifications alone.

Table 11.

*The annual median earning of Masters graduates from different fields of study, one, two and five year after study*

Field of study	Year 1	Year 2	Year 5	Earnings increase
Natural & physical sciences	\$41,599	\$47,193	\$56,315	35.4%
Information technology	\$51,464	\$52,039	\$75,000	45.7%
Engineering & related technologies	\$51,906	\$59,616	\$71,877	38.5%
Architecture & building	\$35,909	\$46,795	\$66,533	85.3%
Agriculture, environmental & related studies	\$43,891	\$49,573	\$53,541	22.0%
Health	\$47,614	\$50,552	\$50,824	6.7%
Education	\$40,235	\$49,962	\$55,393	37.7%
Management & commerce	\$50,339	\$51,817	\$64,362	27.9%
Society & culture	\$41,970	\$50,036	\$60,966	45.3%
Creative arts	\$30,098	\$36,100	\$44,902	49.2%
Total students	\$43,595	\$50,227	\$59,584	36.7%

*Note.* Adapted from 'Earnings-and-destinations-detailed-national-report-to-2012' file. Retrieved from Education Counts (2014c)

Ministry of Education data also provides a category for graduates who are neither employed, nor gone on to further study, nor on the benefit since graduation. Graduates

in this category are often unable to be tracked because of reasons such as migration overseas, and these bachelor graduates are illustrated in Table 12.

Table 12.

*Sorted by fields of study, percentage of Bachelor graduates who were unable to track, or did not fit any of the criteria above*

<b>Field of study</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 5</b>
<b>Natural &amp; physical sciences</b>	4%	5%	7%
<b>Information technology</b>	7%	6%	8%
<b>Engineering &amp; related technologies</b>	6%	4%	7%
<b>Architecture &amp; building</b>	4%	5%	9%
<b>Agriculture, environmental &amp; related studies</b>	4%	4%	8%
<b>Health</b>	2%	3%	8%
<b>Education</b>	2%	3%	8%
<b>Management &amp; commerce</b>	5%	5%	10%
<b>Society &amp; culture</b>	4%	5%	8%
<b>Creative arts</b>	4%	6%	8%
<b>Total students</b>	4%	5%	8%

*Note.* Adapted from ‘Earnings-and-destinations-detailed-national-report-to-2012’ file. Retrieved from Education Counts (2014c)

As shown in Table 12, around 4 percent of all bachelor graduates were unable to be tracked by the Ministry. The percentage across different fields of study varies, ranging from 7 percent of information technology graduates to 2 percent of health and education graduates. The low percentages in this category could be explained by the higher employment percentage in Table 7. For example, 77 percent of education graduates are in employment in their first year after graduation, and only 2 percent of education graduates who were unable to be tracked. However, the higher proportions of information technology and engineering graduates who could no longer be traced by the Ministry is of concern. This could suggest a high rate of migration from New Zealand amongst graduates from these fields. If this is the case, it suggests a significant problem with the STEM focused policies by the current National government, given the emphasis that has been given on the importance of these to building New Zealand’s domestic economy.

### **3.12 Conclusion**

After decades of low productivity and weak economic growth, the New Zealand economy remained commodity based and relied heavily on primary product exports by the end of the 1990s. In 1999, the newly elected Labour-led government attempted to implement a series of economic reforms to actively encourage economic growth. Their policies aimed to build a successful economy that relies on the mobilization of knowledge. These policies followed the global trends of other developed nations at the time, and fundamentally affected New Zealand society's perception of tertiary education.

The Growth and Innovation Framework best represented the policy approach of the Labour government. Published in 2002, the Labour government aimed to uplift the earnings of average New Zealanders by creating an innovative economy, one that remained internationally competitive through acquiring knowledge and apply skills. The four key features in the framework were reflected in Labour's policies and statements from different Ministers. The emphasis on creating a skilled workforce through tertiary education resulted in significant increases in tertiary enrolment. Leading Ministers such as Maharey and Hodgson argued that New Zealand would benefit from a knowledge economy because it would create better outcomes for New Zealand society. This focus on society is a major distinction between policies by the Labour government and the National government. By 2005, the term 'knowledge economy' was not found among the political discourse in New Zealand, instead economic development was focused mainly on the role of innovation. This shift of dialogue was reflected in policy statements, but tertiary education remained crucial in economic development.

Much like the Labour government, the current National-led government has emphasized the importance of tertiary education in developing economic wellbeing. Similarly to how the Growth and Innovation Framework defined the Labour government, the Business Growth Agenda represented the policy direction of the National-led government. Under the agenda, the National government stated that New Zealand needed to create an environment that support business growth, and only a prosperous business sector could benefit the entire New Zealand economy. Therefore in order to attract private revenues, New Zealand needed to have a skilled workforce that enabled and fostered innovation.

Despite the similarities in tertiary education policies between the Labour government and the National government, there were stark differences in rationale between the two,

which ultimately characterized their policy positions. Under the Labour government, tertiary education was seen as a method to generate knowledge and skills to encourage innovation; meanwhile under the National government tertiary education was perceived as a tool to deal with labour demands and an opportunity for New Zealanders to succeed. Unlike Labour's argument for tertiary education to create a more inclusive society, the rhetoric for tertiary education has primarily focused on improving employment outcomes of the individual under the National-led government. The National-led government also promoted tertiary education as a method to promote business growth, using the rationale that a well-educated workforce attracts businesses for a competitive economy (MBIE, 2013).

The concept of innovation has played a major role in the eras of both the Labour-led and National-led governments. The difference depended on their interpretations of innovation, and this was reflected in their policies. Under Labour, innovation was encouraged in different disciplines, because they acknowledged that innovative activities could stem from all sectors of the society. National, by contrast, has argued that the economy relies heavily on support from knowledge intensive sectors, and that innovation from one sector generally benefited other sectors; but Ministers often specifically emphasized STEM disciplines as those that would best foster innovation. The perceived economic benefit from STEM subjects heavily featured in policy statements and reports, and the increases in tertiary enrolment numbers for STEM subjects under National suggest the success of this emphasis. However, the economic benefit of this increased enrolment is yet to be seen due to a number of factors, such as migration of graduates and limited employment opportunities for certain graduates.

Even though the term 'knowledge economy' diminished in political discourse by 2005, its concept fundamentally shifted perceptions of the role of tertiary education in New Zealand, and the tertiary education sector has remained vital in economic development. It is undeniable that New Zealand tertiary enrolment and outcomes have generally been affected by policies. Overall, the data has shown that university graduates generally achieve better employment outcomes than those without qualifications, however their achievements vary across different disciplines. For example, the high employment percent among education graduates could indicate a high demand for these graduates or a high graduate employability among this group. However, a high employment rate among particular groups of graduates does not necessarily correlate with high median earnings, in fact education graduates have the lowest median earnings increase

compared to other graduates. This data also does not depict the quality of outcomes for these graduates outside the four categories. Key issues such as underemployment and skills mismatch are not addressed in the employment statistics. This stark distinction suggests that assessing graduate employment data alone does not reflect the complexity of actual graduate outcomes. In addition, the graduate outcome data also suggested that increasing tertiary enrolments alone does not necessary result in economic prosperity for the individual and the society.

## **DISCUSSION & CONCLUSION**

### **4.1 Knowledge and the economy**

The development of the knowledge economy has been instrumental in shaping New Zealand tertiary education policies, and it has subsequently influenced society's expectations of graduate outcomes despite of the actual outcomes of tertiary graduates.

Prior to the political rhetoric of the knowledge economy, agriculture and primary product exports were focused on as the main contributors to the New Zealand economy. By the late 1990s, the political discourse of a knowledge economy was spreading internationally as is shown in the international literature, and the concept was embraced in New Zealand by both major parties. With the election of the Labour-led government in 1999, policy was aimed towards transforming the twenty-first century New Zealand economy into one based on application of knowledge, with vital ingredients being a skilled workforce and a proliferation of innovation.

In the attempt to develop a knowledge society under the Labour-led government, the role of tertiary education was emphasized as creating the required skilled work force for the envisioned 'knowledge economy'. Citizens were encouraged to participate in tertiary education to gain new knowledge and skills, and in return, they were being given the opportunity to partake in and contribute to the new society, thereby creating an implied social contract between the New Zealand government and its citizens. The knowledge economy argument was based on the belief that a skilled workforce was the only means to create a successful twenty-first century economy, where skills and knowledge encourage innovation and minimize future economic and social risks. These beliefs have remained and dominated the New Zealand policy framework - despite a change in government - for tertiary education policies and economic development policies since.

### **4.2 The role of universities**

Under the application of the knowledge economy, tertiary education became focused on as a tool to supplement national goals and economic development. These features were prominent in the Growth and Innovation Framework by the Labour-led government, where tertiary education was ultimately seen as a mechanism to promote growth and foster innovation by creating a skilled work force, which would spread benefits to wider society by providing economic advantage and reducing social risks and creating a knowledge society. The tertiary education sector was also reformed to increase

efficiency and accessibility. Changes in the student loan schemes effectively abolished loan interests and encouraged tertiary enrolment. Universities were also subjected to reoriented expectations of commercial engagement with business models of management, with competitive funding models introduced in different universities worldwide. According to the existing literature, these drastic changes have had severe impacts on the tertiary education sectors, where a significant increase of enrolments and changing management models are argued to have affected the quality of graduates. The skills obtained by graduates have in some cases no longer been called suitable for their desired occupations, affecting their employability and creating spells of graduate unemployment and perceptions of underemployment.

The analysis on the New Zealand context found the emphasis on tertiary education policy was reflected in the increased in tertiary enrolment numbers since 1999. The change of government in New Zealand in 2008 changed little in this regard, and continued the expectations of the importance of tertiary education in economic development. Under the current National-led government, tertiary education is argued as vital to supplying a skilled work force, to contribute to objectives of encouraging business growth highlighted in the Business Growth Agenda.

The distinction between the Labour-led and the National-led governments lies in what the tertiary education system is expected to deliver, and ultimately depends on their interpretation of the ‘knowledge economy’. For the Labour-led government, tertiary education was a method to create a skilled work force for the benefit of the wider society. For the National-led government, the tertiary education sector has been treated as a direct tool to deal with labour demand and skills shortages, and as a mean to encourage business growth. The policy focus has also been more obviously directed to particular disciplines under this government. STEM disciplines have particularly been prioritized by the National-led government with the view that these will provide for innovation and economic competitiveness in areas perceived to have the greatest need and opportunity for New Zealand.

### **4.3 The legacy of the knowledge economy**

Although the term ‘knowledge economy’ is no longer prominent in New Zealand political discourse, its concept remained entrenched in contemporary tertiary education policy, and its legacy influenced perceptions and expectations of tertiary education. Since 1999, political rhetoric has orientated around the idea that tertiary education provides graduates the opportunity to participate and succeed in the new economic

structure. Knowledgeable graduates will be rewarded with better employability and higher incomes, and they will be able to participate socially in the new economic structure. At the same time, tertiary enrolment has increased significantly since 1999. However, these policies failed to address how a surplus of tertiary enrolments will eventually affect the graduate labour market. The existing international literature notes the rising numbers in graduate underemployment and unemployment, along with new literature focusing on graduate employability and skills mismatch. Meanwhile the New Zealand statistics showed graduate unemployment to have remained consistently low in the past decade, but there has been an emerging focus on graduate underemployment in recent New Zealand literature.

Previous related research has shown that the perception of underemployment was heavily dependent on the attitudes and expectations of graduates. This suggests that our expectations of tertiary education play a significant role in our expected outcomes for graduates. The existing literature has demonstrated that our expectations of tertiary education and graduates outcomes have changed in the past decade. These changing expectations coincide with the emerging focus on graduate employability in recent literature, where successful graduate outcomes rely heavily on the personal responsibilities of graduates to obtain employable skills, rather than supporting the previously implied social contract between the state and its citizens found in the literature.

#### **4.4 Policy outcomes**

The official data referred to in this research showed that graduates generally have better outcomes than those who lack qualifications. This suggests that the implied social contract is being fulfilled in New Zealand to a certain extent. Graduates with higher education qualifications generally earn significantly higher incomes than those without qualifications. These findings support the existing policy statements on the benefits of tertiary education, such as higher median earnings. However, what presents concern is in the detail of this data. There were significant variations in outcomes for graduates across levels of qualification and disciplines. First, only half of all bachelor graduates were shown to be in employment in their first year after graduation. In particular, the bachelor graduates from education degrees generally have the highest employment rate compared to other bachelor graduates, demonstrating a high demand for their skills and knowledge in the labour market. Around 70 percent of bachelor graduates generally gain employment by five years after their graduation, however bachelor graduates from

natural and physical science have consistently lower employment rates than graduates from other disciplines. This suggests that the general notion that tertiary education directly leads to employment needs to be understood better in the detail of disciplines and sectors of work.

Secondly, high rates of employment do not necessarily correlate with high earnings. Graduates from the education discipline have the highest employment rate of all disciplines, but their earnings were shown to increase at the slowest rate over five years, therefore suggesting that analysing graduate outcomes alone is not sufficient in depicting the changing demand of the labour market, nor the experience of employment; and relying on the tertiary education sector alone is not sufficient in dealing with labour demand.

Finally, the current National-led government has prioritized the funding of STEM disciplines as an attempt to foster innovation. However, graduates from these disciplines do not necessarily have better employment outcomes than other graduates. For example, bachelor graduates from natural and physical science have consistently lower employment rates compared to other graduates. In addition, most STEM graduates also have similar earnings to non-STEM graduates. This could explain the higher migration rates among graduates from certain globally 'in-demand' STEM disciplines, such as engineering and IT. Further, even though the current government has aimed to be cost effective with tertiary education funding and expects STEM graduates to innovate for economic growth, the possibly higher migration rates among these graduates poses a challenge to the existing funding models, while also indicating a lack of incentive for these graduates to contribute to the New Zealand economy.

#### **4.5 Conclusion**

There is no doubt that the concept of the knowledge economy has fundamentally shifted the expectations of tertiary education. This concept has affected the management models of universities and effectively commodified higher education worldwide. After decades of sluggish economic performance in New Zealand, the concept of knowledge economy was introduced to the New Zealand political climate in the late 1990s. Policymakers have argued that investing in higher education would provide better employment opportunities for the individual and generate wider economic and social benefits to the country. This ongoing political rhetoric implies an implicit agreement between the New Zealand government and its citizens, one that suggests a direct and linear relationship between tertiary education and better economic and social outcomes.

Universities have become more widely accessible through reforms of the student loan schemes and competitive funding models were introduced to enhance efficiency in education institutions.

Coinciding with the political rhetoric and reforms in New Zealand tertiary education, enrolments have increased substantially since 1999 and graduates generally expected better employment outcomes than those without qualifications. The increasing population were continuously encouraged to participate in tertiary education to gain knowledge and skills in the new economic structure, and lack of qualifications were increasingly seen as a risk in the new society. However these policies for a knowledge economy often failed to address the existing structural problems in the labour market, or address how a surplus of tertiary graduates affects the labour market.

These issues were reflected in the actual outcomes for graduates where almost half of bachelor graduates fail to gain employment after graduation, suggesting a difficult transition between tertiary education and employment. This difficulty contradicts the implicit agreement between the state and its citizens, and its complications were further discussed in the literature. International literature have shown cases of graduate unemployment and underemployment, and demonstrated their detrimental effects on the individual and the wider economy. For those New Zealand bachelor-level graduates who gained employment after graduation, the data provided does not explain the quality of employment for these graduates, nor does it address whether the employment they gain is associated with their fields of study. These statistics question whether the continuing investment in tertiary education truly produces knowledge intensive workers for innovation given the known experience of underemployment in New Zealand. While there is existing research on graduate underemployment in New Zealand, the scarcity of data and studies indicate the necessity for potential future research on the topic.

This analysis in the dissertation focused on what informed current tertiary education policies in New Zealand and how the expectations have translated into graduate outcomes. It has indicated a difficult transition between tertiary education and employment in New Zealand, and that the expected outcomes for graduates have not in all cases been met. The limited access to appropriate data meant the researcher could not address some of the concepts in the literature, such as graduate employability, over-education and skills mismatch, but has gone some way to provide a basis for examining these phenomena further in future research.

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