INSTITUTIONS, THE STATE AND PERFORMANCE:

Evidence from South Korea

Jongseok Lee

Submitted in accordance with the requirements for the degree of
Doctor of Philosophy

The University of Leeds

Centre for Advanced Studies in Finance
Leeds University Business School

October, 2011

The candidate confirms that the work submitted is his own, except where work which has formed part of jointly-authored publications has been included. The contribution of the candidate and the other authors to this work has been explicitly indicated below. The Candidate confirms that appropriate credit has been given within the thesis where reference has been made to the work of others.

Thesis Section	Jointly-authored Publication
Chapter 3: Industrial Policy as an Engine of Economic Growth: A Framework of Analysis and Evidence from South Korea (1960 – 1996)	Lee, J., Clacher, I. & Keasey, K. (2012). Industrial Policy as an Engine of Economic Growth: A Framework of Analysis and Evidence from South Korea (1960 – 1996). *Business History*, forthcoming.

The candidate confirms that he is the principal author of the publication listed above. The work contained in the article arose directly out of the work for this PhD thesis. For the article, the candidate undertook the literature review, data collection, qualitative and quantitative analysis, and made a significant contribution to the conceptual framework used.

The University of Leeds

and

Jongseok Lee

Acknowledgements

Abstract

The purpose of this thesis is to investigate whether State intervention in the market can be a catalyst for economic growth by examining the cases of South Korea. Since State intervention in the market typically takes two forms; namely, implementing industrial policy and controlling State-owned enterprises (SOEs), I investigate industrial policy as an overall strategy of state intervention, and performance contract and board of directors as governance mechanisms of SOEs. In doing so, the thesis contributes to the existing knowledge in the following ways.

First, this thesis extends the existing literature on industrial policy by shedding new light on the dynamic nature of industrial policy. That is, industrial policy necessarily changes the market conditions where it has been shaped and, therefore, it becomes outdated, which necessitates new policies. Given this, I propose a dynamic framework for successful industrial policy over time and find that South Korean industrial policy over the period 1960–1996 can be explained within the framework, confirming that successful industrial policy should be a dynamic and evolutionary process which is responsive to changes in institutional environment.

Second, the thesis extends the existing literature on performance contracts (PCs) by examining whether PCs can actually improve the performance of SOEs. From relevant theories, the thesis draws out conditions that 'sensible' PCs measures should meet so as to effectively motivate SOEs to perform better and the use of Total Quality Management (TQM) as a basis for generating specific PC measures. The arguments are then empirically tested using data from the South Korean PCs which are built on TQM. The results show that the South Korean PC meets the conditions for 'sensible' measures, and actually improve the performance of the South Korean SOEs, indicating that PCs can improve the performance of SOEs where PCs incorporate sensible measures.

Finally, this thesis extends the existing literature on corporate governance by empirically investigating how corporate boards add value to firms in the context of SOEs, and how SOE boards interacts with PCs. Using a novel framework that incorporate board process, the thesis derives empirical evidence that PCs act as substitute for board monitoring. The results indicate that SOEs do adjust their internal governance in response to internal imperatives (the reduced need for monitoring due to the presence of PCs) rather than institutional pressure of PCs for effective monitoring. This implies that regulators should consider this substitutive effect when they design the governance structure of SOEs.

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List of Abbreviations

ABPE   Annual Business Performance Evaluation

GAI   Government Affiliated Institution

GII   Government Invested Institution

HCI   Heavy and Chemical Industry

PC   Performance Contract

PI   Public Institution

SEM   Structural Equation Modelling

SOE   State-owned Enterprise

TQM   Total Quality Management

Chapter 1 : Introduction

1.1 Motivation and Background

The South Korean economy has grown rapidly from being one of the poorest countries in the world in the 1960s to the World's 11th largest economy (in 2003) within 45 years, despite the small country size and the lack of natural resources. More specifically, up until 1961, GDP per capita was around $80,[1] and without any significant natural resources, capital stock or technological capabilities, the country was heavily dependent on foreign aid.[2] Recently, however, the South Korean economy has become one of the major exporters of hi-tech products such as automobiles, electronics, IT devices, marine plant, petrochemicals, and so on. Over the last 45 years, GDP growth rate has been 7.5% per annum and during the period of 1962~1996, before the Asian financial crisis, it was 8.95% per annum,[3] which is one of the highest and long lived period of economic growth in human history (Chang, 2006, p. 17). Accordingly, GDP per capita has reached about $30,000 in 2009.[4]

What made such rapid and persistent economic growth possible? There has been much debate over the determinants of South Korea's economic success and this is a good reflection of the debate between neo-liberalism and interventionism. Neo-liberalists argue that State intervention in the market produces distortions in resource allocation because the State does not have relevant 'information', and, further, since the gain from State intervention is essentially economic rent, they claim that State intervention necessarily invites 'rent-seeking' and 'corruption' (Burton, 1983; Grossman, 1986). In terms of South Korea, neo-liberal economists have argued that the economic success should be attributed to 'market-oriented institutional structures,' with various State interventions in the market effectively cancelling each other out (World Bank, 1993; Balassa, 1988).[5]

Interventionists meanwhile argue that the market mechanism is imperfect and, therefore, the State should complement the market (Keynes, 1937; Wade, 1990; Lazonick,

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[1] In 1961, the GDP per capita of South Korea was $82 which was similar to that of Kenya ($72) and much less than that of Ghana ($179) (see Chang, 2006, p. 49).

[2] For example, the average share of foreign aid in total fiscal income was 49.5% during 1954~1961.

[3] The data was collected by the author from the Bank of Korea website (www.bok.or.kr).

[4] 'World Development Indicators' (World Bank), accessed on 7, July, 2011.

[5] For example, a World Bank Report, 'The East Asian Miracle' (1993) says, "despite government intentions the manufacturing sector may have evolved roughly in accord with neo-classical expectations" (p. 333).

1993). In terms of the South Korean economy, interventionists argue that the economic success should be attributed to the active role that the South Korean government played in providing strong incentives to the private sector to accumulate capital stock and technological capabilities (e.g.,Amsden, 1989; Wade, 1990). Further, until the mid-1990s, the performance of other East Asian countries was so impressive that some scholars proposed the 'East Asian model', featuring active State interventions and the unique Confucian culture, as an alternative economic model to 'Western' capitalism (Casey, 2006; Haggard, 1998).

The 1997 Asian financial crisis however seemed to swing the debate in favour of neo-liberalists. Although interventionists argued that the crisis was a 'mismanaged financial problem' (e.g., Wade, 1998), the International Monetary Fund (IMF) defined it as a structural problem, resulting from State intervention. In order to secure a bailout loan from the IMF, South Korea had to surrender the State's traditional role in economic development. Some Western commentators said that the Asian Crisis is 'the end of interventionism' and 'the start of the Western style free-market across the globe' (Alan Greenspan, cited in Wade, 1998, p. 1536). Indeed, since the mid of 1990s, in conjunction with the World Trade Organisation (WTO), the IMF and the World Bank have required deregulation package that comprises liberalising domestic market and privatisation (Gore, 2000)—known as the 'Washington Consensus'—as a precondition for their loans to recipient countries, asserting the benefits of free trade and free market, and this has significantly reduced the level of State intervention in the market in developing countries.

Interventionists (e.g., Wade, 2003; Chang, 2002) have strongly criticised the Washington Consensus and the WTO regime as developed countries' 'kicking away the ladder' by which they have climbed up. For example, Wade (2003) argues that the Washington Consensus and the WTO regime can be better understood in the light of Friedrich List's following comment on how Britain and Holland behaved in the 19th century;

"It is a very clever common device that when anyone has attained the summit of greatness, he kicks away the ladder by which he has climbed up, in order to deprive others of the means of climbing up after him.... Any nation which by means of protective duties and restrictions on navigation has raised her manufacturing power and her navigation to such a degree of development that no other nation can sustain free competition with her, can do nothing wiser than to throw away these ladders of her greatness, to preach to other nations the benefits of free trade, and to declare in penitent tones that she has hitherto wandered in the paths of error,

and has now for the first time succeeded in discovering the truth." (List, 1966: 1885, p.368)

However, the recent financial crisis has raised significant questions about liberal free-markets as a mechanism for generating long-run economic growth. The recent 2010 Seoul G-20 summit communiqué reflects such suspicion. In the communiqué, the summit announced that "we further believe there is not a 'one size fits all' formula for development success and that developing countries must take the lead in designing and implementing development strategies tailored to their individual needs and circumstances".[6]

Indeed, a growing number of scholars agree that State intervention can be a catalyst for economic growth and their arguments are mainly based on the following three reasons. First, the liberal market mechanism has limited capacity to coordinate structural change (Langlois and Robertson, 1995; Chang, 1994; North, 2005). For example, economic development typically begins with the transformation of an agricultural society into a manufacturing-based society. However, in a decentralised market mechanism, such a structural change does not occur naturally, because vested interest groups (i.e., landlords) owe their wealth and success to the existing agricultural industry and have no reason to favour such a structural change. However, since the State can create laws, State intervention can coordinate such change at much lower costs (Chang, 1994) . Second, the State's lack of information and the rent-seeking problem can be effectively overcome if a society has a proper institutional setting in which the State collaborates with the private sector, and the autonomy of the State and the collaboration are balanced (Evans, 1989; Wade, 1990; Rodrik, 2004). Finally, the history of economic development in advanced countries (including the UK, US and Germany) reveals that, in all cases, the government played a significant role (Polanyi, 1957 ; Kozul-Wright, 1995; Bairoch and Kozul-Wright, 1996; Chang, 2002).

However, researchers often overestimate or underestimate the role of the State in the market. For example, some interventionists regard economic and business institutions as 'arbitrarily adjustable' variables by the State, overlooking the role of individuals and business who actually invest in capital stock and technologies (Haggard, 1998).[7] Neo-liberalists meanwhile ignore the State, placing too much emphasis on the rationality of individuals. Finally, researchers in so-called 'model of capitalism' often see economic institutions as a 'given' with too much emphasis on 'idiosyncratic' social structure and they often overlook both the State and business (Casey, 2006). Indeed, the State is neither omniscient nor

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[6] This is called the 'Seoul Development Consensus for Shared Growth' (Annex I, p. 2).

[7] For example, see Amsden (1994).

incompetent and, more importantly, that goes for business and the market as well (North, 2005; Williamson, 2002). This is why a growing number of researchers claim that the State and business should collaborate and researchers should have a balanced perspective in analysing the role of the State in the market (Rodrik, 2004, p.17; North, 1990, 2005; Haggard, 1998).

With the above motivation and theoretical background, the current thesis investigates whether State intervention in the market can have a positive impact on the performance of firms and the economy, and in the long run, be a catalyst for economic growth. Typically, State intervention in the market takes two forms. The first is implementing industrial policy which aims to influence the choices of economic agents in order to promote certain industries or economic activities. Therefore, industrial policy necessarily has certain goals and, to achieve the goals, the State implements a wide variety of policy instruments. In this sense, industrial policy can be understood as the strategy or framework of State intervention in the market rather than specific policy means. Hence, the current thesis first analyses industrial policy as an overall strategy of State intervention in the market for fostering economic growth.

Second, while many industrial policies operate within markets, the State often directly owns and controls companies (State-owned enterprises; SOEs) where market mechanisms do not work well or the industries is deemed to be of crucial importance. Financial institutions, utilities and infrastructure firms owned by the State are the best examples. The conceptual advantage of SOEs is that a company level of 'efficiency' and 'public interest' can be pursued at the same time (Islam, 1993). However, in practice, SOEs have long been criticised for their extremely high agency costs, which have often been an obstacle to economic growth in many countries (Megginson and Netter, 2001; Shirley, 1989b). Therefore, as a second research topic, the current thesis investigates how the State can reduce the agency problems of SOEs and effectively motivate SOEs to perform better, using the 'performance contract' as an external control mechanism.

Finally, company-level efficiency can be possible in SOEs only when a significant degree of autonomy is given to SOEs (Li, 1997; Jefferson and Rawski, 1994). However, a certain degree and scope of state control is also necessary because SOEs have to pursue public interests and agency problems need to be limited (Vickers and Yarrow, 1991; Estrin and Perotin, 1991). The board of directors is a key governance mechanism that potentially allows these two conflicting requirements to be unified through monitoring managers within the firm on behalf of the State (Fama and Jensen, 1983). Moreover, the board of directors is also seen as bringing access to external resources (Pfeffer and Salancik, 1978) and formulating the

organisational strategy (Judge and Zeithaml, 1992) of SOEs. However, the way in which corporate boards add value may differ across firms because different firms face different internal management issues and institutional environments which impact the degree to which the three board roles mentioned above are required in different organisations (Johnson et al., 1996, p. 465). Since the most important factor in the operation of SOEs is the degree and scope of State control (Islam, 1993), the current thesis investigates 'how SOE boards add value to firms' and 'how such mechanisms interact with State control' to draw out implications on how the governance structure of SOEs should be designed to be effective.

The remainder of this chapter is structured as follows. Section 2 elaborates the three research topics and identifies the contributions of the current thesis. Section 3 outlines the structure of the rest of the thesis.

1.2 Research Questions and Contribution

As identified in the previous section, the overall objective of the current thesis is to investigate whether State intervention in the market can have a positive impact on the performance of firms and the economy, and in the long-run, be a catalyst for economic growth by analysing the cases of South Korea. To achieve this objective, the thesis focuses on answering the following three research questions:

1. **Can industrial policy induce long-run economic growth?**

2. **Can performance contracts improve the performance of SOEs?**

3. **How do SOE boards add value, and how do performance contracts change the activities of SOE boards?**

Research Question 1:
Can industrial policy induce long-run economic growth?

Although there is a body of literature on industrial policy, the existing arguments have been focused on two specific issues—namely, the informational disadvantage of the State and rent-seeking problems. Proponents of neo-liberal free-market argue that industrial policy cannot induce economic growth due to two problems. First, the market is better informed than the State and, therefore, industrial policy necessarily distorts market-based resource allocation (Krueger, 1990). Second, as any gain from industrial policy is economic rent industrial policy naturally invites rent-seeking behaviours by agents (Buchanan et al., 1980). Interventionist meanwhile counter-argue that the market is imperfect because it has only a limited capacity to coordinate stability and structural change over time and, therefore, industrial policy can solve the coordination problem at lower cost (Rodrik, 2004; Cohen, 2009; Chang, 2006). Interventionists also claim that the information problem and the possibility of rent-seeking can be overcome through establishing an institutional structure for a balanced collaboration mechanism between the State and the market.

This thesis extends the debate by shedding new light on the dynamic nature of industrial policy. That is, industrial policy necessarily changes the market conditions of the society where it has been shaped and, as a result, industrial policy becomes outdated (North, 2005). Therefore, a successful industrial policy should evolve over time. This raises the question: what will be the direction of such dynamic change? This study argues that the

trajectory of the dynamic change can be found from the history of advanced countries because, as many business and economic historians observe (e.g., Gerschenkron, 1962; Cimoli et al., 2009), under uncertainty, the fundamental way in which economic growth in backward countries has been achieved is through importing, imitating, and modifying institutional and technological knowledge from advanced countries. This study therefore suggests a dynamic industrial policy framework that explains successful industrial policy changes along with the changes in the quality and the quantity of capital stock and technological capabilities within the economy, and the social contexts. This framework is then applied to explain the historical changes in the industrial policies of South Korea and the economic development that occurred over the period 1960–1996. The results show that economic development can be explained within the framework and confirms that successful State intervention should be a dynamic and evolutionary process which is responsive to the changes in the quality and quantity of the capital stock and the technological capabilities within the economy as well as the social context in which policies are implemented.

Research Question 2:
Can performance contracts improve the performance of SOEs?

The SOE has long been a common institutional arrangement across countries for addressing market failure, industrial promotion and other wider social goals such as delivering social services. From a transaction cost theory perspective, SOEs are a very effective means to deal with areas where the market is failing and uncertainty is high. In the South Korean case, SOEs have played a critical role in providing financial services, industrial infrastructure and introducing new industries over the last 50 years. However, SOEs have long been criticized for being inefficient, which results from vague organisational goals, the lack of market discipline and unnecessary interventions from the State (Estrin and Perotin, 1991; Shleifer and Vishny, 1996). Although privatisation has been the dominant policy measure to solve these problems, privatisation necessarily involves discarding public interest which is a fundamental reason of State ownership of firms. When such public interest should not be discarded, privatisation cannot therefore be the solution.

Another approach has been to utilise 'performance contracts' (PCs).The performance contract (PC) refers to a written agreement between SOE manager and the State on the organisational goals the SOE should achieve, allocating decision rights to the manager, performance measures for assessing the extent to which the goals are achieved, and incentive payments for actual achievement (Heinrich and Marschke, 2010; Verbeeten, 2008; Shirley and

Xu, 2001). In fact, PCs are a variant of the incentive contracts which are often used in private sector firms to motivate managers. Since the 1980s New Public Management (NPM) has become a leading philosophy for 're-inventing' the public sector and PCs have been suggested as a key policy means by proponents of NPM to address the agency problems of SOEs and other public organisations (Hood, 1995; Jones, 1991; Islam, 1993). Underpinning this idea is the belief that the incentive mechanisms of PCs can motivate SOE managers, thereby limiting shirking. Moreover, vague and multiple organisational goals can be transformed to a limited number of clearly defined goals and, as a result of the structure and potential rewards for achievement set out in PCs, SOE managers have the right and the incentives to resist unnecessary intervention from bureaucrats and politicians.

Despite its long history and use across the World, there are only a few empirical studies on 'whether PCs can really improve the performance of SOEs', and the empirical results are inconclusive (Shirley and Xu, 2001; Speklé and Verbeeten, 2009). Researchers generally attribute the disappointing empirical results to the following three factors: (a) the lack of 'sensible' performance measures, (b) insufficient incentive and (c) State's lack of commitment to resources and managerial autonomy of SOEs. However, as Verbeeten (2008, p. 428) points out, the first issue, the lack of 'sensible' measures, can be seen as the most critical because, if the measures of PCs are not 'sensible' and, as a consequence, PC results are not reliable, then the State is justified in being reluctant to provide strong incentives and firm commitment to such contracts.

Accordingly, the current thesis investigates 'how PCs should be structured in order to effectively motivate SOEs to perform better, focusing on i) what kinds of performance measures are 'sensible' for motivating SOEs; and ii) whether PCs with 'sensible' performance measures can actually improve the performance of SOEs.

In doing so, the second part of this thesis contributes to the existing literature of performance contracts in the following three respects. First, based on the theories of organizational effectiveness, optimal incentive contracts and quality management, it identifies what constitutes 'sensible' measures for PCs. Although many researchers attribute the source of insignificant PC/SOE performance relationship to the lack of sensible measures, in fact, the existing studies only offers one or two specific issues - e.g., distortion (Baker, 2002); clarity in goal setting (Verbeeten, 2008); positive performance effects (Shirley and Xu, 2001). The current study attempts to fill this gap by suggesting four conditions for 'sensible' PC measures; namely, appropriate performance criteria, measurability, limiting distortion problems and positive causal links between performance criteria.

Second, it proposes using Total Quality Management (TQM) as a platform for generating specific 'sensible' PC measures. Since the TQM principles provide a wide range of factors that arguably constitute organisational performance in general, practitioners may design 'sensible' PC measures through selecting and modifying TQM principles. The Korean ABPE was recently reformed in this way. Therefore, the thesis empirically tests whether the Korean ABPE for SOEs meet the four conditions for 'sensible' PC measures.

Finally, the thesis provides new empirical evidence on whether PCs can actually improve the performance of SOEs where PCs incorporate 'sensible' measures. Although many researchers argue that this should be the case (Shirley and Xu, 2001; Behn, 2003), there is no empirical evidence to validate this assertion. The thesis therefore extends the existing literature on PCs by providing new empirical evidence and policy implications on 'how performance contract measures should be constructed in order to effectively motivate SOE managers to perform better.

Research Question 3:

How do SOE boards add value, and how do performance contracts change the activities of SOE boards?

The board of directors has long been at the centre of corporate governance research (Daily et al., 2003) because they are seen as adding value to firms by monitoring management (Fama and Jensen, 1983), bringing accesses to external resources (Pfeffer and Salancik, 1978) and formulating and revising corporate strategy (Judge and Zeithaml, 1992). In the context of SOEs, the board of directors is also a key governance mechanism that deals with agency problem between the State as the owner and SOE managers through monitoring the managers within the firms (Islam, 1993). The resource provision and strategic roles of SOE boards are also important since the resource allocation for SOEs are subject to political decision making (Boubakri et al., 2008), and recent deregulation has increased the level of uncertainty and competition SOEs face (OECD, 2005).

However, 'how corporate boards add value to firms' may differ across firms because different firms face different management issues and institutional environments which arguably influence role of the board to different degrees. For example, many researchers argue that the service role may be the most visible in firms which experience less need for active board monitoring as a result of strong alternative monitoring forces such as competitive product and managerial markets or regulations (Johnson et al., 1996, p. 424~5; Byrd and Hickman, 1992, p. 196; Fama and Jensen, 1983). Given the agency problems of SOEs, it is

expected that SOE boards primarily engage in monitoring. However, the State often imposes an additional control mechanism on SOEs to increase the overall monitoring of SOEs and, as previously mentioned, PCs are widely used to this end. Therefore, the relationship between the monitoring role of SOE boards and PCs is an interesting issue. Although the two mechanisms have been widely used across countries, to the best of my knowledge, little attention has been given to the relationship between these two. Nevertheless, this relationship is important because if PCs substitute the monitoring role of SOE boards, this implies that the State may not succeed in improving the monitoring level of SOEs by imposing PCs on SOEs.

Therefore, the third part of this thesis investigates 'how SOE boards add value to firms' and 'how the mechanisms interact with PCs'. The relationship could be either 'substitutive' or 'complementary'. If PCs effectively motivate and monitor SOE managers, the need for SOEs boards to monitor managers will be significantly reduced (Baysinger and Butler, 1985; Booth et al., 2002). Therefore, PCs may act as a substitute for SOE board monitoring. Alternatively, PCs may promote board monitoring. That is, since it is costly for the State to develop a dedicated PC for an individual firm (Stigler and Friedland, 1962; Joskow et al., 1993), PCs are typically based on 'best practices'[8] which put great emphasis on effective monitoring for addressing the agency problems and inefficiency of SOEs. Accordingly, the incentive mechanism of PCs and the reputational concern of SOE directors (i.e., wanting to be recognised by the state as experts in decision control) may encourage SOE boards to engage in more monitoring.

By empirically investigating these issues, the third part of this thesis extends the literature of corporate governance in the following three respects. First, while the conventional empirical approach for investigating corporate board/firm performance relationship is to directly relate a few attributes of board composition to firm performance, I incorporate board processes and board performance in the analysis. Further, I integrate agency theory, resource dependence theory and service role theory into the framework of analysis to reflect the multiple roles corporate boards are expected to perform (Roberts et al., 2005; Daily et al., 2003). By doing so, I attempt to explain more about board/firm performance firm performance relationships than the conventional approach. The results confirm that the transformation of human capital individual directors possess into actual board performance is significantly influenced by board process factors such as opportunity to engage in actual board activities, incentive for directors, power relations within the boardroom, and the quality of board routine

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[8] For example, the "OECD guidelines on the corporate governance of State-owned enterprises" states, "SOE boards should carry out their functions of monitoring of management and strategic guidance, subject to the objectives set by the government and the ownership entity" (OECD, 2005, Guideline VI-B, p. 17).

and so on, and therefore, researchers should incorporate board processes into their analysis of corporate boards (Forbes and Milliken, 1999; Roberts et al., 2005; Payne et al., 2009).

Second, this study extends the existing debate on the determinants of corporate governance structures: while some researchers argue that the existing governance structures of a firm is the result of the optimal choice of the firm in response to its internal imperatives (e.g., Ward et al., 2009; Baysinger and Zardkoohi, 1986), others argue that the governance structures are the result of institutional pressure that directly coerces firm to adopt certain structures (e.g., DiMaggio and Powell, 1983; Joskow et al., 1996). The empirical results of this study provide new evidence that SOE boards are more responsive to internal imperatives (i.e., the reduced need for board monitoring due to the presence of PCs) than the institutional pressure of PCs for effective board monitoring.

Finally, the empirical findings provide policy implications to regulators of SOEs. The substitutive PC – SOE board monitoring relationship indicates that regulators may not succeed in improving the overall monitoring of SOEs by implementing PCs. It will be better if the two mechanisms are balanced because the potential benefits of board monitoring differ from those of PCs in that the former is 'preventive' and 'comprehensive', while the latter is 'limited' to the scope of performance measures (Holmstrom and Milgrom, 1991) and 'corrective'. Therefore, it is suggested that regulators should consider substitutive relationships when they design PCs so as not to crowd out internal monitoring by SOE boards.

1.3 Outline of the Thesis

This section briefly outlines the current thesis. As previously mentioned, the current thesis comprises three main parts. Chapters 2 and 3 constitute the first part, the second part consists of Chapters 4 and 5, and Chapters 6 and 7 compose the third part.

Chapter 2 reviews the origin, evolution and theoretical foundation of industrial policy, and summarises the heated debate on whether industrial policy can induce economic growth. From a brief review of the history of industrial policy in the UK, US and Germany, the chapter finds that industrial policy played a critical role in the economic development that occurred in these countries. The summary of the industrial policy debate illustrates that information and rent-seeking problems have been at the centre of the debate but the problems can be overcome when the State/business relationships are collaborative and balanced.

In light of Chapter 2, Chapter 3 argues that an effective industrial policy should dynamically change over time in accordance with changes in the economic and social contexts. The chapter also argues that the trajectory of such dynamic changes can be derived from the history of industrialisations and economic developments in advanced countries. Given these, the chapter develops a dynamic framework for successful industrial policy changes over time. This framework is then used to explain the South Korean industrial policy change and economic success that occurred during the period of 1962~1996.

As a background of Chapter 5, Chapter 4 reviews 'why SOEs are utilised in capitalist economies' and 'why agency problem is a critical issue in SOEs'. This chapter then reviews two policy approaches – privatisation and performance contracts - for addressing agency problem in SOEs. It notes that when public interest cannot be discarded, privatisation cannot be the solution. The performance Contract (PC) is then introduced as an alternative policy instrument. In addition, the South Korean PC is introduced to provide a more specific basis for the empirical analysis in Chapter 5.

Chapter 5 investigates 'whether PCs can improve the performance of SOEs where PCs incorporate 'sensible' performance measures. To investigate this issue, first, from the relevant theories, this chapter draws outs four issues PC measures should address. The chapter then proposes that TQM can be used as a basis for generating specific PC measures that meet the four conditions. The chapter then empirically investigates whether PCs with such 'sensible' measures can actually improve the performance of SOEs by examining the South Korean PCs which are built on TQM principles.

Chapter 6 reviews the literature on corporate governance of SOEs and introduces the South Korean setting in order to provide a more specific background for the empirical study in Chapter 7. The chapter notes that the board of directors is the most important governance mechanism in the context of SOEs because the role of SOE boards reflects of the boundaries of State control and the autonomy of SOEs and, therefore, the role of SOE boards potentially determines the extent to which 'professional managerial skills' can be utilised. The chapter also discusses issues that arguably influence the role of SOE boards. The final section of the chapter introduces the governance structure of the Korean SOEs.

Chapter 7 empirically investigates 'how SOE boards add value to firms' and 'how such mechanisms are influenced by the presence of PCs' in the context of South Korean SOEs. In this chapter, SOE boards are hypothesised to perform multiple roles; namely, monitoring the management, bringing external resources and formulating organisational strategy. Given the assumption, the effects of PCs on SOE board/firm performance relationships are empirically investigated in three sequential stages: i) board composition, ii) board process and performance and iii) firm performance.

Finally, Chapter 8 summarises the main finding and contributions of this thesis and concludes the current thesis.

Chapter 2 : Review of the Literature on Industrial Policy

2.1 Introduction

There is no general consensus on the definition of industrial policy. This partly reflects philosophical differences in the role of the State in the market but it also reflects the wide variety in the scope and scale of industrial policies across countries (Wren, 2001; Cohen, 2009; Coate, 1996). Although neo-classical economists confine the role of the State to dealing with market failure, the market often interacts with non-market mechanisms [9] (Rodrik, 2004; Cimoli et al., 2009). A growing number of researchers, therefore, view industrial policy in a much wider scope. This study defines 'industrial policy' as referring to the strategy or framework of State intervention in the market, which comprises a wide variety of policies measures and institutional arrangements in order to foster the growth of the economy. More specifically, industrial policies can be classified into three areas: (a) providing a landscape to industries by providing company law, patent law, law enforcement system, and industrial standards on quality and safety (North, 1990): (b) fostering technological progress through subsidising R&D projects, training programs and education, which is often associated with competition-promoting or competition-restrictive policy measures (Cohen, 2009); and (c) redistributing resources in favour of specific industries or regions (Cowling et al., 1999).

This chapter offers a brief review of the literature on industrial policy to provide a more specific background for an advanced analysis in Chapter 3. Section 2.2 reviews the origin and evolution of industrial policies in the 17th and 18th centuries of Britain, and how the British experience was imported and modified in the USA and Germany in the 19th century. Section 2.3 then briefly reviews the debate on industrial policy. Section 2.4 summarise this chapter and identifies the need of a framework that incorporates institutional environment and changes in institutional environment over time into the analysis of industrial policy.

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[9] For example, educational system significantly influences the productivity of firms in the economy through determining the quality of workers.

2.2 The Origin and Evolution of Industrial Policy

The origin of industrial policy might date back to 17th century Britain, when the British government provided protective trade policy and various complementary institutions with the implicit or explicit intention of promoting domestic industries (Davis, 1966b) . The beginning of Britain's industrial policy, however, was not the product of well-coordinated governmental strategy, but the result of an unintended self-discovery process (Rodrik, 2004). For example, Davis (1966b) dates the beginning of British industrial policy to 1690, when the government imposed a 20% import duty in addition to the existing general 5% duty rate on imports of Indian textile goods in order to protect the domestic woollen industry.[10] Another important historical event in 1693 was the imposition of a 25% special duty on silk, linens and white papers from France, which remained in force until the signature of the 'Eden Treaty' in 1786. Though this was for political purposes to restrain France, English manufacturers in those industries could grow fast thanks to such protective measures.

However, the most important momentum that formulated the protective English industrial policy was a sharp rise of the general tariff rate from 5% to 15~25% during 1694~1705 to finance a series of wars Britain was engaged in. Facing the sharp rise in the tariff rate, British industrialists complained loudly about 'three anomalies'. The first was increasing duty on exports, which had made British exports more expensive in the foreign market. The voice of textile industrialists was loudest and consequently the export duty remained unchanged in the Tariff Act of 1697. Further, in 1700, woollen goods were also exempted from the export duty and subsequent minor exemptions followed in a few years. The second anomaly was imposing a 15~25% import duty on raw materials, which also invited severe criticism from industries, since British consumers had to pay higher prices for British products that used imported raw materials than for imported products. Finally, the textile industries were given a concession on the import of dyestuffs in 1714, and Turkish silk and mohair yarn in 1718. The third anomaly, in association with the Navigation Act,[11] was the repayment of customs on the re-export of imported goods, because English products became more expensive than foreign goods in English colonial markets. To address this, the government removed the drawback on the re-export of foreign iron goods to the colonies, which provided a significant privilege to English industries against foreign competitors in colonial trade.

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[10] The historical accounts of English protectionism is mainly based on Davis(1966b) .

[11] According to the Act, all British colonies were to trade only via Britain. See Gardiner (1903)

Though the beginning was unintentional, from the early days of 18th century the uncoordinated measures had been consolidated with an explicit purpose of protecting domestic industries (Shafaeddin, 1998). The tariff reform of 1722 initiated by Sir Robert Walpole was the beginning (Cimoli et al., 2009). In the tariff reform, the export duty, the import duty on raw material and the drawback of paid duty on re-export of foreign goods were completely abolished. In the following period of 1747~1753, an additional 10% of import duty was added, making the British tariff the highest in Europe (Kozul-Wright, 1995). Further, the export and utilisation of English textile machinery were prohibited outside British territory in 1774 (Davis, 1966a). With a series of complementary institutions and policies that promoted the accumulation of capital (e.g., the creation of private banks in 1761 and saving banks in 1798) and the construction of industrial infrastructure (e.g., waterways and railways) during the 18th century, the protective trade policy made the British economy a world dominant industrialised country in the 18~19th centuries (Shafaeddin, 1998).

To latecomers such as the United States and Germany, the British experiences were already known knowledge. In the United States, Alexander Hamilton, the first U.S. Secretary of the Treasury, argued in a report to Congress in 1791 that Europe was more advanced in manufacturing and its industries enjoyed governmental aids which destroyed new industries in other countries (Hamilton, 1934). Against this, Hamilton proposed the famous 'infant industry protection' to protect a number of industries with significant potential for productivity gain and market linkage effects. The measures were protective trade policies similar to those of 18th century Britain. Further, he also called for government intervention to supply "the deficiency of private resources" as complementary institutions to market (Shafaeddin, 1998).

Based on Hamilton's arguments, from 1816, the United States implemented the infant industry protection policy until 1931 with the aim of promoting a number of specific industries (Shafaeddin, 1998). The efforts of the US government to provide complementary institutions were also significant—e.g., the promotion of the Joint Stock Companies from the 1830s, introducing a mandatory educational system in 1852, and subsidised research stations in 1875, and so on (Goldsmith, 1995). With the significant government role, US industries grew into the most competent industries in the world, while their European rivals were devastated by the two World Wars (Shafaeddin, 1998).

The intellectual basis for German industrial policy was Friedrich List's famous essay, 'The National System of Political Economy' in 1841. The most innovative aspect of List was the recognition of 'productive power' as a cause of 'national wealth'(Levi-Faur, 1997). In the essay, List defined three types of capital: natural capital (i.e., natural resources), material

capital, and mental capital (e.g., skills, technologies, policies, entrepreneurs, etc.) and claimed that 'productive power' could be created by interactions between the three capitals (Levi-Faur, 1997). To promote the productive power, List requested the German State to protect domestic manufacturing industries until the industries were mature enough to compete with well-established foreign competitors.

In practice, the German protective tariff system began in the 1840s and was reinforced until the 1890s (Ashley, 1920)[12]. To promote exports, the German government exempted the imports of raw materials that were not produced at home from paying custom in 1891 and introduced exporting business in the 1890s. Further, in 1903, it also introduced the drawback of paid custom on imports for processing and repairing with the purpose of re-export.

Apart from the protective trade policy, what really distinguishes German industrialisation from the English experience are two institutional settings: namely, the Prussian style strong bureaucracy and the tradition of corporatism (Abelshauser, 2005). From the late 19th century, the newly unified German State had acted as an 'agent of change' and within the corporatist institutional structure, the State collaborated with industrialists and other social groups to create economic institutions such as oligopolistic markets, a highly regarded unique vocational training system, an extensive network of industry-focused research universities, a relational banking system, and a social security system that had not existed before in Britain (Abelshauser, 2005). As many economists and historians claim, the German experiences were introduced to and modified in Japan and, somewhat later, in other East Asian countries such as Korea and Taiwan (Cimoli et al., 2009; Chang, 2002; Chang, 2006; McNamara, 1999; Akita, 1996; Evans, 1989).

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[12] This historical account of the German tariff system is based on Ashley (1920)

2.3 Theoretical Foundations of Industrial Policy

As discussed before, industrial policy has evolved from individual protective trade policy measures and practices rather than economic theories. However, a body of literature provides some theoretical justifications for industrial policy. This sub-section briefly summarises those.

2.3.1 Neo-classical Approach: Market Failure

Neoclassical economists do not generally agree that State intervention in the market induces economic growth, because of informational disadvantage in the State and the possibility of rent-seeking (Krueger, 1990). However, in the case of market failures, they justify State intervention (Cohen, 2009). The first type of market failure is 'information asymmetry' between consumers and producers. Since consumers do not have sufficient information on the products they purchase, they tend to evaluate the quality of products on average, which discourages producers from investing in capital and technologies for better goods (*ibid.*). In this circumstance, the State may introduce institutions (e.g., a certification system) which provide some signals to customers on the quality of the goods as well as incentive for producers to reveal private information on the quality of their products.

The second type of market failure is 'externalities' (Cohen, 2009). As is well known, R&D is best example of economic behaviour with positive externality: the social benefit of R&D is greater than the cost borne by individuals who invest in R&D because, once the innovations from R&D are open to public, imitating such innovations is possible and the price of imitation becomes almost zero over time. Therefore, R&D of the economy will be sub-optimal unless there is appropriate compensation from the State. In this case, the State is justified in introducing policy measures such as subsidies on R&D projects.

2.3.2 Spill Over and Learning Effects: Picking Winners

The 'spill over effect' means that there are certain industries that have strong forward and backward industrial linkage effects and/or potentially higher profits than others (e.g., consider financial and high-tech industries). Therefore, developing such industries may lead to a faster growth of an economy (Chang, 2006). A typical policy framework to this end is 'selective industrial policy' (i.e., picking winners) that provides preferential conditions (e.g., protective trade policy, subsidised loans and preferential taxation) to such industries. The

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underpinning of such policy is learning by doing effect: that is, the target industries can get mature through repeating production over time (*ibid*).

2.3.3 The New Institutional Approach: Coordination Problem

Recently, new institutional theories have provided new theoretical justifications for industrial policy: namely, the need for 'stability' and 'structural change' (Langlois and Robertson, 1995; Chang and Rawthorn, 1995). First, economic growth needs stability. According to the transaction costs theory, uncertainty significantly erodes entrepreneurs' and workers' incentives to invest in 'dedicated' assets and technologies, due to the possibility of opportunistic behaviours (Williamson, 1979). However, since economic growth is fundamentally based on 'economies of scale' and 'specialisation'(North, 1990), institutions that decrease the degree of uncertainty in the market are essential to promote investment in capital stock and technologies. While the liberal market does not have the capacity to generate such institutions due to the opportunism, the State is able to do such a job because it has rule-making authority (Langlois and Robertson, 1995). In this sense, policy measures such as protective trade policy and competition-prohibitive licensing can be justified.

Second, economic growth often requires structural change. According to Nelson (1995), existing technologies are the material basis of the existing production systems (e.g., firms and industrial structure) and surrounding institutions (e.g., company laws and commercial law). Dosi (1988) argues that the existing technologies always face problems but solutions (i.e., innovations) can always be found from the existing systems. Thus, technologies constantly evolve within a certain 'technological paradigm' over time (Nelson, 1995). In this sense, technological innovations are the source of economic growth (Baumol et al., 1994).

However, due to the inter-dependence of modern economic activities (Abramovitz, 1986, p.402), such innovations often cause 'tensions' with the owners of other capabilities (e.g., suppliers and employees) who owe their existence significantly to the existing institutions [13] (North, 2005). It typically takes a long time for them to be convinced of the positive effects of such innovations. Further, since the individual innovators have only a limited capacity to persuade other constituents (i.e., the owners of other capabilities) to

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[13] For example, the invention of the automobile made horsemen lose their jobs and, further, required new roads, petrol stations, traffic signals and traffic rules. Another example is the recent IT - revolution that changed not only the production system or organisational structure of firms but also education, industrial relations and political systems.

participate in the innovations, institutional changes, which may enable the innovators to capture new opportunities, are unlikely to take place within a 'right' time (Langlois and Robertson, 1995, p.52). If the innovations require changes on a relatively small scale, merger and acquisition will be enough (Langlois and Robertson, 1995), but if the innovations require 'structural' changes, State intervention can be a more effective way to foster such structural changes (Chang and Rawthorn, 1995). The best example is the 'Big Push' argument, which explains the critical role of the State in the early stage of industrialisation (Rosenstein-Rodan, 1943).

Recently, a number of institutionalists have argued that the State should act as an 'institutional entrepreneur' (Nasra and Dacin, 2010; Spencer et al., 2005; Busenitz et al., 2000; Chang and Rawthorn, 1995). For example, taking the example of Dubai, Nasra and Dacin (2010) argue that differences in national strategy over institutions are (partly) the source of differences in economic performance across countries, and, therefore, the State should take a more active role in exploring new opportunities and building the necessary institutions to induce economic growth rather than staying as an coordinator.

2.4 Industrial Policy Debate

Since the 1970s, neo-classical economists have criticised industrial policy for a number of reasons and such criticism has been supported by three international political economic factors (Barton et al., 2010; Shafaeddin, 1998). The first was the dominant status of US economy in world trade. As Britain did in the 19th century, the USA has strongly demanded free trade in order to let American firms secure an easy access to foreign markets to enjoy the economies of scale (Kozul-Wright, 1995). The desire of the USA for free trade resulted in the first round of the General Agreement on Tariff and Trade (GATT) in 1947 (Shafaeddin, 1998). The second was the inauguration of the World Trade Organisation (WTO) as the governing body of GATT in 1995. The ultimate purpose of the WTO and GATT is to achieve free trade and, to this end, the WTO restricts its member countries from implementing most traditional industrial policy measures that prefers domestic goods and firms or discriminates against foreign products and firms in domestic market. The last was the international financial system that comprises the International Monetary Fund (IMF) and World Bank. These international financial institutions were created to provide financial and institutional support for less developed or financially endangered countries. However, since these institutions are mainly backed by the USA and Western European countries, which are the main supporters of free trade, these institutions continuously demand a deregulation package, known as the 'Washington Consensus', to recipient countries in exchange for the financial support they provide.

Nevertheless, interventionists have continuously argued that well designed industrial polices can induce economic growth and their arguments have been supported by the economic success of post war Japan and East Asian countries where industrial policies and the State played critical roles. This subsection briefly summarises the neo-classical criticisms and the counter-arguments of interventionists. The final part of this section asks and answers whether industrial policy is still relevant under the WTO regime.

2.4.1 Informational Disadvantage of the State

First, the biggest criticism from neo-classical economists about industrial policy has been the informational disadvantage of the State compared to market participants. Obviously efficient industrial policy needs knowledge and locally dispersed information. However, neo-classical economists have argued that the State has neither information nor competence to process relevant information. For instance, Eliasson et al. (1998, p. 272~3) summarise the reasons as follows. First, they assert that the locally dispersed information is extremely costly

to collect and firms that apply for a governmental support may not reveal full information. Second, they argue that politicians and bureaucrats typically lack relevant competence to assess which firms or industry to perform well and which ones are more likely to fail. Third, according to them, "bureaucrats and politicians are not working under the 'laws of profit and loss', ... they lack the incentives of private investors to avoid losers". Accordingly, they strongly argue that industrial policies typically end up with distorting market resource allocation which is believed to be optimal, and picking 'losers' instead of 'winners' (Burton, 1983; Grossman, 1986; Krueger, 1990).

The counter-arguments of interventionists can be summarised as follows. First, due to the inherent bureaucratic cost, large firms are not so different from the State in terms of the informational problem (Chang, 2006). Due to uncertainty, complexity and the transaction costs, the multi-divisional large firm under a hierarchical control has been the dominant form of production system in modern economies (Williamson, 2002). However, such a hierarchical organisational structure typically impedes managers from efficiently processing information, which is not different from the information problem of the State. Second, regarding the competence of bureaucrats in 'picking winners', interventionists argue that industrial technologies evolve along such a predictable path[14] that even bureaucrats are able to choose which sectors to favour and what types of support to offer (Dore, 1986; p 135). Further, they contend that if we consider some country-specific constraints (e.g., natural resources, domestic market size, cultural factors, etc.), and successful experiences elsewhere to follow, 'picking winners' is not a very difficult job (Chang, 2006; Cowling et al., 1999). Third, many interventionists argue that the informational disadvantage of the State can be effectively overcome by collaboration between the State and business (Rodrik, 2004). Since the collaboration between the State and firms can be seen as a repeated game, firms cannot ignore their reputation in long-term relationship with the State and, therefore, they have incentive to cooperate even though they are at informational advantage (Kreps et al., 1982). Finally, regarding the distortion of market resource allocation, interventionists claim that the efficacy of industrial policy should be assessed in terms of 'whether the policy increases the growth rate' (i.e., 'growth efficiency') rather than in terms of 'whether it maximises the current welfare of the economy' (allocative efficiency) (Chang, 2006; Soete, 2007).

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[14] Dosi calls this as 'technical trajectory'. For more details, see Dosi (1982)

2.4.2 The Rent-seeking Problem

Another major neo-classical criticism of industrial policy is that any gain from industrial policy is fundamentally State-created 'economic rent' and, therefore, industrial policies can be easily affected by the rent-seeking behaviours of interest groups (Colander, 1984; Buchanan et al., 1980; Niskanen, 1975; Krueger, 1990).

The argument is based on a neo-utilitarian understanding of the State, which is the application of the neo-classical theory of the market to the political arena; that is, they understand the State as the nexus of political exchanges and that the incumbents are self-interested rational maximisers as other economic agents are. Since the incumbents need political support to survive in public office, they are expected to utilise their 'rule-making authority' to provide their political supporters with incentives to support them and such incentives are necessarily economic rents, stemming from constraining the 'optimal' market operation (e.g., regulation on entry to markets, providing subsidy or subsidised loans, etc.).

According to Krueger (1990, p. 18), once a system of protection against foreign competitors is set out for an industry, the industry tends to require a higher degree of protection and the proliferation of the protection to defend their positions. Further, initially unprotected groups may also begin lobbying for protection, arguing that their cases are, at least, as strong as those of already protected groups. He stresses that such nature of industrial policy makes domestic firms, which would grow by themselves otherwise, reliant on government supports.[15] Indeed, rent-seeking problems have been so ubiquitous, especially in developing countries in Latin America[16] and Africa, that it is much easier to find failed industrial policies than successful ones (Krueger, 1990). Therefore, neo-classical economists argue that State's rule-making authority should be limited to a minimal degree.

Regarding this issue, interventionists partly accept the criticism but assert that the rent-seeking can be effectively addressed (Evans, 1989; Chang, 2006; Cowling et al., 1999; Rodrik, 2004; Johnson, 1982). For instance, interventionists argue that individual bureaucrats are 'socialised' to serve governmental tasks, and, hence, they can adhere to governmental goals, being 'insulated' from the particularistic demands of interest groups (the notion of 'embedded autonomy') if the institutional structure for the State bureaucracy is appropriately

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[15] For example, Krueger (1991) analyses how American sugar program had evolved during the period of 1934~1987 in consideration of rent-seeking behaviours of the interest group.

[16] One of the most frequently mentioned example of this is the Brazilian computer industry of the 1980s which enjoyed a strong infant industry protection program but they didn't grew since the Brazilian State just protected the industry without providing incentive to get mature. (For more details, see Luzio and Greenstein, 1995)

built (Johnson, 1982; Evans, 1989; Wade, 1990). Evans (1989) argues that to build such State bureaucracy, a meritocratic recruitment and a predictable career path should be given to bureaucrats with sufficient rewards. Cowling et al. (1999) contend that if the decision-making process is structured to be transparent and open to public scrutiny, rent-seeking behaviours will be limited. Some researchers (e.g., see Rodrik, 2004) argue that policy measures with broader targets (e.g., subsidies on basic R&D projects rather than on industry-specific R&D projects) can decrease the possibility of rent-seeking. That is, because such policy measures increase the possibility of 'free riding' among rent-seekers due to the externality in the industrial policy targets (e.g., consider the externality of basic R&D projects), the policy measures decrease the potential gains of individual rent-seekers compared to the costs borne by them. In the case of infant industry protection, interventionists claim that the length of time during which governmental support will be provided should be fixed in advance (e.g., see Chang, 2006).

2.4.3 Relevance of Industrial Policy under the WTO Regime

Is the industrial policy still relevant under the WTO regime? This is a critical question because the WTO officially bans its member countries from implementing most traditional industrial policy measures (e.g., protective tariffs, quotas, subsidies on exports, discrimination against foreign firms and products, etc.). As explained in section 2.2, the industrial policy measures were favourably used by all currently developed States including the UK, USA, Germany and others when they caught up with the advanced competitors (Rodrik, 2004). Therefore, some scholars view the inauguration of the WTO regime in 1995 as developed countries' "kicking away the ladder" by which they have climbed up (Wade, 2003; Chang, 2002). This claim is better understood in the light of Friedrich List's following observation on how head-started Britain and Holland behaved in 19th century.

> *It is a very clever common device that when anyone has attained the summit of greatness, he kicks away the ladder by which he has climbed up, in order to deprive others of the means of climbing up after him.... Any nation which by means of protective duties and restrictions on navigation has raised her manufacturing power and her navigation to such a degree of development that no other nation can sustain free competition with her, can do nothing wiser than to throw away these ladders of her greatness, to preach to other nations the benefits of free trade, and to declare in penitent tones that she has hitherto wandered in the paths of error, and has now for the first time succeeded in discovering the truth. (List, 1966: 1885, p.368)*

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Some political economists (e.g., Wade, 1998; Crotty and Lee, 2009) argue that the Western developed countries utilised the subsequent Asian Financial crisis of 1997 as an opportunity to disarm the newly industrialised Asian countries of their traditional industrial policy measures, asserting that the crisis resulted from State intervention and that the WTO regime was right. Indeed, some commentators viewed the Asian Crisis as the end of interventionism and the start of the 'Western style free market' (Alan Greenspan, cited in Wade, 1998, p.1536).

However, a number of interventionists claim that the WTO is still an evolving scheme and there is still much room for the member countries to implement industrial policies (2006; 2004). For example, governmental subsidies on the development of environment-related technology and products, basic R&D and disadvantaged regions are still possible; the member countries are still allowed to raise tariffs or impose quotas if they have a significant problem with their balance of payments (for more detail, see Rodrik, 2004).

Further, the recent crisis of 2008 seems to open up a new era for industrial policy. As Kenneth Rogoff, the former IMF chief economist, says, most developed countries, including the US, which is arguably the greatest supporter of the WTO and the Washington Consensus, "appear willing to contemplate any measure…to ensure that none of its major banks and investment houses fails". [17] Of course, such attitude makes a stark contrast with the 'laisser-faire' approach the developed countries have long been preaching. Indeed, the recent 2010 Seoul G-20 summit communiqué announced that "we further believe there is not a 'one size fits all' formula for development success and that developing countries must take the lead in designing and implementing development strategies tailored to their individual needs and circumstances" (in Annex I, p. 2). In light of these, industrial policy has been gaining more attention in recent days (Aghion et al., 2011).

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[17] The former IMF Chief Economist Kenneth Rogof's comment in Crotty and Lee (2009)

2.5 Summary

This chapter briefly reviewed the origin and evolution of industrial policy, its theoretical basis and the industrial policy debate between neo-classical economists and interventionists. The review of literature on industrial policy provides two important implications for further studies. First, virtually no developed country has grown up from the 'laissez-faire' approach. Although I only review how the State intervened in the market in Britain in the 17~18th centuries, and the USA and Germany in the 19th century, the stories extend straightforwardly to France (Gerschenkron, 1962), Japan and East Asian countries (Cimoli et al., 2009). Thus, it might be argued that industrial policy is a necessary condition for economic growth.

Second, however, not all countries have succeeded in fostering economic growth by implementing industrial policy. This indicates that badly designed industrial policy may significantly impede the domestic market from growing, as was the case in Latin American countries. Hence, industrial policy is not a 'necessary and sufficient' condition. However, as the summary of the industrial policy debate shows, proponents of industrial policy argue that most problems can be overcome if institutions and policy measures are well structured.

The following question then arises; what kinds of industrial policy should the State implement to effectively foster economic growth? Section 2.2 illustrates that there cannot be 'one size fits all' for two reasons; first, different countries are in different stages of economic development and institutional environments; second, more importantly, a 'right' industrial policy for a certain period can become ineffective over time because the market conditions and environment change through time - for example, consider the changes in trade policy of Britain and USA over time in section 2.2. However, the existing literature on industrial policy pays scant attention to the above two issues. As seen in section 2.3, this is perhaps due to the fact that industrial policy debate has long been focused on 'information disadvantage of the State' and 'rent seeking' problem. Therefore, the next chapter attempts to answer the question, 'what kinds of industrial policy should be implemented', focusing on institutional environment and change in institutional environment where industrial policy is implemented.

Chapter 3 : Industrial Policy as an Engine of Economic Growth: A Framework of Analysis and Evidence from South Korea (1960 – 1996)

3.1 Introduction

Although there has been a long debate on the role of state intervention in economic growth, for many scholars and commentators the inauguration of the World Trade Organisation (WTO) in 1995 and the East Asian Financial crisis in 1997 seemed to be the beginning of the end for state intervention. Until the financial crisis of 2008, free-market competition had been widely viewed as the most efficient method for fostering economic growth. However, since 2008 the 'Washington Consensus' seems to be unravelling at a remarkable speed as most developed countries, including the US, which is arguably the greatest supporter of the Washington Consensus, "appear willing to contemplate any measure…to ensure that none of their major banks and investment houses fail."[18]

Although this is a result of the financial crisis, this issue has arguably spread beyond the confines of banking and bank regulation to the economy more generally. Many of the debates that are taking place across the World are concerned not only with how governments regulate the financial sector but how government policy can be used to stimulate growth in the stalled economies of the West.[19] Indeed, the recent 2010 Seoul G-20 summit communiqué announced that "…we further believe there is not a 'one size fits all' formula for development success and that developing countries must take the lead in designing and implementing development strategies tailored to their individual needs and circumstances."[20]

In light of the above factors, industrial policy as a means of inducing economic growth is gaining greater attention. There is no general agreement on the definition of industrial policy but it may be referred to as encompassing almost all policies of the State to promote economic growth. More specifically, industrial policy can be divided into three areas: (a) providing a landscape for industries such as company and patent law and a system of law enforcement (Williamson, 1985; North, 2005); (b) fostering technological progress through various R&D, training and educational policies as well as competition-promoting or

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[18] The former IMF Chief Economist Kenneth Rogof's comment in Crotty and Lee (2009)
[19] See for example: Finding a strategy for growth, Washington Post, 24th January 2011.
[20] 'Seoul Development Consensus', Annex I, p.2

competition-restrictive policy practices (Freeman, 1995; Wong, 1999; Spencer et al., 2005; Cimoli et al., 2009); (c) redistributing resources in favour of specific industries or regions (Cohen, 2009; Chang, 2006). The most critical issue of the industrial policy debate has been whether the involvement of the State in any or all of these three areas results in economic growth. While mainstream economists typically confine the scope of industrial policy to the first or, at most, part of the second argument due to informational and rent-seeking problems (Kruger, 1990), revisionists have developed the notion of the 'developmental state' or 'state corporatism' in which the State is able to secure relevant information and be insulated from rent-seekers (Johnson, 1982; Gerber, 1995). Hence, for revisionists, all three areas are included in the scope of industrial policy.

Within the business and economic history literatures, industrial policy research can be roughly divided into two groups. The first is the sociological approach which considers the effectiveness of industrial policy within a certain social context (Granovetter, 1985; Clark, 1999; Dupree, 1990; Abelshauser, 2005). Thus, the main concern of this branch of research is to explain how certain policy measures are enabled or disabled depending on the idiosyncratic social context in which a policy is implemented. The second approach considers generally applicable 'best' policy practices typically based on comparative study (Lazonick, 1993; Elbaum and Lazonick, 1987). Therefore, it can be considered to be a prescriptive approach (Kirby, 1992, p. 647). While the two approaches differ, there are two inherent problems with both. First, while the sociological approach regards social context as 'given' for economic agents (i.e. the State and businesses), the prescriptive approach overlooks it. Hence, the former 'underestimates' the roles of the State and businesses while the latter 'overestimates' them. Second, both approaches fail to explain the dynamic nature of industrial policy in association with changes in the environment over long periods of time because the sociological approach typically adheres to 'continuity' or 'path-dependency' while the prescriptive approach is mainly concerned with 'universality'.

Given the relative limitations of the sociological and prescriptive approaches to industrial policy, we re-investigate the impacts of industrial policy on economic growth and make two contributions. First, we extend the existing theoretical framework for understanding industrial policy to consider its inherent evolutionary aspect. As North says, any policy inherently aims to change the social context where the policy had been shaped (North, 2005, p. 59~60). Hence, industrial policy necessarily changes the related social context, which creates a 'tension' between the policy and the social context. Faced with this tension, the State and business may collaborate to formulate a subsequent policy. From this insight, we derive a sequential framework that explains historical changes in industrial policy along with changes

in the quality and quantity of capital stock and the technological capabilities that occur[21]. Second, using this framework, we explain the historical changes in the industrial policies of South Korea and the economic development that occurred over the period 1960–1996.

The next section offers a brief overview of the existing business and economic history literatures on industrial policy and identifies the need for a new perspective. The following section develops a theoretical foundation for the new perspective, and based on it, the limited capacity of free-markets to generate long-run economic growth is discussed. The next section reviews the theoretical underpinnings of industrial policy and the four most widely employed industrial policies frameworks across countries—this leads to our sequential framework for the setting of industrial policy. This framework is then applied to analyse and explain the South Korean experience. The final section concludes.

3.2 Industrial Policy in the Business and Economic History Literature

The literatures on economic growth and industrial policy allow us to identify three major components that co-determine the effectiveness of industrial policy on economic growth; namely, the State, business, and the underlying social context (Haggard, 1998, p. 82~83). Of these three, business and economic historians have typically focused on the influence of 'social structure' on industrial policy. This tendency is largely based on the notion of 'embeddedness'—that is, individuals are 'socialized' to embed the underlying social structure and, therefore, their economic behaviours should be understood within the context of the social structure (Granovetter, 1985).

Clark (1999), for example, accounts why the Anglo-American Council for Productivity (AACP), created in 1945 to provide proposals for British industries to have a similar level of productivity to their American counterparts, failed to transform British manufacturing industries, attributing the failure to the 'inherently sclerotic' nature of the British social structure. Although the American side of the AACP proposed prescriptions based on Chandler's vertically integrated multi-divisional production system, British industrialists diluted the American proposals because they wanted 'short-term' measures for recovery while keeping the existing outdated industrial structure of family-based small firms and craft-based production systems unchanged. Clark also finds that this tendency of British

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[21] Within changes in the quality and quantity of capital stock and technological capabilities we include changes in the quality and quantity of labour through training and education.

industrialists coincided with the British state's post war overall policy stance (i.e. seeing finance as a main source of income underpinned by the 'sterling area' and the other financial services needed to support colonial trade) to regain the 'viability' of the British economy in the post-war international economic landscape. A similar argument is found in Dupree's (1990) study of the 'destiny' of the British cotton industry. Dupree claims that, despite the many efforts of British cotton industrialists to have protective industrial policy re-enacted in the post-war period, the newly formulated international economic environment denied them such protection. Equally, many business historians such as Abe (1997) and Richter (1999) argue, in explaining the rapid economic growth of Japan and the East Asian economies, that the effective industrial policy practices such as the existence of a 'relationship banking system' that provided entrepreneurs with long-term finance and a 'coercive but collaborate state-business relationship' were formulated and implemented under the unique influence of Confucian culture.

This view, however, has been open to criticism. First, it typically fails to find a precise causal link from social context to specific policy practices because, as Granovetter (1985, p. 486) asserts, "...once we know in just what way an individual has been affected, ongoing social relations and structures are irrelevant...in actual decision situations, he or she can be atomized." For example, although East Asian countries share many cultural and social factors, there has been a wide variety of industrial policies across these countries (Rodrik, 2004, p. 10). Second, and more importantly, this perspective significantly overlooks the role of the State (Casey, 2006, p. 4-5; Kirby, 1992), as the State is endowed with statutory power to impose formal institutions, which are often more influential than the social context.

In contrast to those historians who focus on the social context in which industrial policy is set and implemented, advocates of the prescriptive approach are strongly inclined to find generally applicable 'best practices' relying on the statutory power of the State to generate growth-promoting institutions (Abe and Fitzgerald, 1995, p. 486). They typically utilise cross-country comparisons to support their arguments. The best example would be Elbaum and Lazonick's (1984) historical account of the decline of British industries during the post-war "golden age." From case studies comparing the British and American, cotton, textile, iron and steel industries, they argue that, despite existing institutional constraints reinforcing growth-inhibiting effects, the British government shrank from providing effective policies to alter these institutions even though "it had the necessary coercive power to impose industrial restructuring for reasons of financial and political expediency" (Kirby, 1992, p. 639).

In a similar vein, Catalan's (2010) work compares industrial policies for the automobile industry in Argentina, Spain and Korea for the period 1940-1987. Catalan argues that the governments of these three countries 'decided' to develop their automobile industry using similar industrial policy measures—those are, restrictions on the import of foreign finished automobiles, localisation of foreign technologies, and the development of an indigenous 'national champion' to foster technological progress in the industry by providing preferred access to capital. However, since the 1970s, there has been a divergence in industrial policy across these countries. Argentina and Spain deregulated their automobile industries in an effort to increase productivity. These policy changes however, led to a significant deterioration in the overall profitability of the automobile industry due to harsh competition, leading to the decline or closing down of the indigenous national champion in these countries. In contrast, he finds that the Korean state did not change its industrial policy framework even during political and economic turbulence in the 1980s, and this contributed significantly to the emergence of the Korean automobile industry on to the world market.

Prescriptive arguments are based on assumption that there are 'best policy practices' that have general applicability, and the State is endowed with 'autonomous' power to implement such policies. Granovetter (1985) however criticises this notion as the State is also a part of society and, thus, it is not entirely free from society. Further, Haggard (1998, p. 2) argues, as is the case for the sociological approach, the prescriptive approach significantly underestimates the role of businesses who invest capital, hire employees and develop technologies, and these are the main source of economic growth.

Within the business and economic history literature, it is not difficult to find evidence that the State's industrial policy had often been 'enabled' or 'constrained' by business. Davis (1966), for example, acknowledges that the very origin of protective industrial policy—that is, prohibitive tariffs, subsidies on exports and the exemption of import duty on raw materials—had been gradually formulated through interactions between textile and iron industrialists and the State during the 17th and 18th centuries in Britain. (Davis, 1966b). Furthermore, Abelshauser (2005) asserts that within a 'corporatist institutional infrastructure' the German state and industrialists with other associational groups have successfully collaborated since the 19th century to create effective industrial practices such as the stabilization of volatile markets, a highly regarded vocational training system, an extensive network of industry-focused research universities and a relational banking system. (Abelshauser, 2005). In contrast, Rosevear (1998) finds British regional industrial policy measures implemented during 1945-51 were accepted by businesses only when the measures were compatible with their corporate strategies. Phillips (2009) further demonstrates this with the example of the Labour

government's attempt to introduce 'worker directors' as one element of the German style "coordinated market economy" to the UK in the 1970s. British industrialists severely resisted the adoption of such a policy in an effort to maintain their managerial prerogatives in organizations of productive resources even though wages had long been subjected to collective bargaining.

Underestimating or overestimating the role of the State and business results in another problem, the "presumption of stasis." Casey (2006, p. 5) argues that due to the emphasis on the given idiosyncratic social context in the sociological view, "changes in global markets do not inherently create imperatives to transform domestic economic structure," which reinforces the State's and firms' "rational incentive" to continue what they have been doing; concluding, that only marginal change can take place in industrial policy. On the other hand, the prescriptive approach places too strong an emphasis on the statutory power of the State and overlooks importance of the social context and business, which may lead to the illusion of a generally working model (Abe and Fitzgerald, 1995). For example, Fordism or Chandler's type of production system (which made significant contributions to the post-war US economy being a global dominant power) do not hold in new knowledge-based economies, and so the prescriptive approach is considerably less convincing from a longer term perspective. Neither perspective, therefore, adequately explains the dynamic changes in industrial policy and institutions in accordance with changes to internal and external economic environments over time.

In sum, a robust historical analysis of industrial policy needs to meet two objectives. First, it should appropriately reflect the balanced roles of the State, entrepreneurs and the social context. Second, it should explain the dynamic nature of industrial policy through time. In response to these goals, we recognise the inherently evolutionary aspect of industrial policy. Every public policy necessarily changes the related social context where it has been formulated, which in turn creates a 'tension' between the policy and the changed social context (David, 1994; North, 2005). In response to this tension, the State and business may therefore collaborate to formulate a subsequent policy and the two imperatives are met. However, an evolutionary model cannot solely predict what type of tension will emerge and how the tension can be overcome by industrial policy because more often than not, there is a high degree of 'uncertainty' involved (North, 2005, ch. 2). Nevertheless, in a broad sense, a similar pattern may be observed from the history of economic growth because, as many business and economic historians note, under uncertainty, economic growth in backward countries has typically been achieved through importing, imitating and modifying institutional and technological resources from advanced countries (Gerschenkron, 1962; Cimoli et al.,

2009). Thus an understanding of the history of industrial policy across the globe is needed to add a "trajectory" to an evolutionary model of industrial policy and economic growth.[22]

We, therefore, re-investigate the impact of industrial policy on economic growth with this evolutionary perspective and make two contributions. First, we derive a sequential framework that explains historical changes in industrial policy along with changes in the quality and quantity of capital stock and the technological capabilities that occur. Second, using this framework, we explain the historical changes in the industrial policies of South Korea and the economic development that occurred over the period from 1960 to 1996. As a theoretical foundation of this framework, the next section identifies a decision making model of economic agents under uncertainty and discusses the impact of market-oriented institutions on long-term economic growth based on the model.

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[22] I derived this idea from Dosi(1982)'s argument on "technical trajectory".

3.3 Economic Growth and Markets in an Uncertain World

Our chosen framework of analysis is one where economic agents are faced with uncertainty. As such it is not possible to know, or reasonably estimate in a probabilistic manner, what will happen in the future (Keynes, 1937, p. 148). In order to deal with this uncertainty, economic agents establish behavioural rules via the creation of institutions that limit the flexibility of their actions (Heiner, 1983; Williamson, 1985) and this poses the question, what kind of institutional structures induce economic growth? The performance of an economy depends on the quantity and quality of its workforce, capital stock, and technological knowledge (North, 2005, p. 43). Consequently, the institutional structures that promote the accumulation of these three 'resource pools' under uncertainty should induce economic growth. Before discussing the above issue, we consider how economic agents make decisions under uncertainty and the role of institutions.

3.3.1 Decision Making under Uncertainty and Institutions

Although mainstream economic theory assumes an 'ergodic' process where economic agents can list all future events and assign probabilities to these events, there are many situations where such ergodicity does not apply and are, therefore, 'uncertain' (Heiner, 1983; Keynes, 1937; Shackle, 1958; North, 2005). GLS Shackle in his seminal work on uncertainty argued that in such a situation there is no knowledge that can be used to predict the relevant consequences of actions because "knowledge would not deserve that name if it gave us several conflicting accounts" (Shackle, 1958, p. 109). Accordingly, a 'decision' under uncertainty is therefore, "a commitment to the first step in an action of choosing among different rival and mutually exclusive hypotheses about which it is impossible to know the relevant consequences" (Shackle, 1958). Building on Shackle's analysis, Davidson (1993, p. 430) argues, "Decision-makers in these situations believe that no relevant information exists today that can be used as a basis for scientifically predicting future events."

The difficulty of 'scientifically' making decisions under uncertainty, therefore, raises the question as to how such decisions are indeed made. Keynes' answer to this question can be summarised as, "fall back on the judgment of the rest of the world which is perhaps better informed," (Keynes, 1937, p. 214) because, economic agents are "socially and endogenously-constituted human beings, not autonomously constituted, lifeless Walrasian calculating machines", (in Crotty, 1994, p. 13). Faced with making decisions under uncertainty, economic agents—i.e. entrepreneurs, workers and policy makers—first become conscious that they

"simply do not know." This consciousness leads them to rely on social conventions that have been shaped by the majority of society because contemporaneous conventions calm nerves and save face when dealing with uncertainty (Crotty, 1994). If the majority of a society decides in the same way, expectations are fulfilled and confidence in the conventions will, therefore, increase accordingly (Crotty, 1994). Though social conventions may become or interact with institutions through history, existing institutions also prescribe, constrain, and shape contemporaneous conventions (March and Olsen, 1984) and institutions are, therefore, critical to economic decision making under uncertainty.

3.3.2 Market-Oriented Institutions and Economic Growth

Given the importance of human decision making under uncertainty and institutions, this subsection analyses the key economic decisions regarding economic growth: namely capital and technological investment decisions by firms and labour.[23] First, regarding capital investment decisions, a growing number of economists argue that a lack of institutions or deregulation that promote competition increases the degree of uncertainty because they remove constraints imposed on the decision making of economic agents and this has the consequence of making investment more volatile (Goldstein, 1995; Grenadier, 2002). Crotty (1994, p. 17) summarises Keynes' view on this issue: "[the] belief that investment will be profitable will stimulate investment...conversely; extrapolative expectation formation in a deep depression will lead to investment decisions that will reproduce the depression." Such outcomes are mainly due to the "anarchic nature of competition" in association with conventional decision making (Marx, 1981; Goldstein, 1995). According to Schumpeter (1983: 1934), 'competition' does not mean a tranquil state where firms are simply price takers, and earn normal profit to cover their maintenance costs. Rather, 'competition' poses a serious threat to the survival of firms and this leads managers to undertake aggressive cost reductions or create competitive barriers through innovations to ensure the continued existence of the firm. Under conventional decision making, such competitive pressures coerce economic agents and their financial supporters to invest in more risk-taking, which can, therefore, lead to over-investment in highly competitive markets (Goldstein, 1995). Some firms, however, will be unable to earn sufficient income to ensure their survival and the application of 'a hard bankruptcy rule' will result in corporate insolvencies. The insolvency of large firms that have the attention of economic agents may trigger pessimistic self-fulfilling prophecies among economic agents on future events: once such pessimism develops, and since there is no

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[23] It should be noted that these two sources of economic growth cannot be considered individually because simply purchasing new production facilities does not lead to enhanced productivity without appropriate technological capabilities. For more detail, see Nelson and Winter (1982)

'coordinating mechanism' in market institutions to solve the 'collective action problem' where no economic agent wants to invest, an actual recession will occur (Wade, 1998, p. 50). The recent and continuing financial crisis is a good illustration of this explanation.

Turning to the technological choices of firms, according to Fine & Pappu (1990), and Röller and Tombak (1991), in highly competitive markets, it is necessary for firms to be flexible in their manufacturing to gain a strategic competitive edge as well as a hedge against uncertainty. According to Goyal and Netessine (2007), in doing so, firms that invest in flexible technologies are able to respond to both the deterministic and stochastic components of the market, while firms that invest in dedicated technology are only able to respond to the deterministic component of the market.

Regarding the investment decisions made by workers in their firm-specific technological knowledge, it is evident that uncertainty, in association with market institutions, also impact on these investment decisions. Given the investment and technological decisions of firms, an increased level of uncertainty, ceteris paribus, prevents workers from investing their efforts in acquiring firm-specific skills as more flexible skills are preferred as an insurance against uncertainty (North, 1990, p. 34). This reduced investment in the firm-specific skills is exacerbated by the unfair distribution of uncertainty between firms and workers which results from the existence of market institutions. One example of this type of market institution is the 'free layoff'; whereby, in the face of demand uncertainty caused by competition, the ability to reduce the workforce via layoffs is a means by which firms can transfer some of the cost of increased uncertainty to workers (Stockhammer, 2007, p. 41).

What are the impacts of these capital and technological investment decisions on economic growth? First, an unstable investment environment prevents scarce capital from being employed in more productive ways (Williamson, 1985). For example, at the level of the economy, investing in a small number of large production facilities based on economies of scale can be a more productive investment than scattering limited resource across a large number of small facilities. This is especially the case for those economies that are attempting to 'catch-up', as economic growth has been based on 'learning' and 'improving' existing technologies rather than 'inventing' or 'innovating' (Amsden, 1989, p. vii). Thus, capital investments with economies of scale (where the learning effect can be maximised) are critical to economic growth. Second, as Williamson (1985) argued, due to asset specificity, asset scrapping incurs transformation costs for those assets to be reconstructed and redeployed as other useful assetst (Chang, 2006). Thus, frequent asset scrapping dissipates the limited capital of an economy. Third, the reduced investments in technological capabilities by workers may

also negate the effect of capital investment because the two complement each other (Nelson and Winter, 1982).

In sum, market oriented institutions have the capacity to increase the degree of uncertainty faced by economic agents, thereby distracting such agents from accumulating the sufficient quantity and quality of capital stock and technological capabilities. The main reason for this conclusion is that the market does not have a mechanism to fully overcome the 'coordination problem' so as to provide 'stability,' which, from an evolutionary perspective, is a precondition for generating further growth (Nelson, 1995). Of course, the problem is 'the degree of competition' rather than competition itself. Clearly, a level of competition is necessary to encourage economic agents to improve. However, when competition becomes overly harsh and aggressive, long-term growth may be eroded by increased uncertainty. Against this backdrop of the negative consequences of harsh competition, interventionists argue that certain types of state intervention can complement market-oriented institutions and lead to economic growth over time. Of course, in many cases, State intervention has also created a great deal of uncertainty (Krueger, 1990; Burton, 1983). Therefore, the issue is not solely about state intervention but 'well structured' state intervention.

3.4 Industrial Policy under Uncertainty

As mentioned previously, industrial policies can be divided into three areas: a) creating a landscape; b) fostering technological progress and; c) re-distributing resources in favour of specific industries or regions. First, creating a 'landscape' is the provision by the State of minimal institutional conditions such as company law, patent law and a law enforcement system on which economic agents rely when they make a decision (North, 1990, ch. 8; Langolis and Robertson, 1995, ch.1). Second, since technological progress is widely accepted as one of the fundamental sources of economic growth (Nelson and Winter, 1982; Dosi, 1982), fostering technological progress by supporting innovations or imports and the adaptation of sophisticated technologies from advanced economies is a critical issue. Subsidies on R&D projects, public R&D centres, foreign direct investments (FDI) and training programmes have been used as policy measures to this end (Freeman, 1995; Cohen, 2009). While promoting competition has often been argued, and sometimes utilised, for this purpose, policies to restrict competition such as a protective trade system and intentionally fostering oligopolistic market structures have more often been employed (ibid.). Finally, industrial policy often engages in redistributing resources in favour of specific industries, firms or regions. Such targets are chosen by two criteria—one is 'picking winners' and the other is 'helping losers' (Cowling et al., 1999; Rodrik, 2004). To this end, the State provides some preferred conditions, access to resources or incentives by distorting the market.

From an evolutionary perspective, the theoretical underpinnings of the above industrial policies stem from two imperatives: 'stability' and easier 'structural change'. First, as discussed earlier, uncertainty significantly erodes the incentives of entrepreneurs and workers to invest in sufficiently large production facilities so as to enjoy economies of scale and dedicated technological capabilities; the market is, however, unable to reduce the degree of uncertainty due to the 'collective action problem' (Langlois and Robertson, 1995). Hence, the State is required to introduce institutional arrangements that effectively decrease the degree of uncertainty.

Second, and perhaps more importantly, increases in capital stock and technological capabilities where stable conditions have been created allow entrepreneurs (or sometimes the State, or both the State and entrepreneurs together) to generate or anticipate new opportunities (North, 2005, p. 77). However, to materialise such opportunities the State may need to alter the existing institutional structures because of the complex interdependence of modern economic business activities (Langolis and Robertson, 1995, p. 52). In decentralised markets, individual entrepreneurs have only limited capacity to persuade other constituents of the need

to work together to materialise new opportunities as these constituents owe their existence to the prevailing structures (North, 2005, p. 77). It, therefore, takes a long time for the owners of other capabilities to be convinced about any new opportunities (Langolis and Robertson, 1995). If the opportunities require changes on a relatively small scale, the acquisition of other capabilities will be sufficient. However, if structural change on a larger scale is necessary, the State is justified to intervene in the market as a 'coordinator' to foster such structural changes (Langolis and Robertson, 1995, p. 5-6).

Given the above, the question which needs addressing is 'what types of industrial policy and institutional arrangements are needed to foster economic growth over time.' To answer this question, we need to fall back upon 'history' because as many business and economic historians observe, under uncertainty, the fundamental ways in which economic growth in backward countries has been achieved is through importing, imitating, and modifying institutional and technological resources from advanced countries (Gershenkron, 1962). For example, Britain's protective industrial policies for the textile manufacturing industry enacted in 1721 by Sir Robert Walpole inspired Alexander Hamilton, the first US Treasury Secretary, to develop the famous 'infant industry protection theory' (1791) that, in turn, led Friedrich List to call for similar policies for Germany (Chang, 2002). The same argument also fits well (albeit at somewhat later dates) with the cases of Japan, Korea and Taiwan (Cimoli et al., 2009)

What matters is the creativity of a society and the design and creation of institutional structures that allow policy makers and entrepreneurs to transform probable knowledge into integrated and effective policies (North, 2005). In this sense, much as Gershenkron's (1962) essay summarised the policies and institutions used in Continental Europe to catch-up with Britain, we document and discuss (with theoretical underpinnings) the four most widely employed industry policy frameworks. The final part of this section suggests a sequential framework that explains the historical changes in industrial policies along with the changes in the quality and the quantity of capital stock and technological capabilities.

3.4.1 Big-Push as a Catalyst for Industrialisation

In order for an economy to transition from pre-industrial to industrial, there needs to be a 'big push.' There are two theoretical bases for this. First, as Gerschenkron (1962) argues, industrialisation begins only if the industrialisation movement can gain traction simultaneously along many lines of economic activity. The 'complementarities' or 'indivisibilities' in economic progress, therefore, prevents the development of one industry without the development of other complementary industries. For example, industries cannot develop unless industrial infrastructure, such as utilities and transportation services, are available and well functioning. Rosenstein-Rodan's (1943) 'Big Push Theory' had a similar insight; whereby, due to the existence of externalities between economic activities, comprehensive institutional change and investment is required in the beginning of industrialisation to effectively address these externalities.

Second, from a 'laissez faire' perspective, there is little reason to believe that tomorrow will be radically different from today. As North (2005, p. 77) argues, since vested economic agents in a pre-industrial condition largely owe their existence to current institutions, a radical change in institutional structure will face strong resistance. Such radical change can take place only if the autonomous state radically alters the existing institutions in order to unlock from the past and provide novel trajectories for future gains to other constituents (Johnson, 1982; Wade, 1990). Thus, some political economists such as Johnson and Wade place a great emphasis on the role of the 'autonomous' state in industrialisation. Historically, a 'five year plan' is one of the most widely used frameworks for a 'Big Push' in many developing countries such as India, Pakistan, China, Taiwan and Korea - though there have been wide varieties in the processes, comprehensiveness and methodologies used to achieve a 'Big Push' (Lal, 1998).

3.4.2 Selective Industrial Policy: Maximising the Growth Rate

As developing countries are generally under endowed with resources both in terms of capital and technological capabilities, from a policy perspective directing support to industries that are likely to have the greatest impact on overall economic growth is a good way to maximise the growth rate of the economy (Cowling et al., 1999). Mainstream economists typically argue that the market mechanism will ensure optimal resource allocation in these industries without state intervention. However, the effect of economies of scale can be considered as a good theoretical justification for selective industrial policy. Industries with increasing returns to scale technologies can provide higher profits than other industries when a

certain level of scale economy is assured by the State (Chang, 2006, p. 39). Considering restrictions that are a result of country-specific endowments, the stage of industrialisation and technological paradigms, it should be possible for the State to decide which sector to choose, and what support to provide (Dore, 1986).

A typical policy that has been used to achieve this goal is for the State to provide substantial financial support on favourable terms to domestic firms in selected industries so as to enable them to acquire advanced large scale production facilities. However, from the technological capability building perspective, the provision of large amounts of financial support does not ensure economies of scale. To fully exploit economies of scale, complementary institutions need to be associated with the financial support (Lundvall, 2010). As such, there is a requirement for appropriate institutional structures that provide a long term commitment to such industries. Otherwise, technological capabilities that can only be acquired by repeating a production process cannot be obtained (Nelson and Winter, 1982). Historically, the most widely adopted policy to achieve this goal is the protective trade policy against more established and advanced foreign competitors; for illustration, consider Britain in the 18th century, the U.S. and Germany in the 19th century and the East Asian Countries in the 20th century (Bairoch and Kozul-Wright, 1996; Shafaeddin, 1998). Thus, protective policies provide domestic firms with 'stable conditions' so as to enable the accumulation of the necessary level of technical capabilities to survive and compete.

One thing to be stressed here is that the State's protection as discussed above should be, firstly, provided for a fixed term and, secondly, explicitly linked to performance in the selected industries. If this is not the case, then, such industries will never become 'mature' as they have a perverse incentive to rely on such protection as was the case for the 'import substitution programs' of the 1990s in Latin American countries (Luzio and Greenstein, 1995). Moreover, it is also crucial that there is a supply of highly educated and skilled workers for these industries, and this should also be supported through the industrial policies of the State (Chang, 2006, ch. 2).

3.4.3 Managing Competition and the Provision of Long-term Commitment

The association of Schumpeterian competition and conventional decision making under uncertainty often results in excess capacity in market economies. Such excess capacity can lead to price wars that significantly erode the profitability of firms and even to the eventual bankruptcy of some firms. Although mainstream economists would argue that it is part of the process of moving towards equilibrium, it clearly leaves two types of social costs

(Chang, 2006, p. 120). First, there is the transformation cost of those assets that are made redundant as a result of competition. Due to asset specificity (Williamson, 1985) additional costs have to be incurred to transform scrapped assets, whether capital or labour, into other useful assets. For example, an individual working for a steel producer cannot instantly be hired to work in the computer software industry as there would need to be some level of re-training which would incur a cost. Second, the potential to accumulate technical capabilities that require time-consuming learning via repeating production processes will incur additional costs, as asset scrapping and layoffs distracts and hinders investment in the acquisition of the advanced skills that are necessary for higher productivity.

If the degree of competition and competing investments are appropriately managed by the State through licensing, ignoring or fostering monopolisation or other competition-restrictive measures, then these social costs can be largely avoided; this is the essential underpinning of 'managed competition.' Moreover, if such industries face some temporary difficulties (e.g., a temporary reduction of industrial output) then temporary support from the State to endangered firms prevents these social costs from being incurred. For example, the European steel cartel (Eurofer) in the 1980s initiated by the European Commission (Ljungberg, 2005), the Japanese 'recession cartel' and the State-led merger and acquisitions in Korea (Telser, 1987; Amsden and Singh, 1994).

3.4.4 Industrial Upgrading

In trying to increase productivity and growth in the economy the State may need to intervene to restructure the existing industrial configuration. Such restructuring typically involves two actions, namely, 'rejuvenating' old but re-enforceable industries and supporting the 'phasing out' of declining industries (Chang, 2006, ch. 2).

Even, industries that had been internationally competitive may decline over time due to changing economic conditions. For example, in the early days of industrialisation, the textile industry based on low wages typically became a key industry in many developing countries. However, as industrialisation deepens and the income level of the economy rises, the textile industry tends to lose its competitiveness because of surges in wage levels and out-dated machinery. Some industries are re-enforceable through industrial restructuring but some others are not. For re-enforceable industries, large scale capital investments are typically needed to replace older or inefficient machines with new ones that embed advanced technologies for higher value-added products and substitute labour. For declining industries, the phasing out of such industries and re-allocating capital and labour to other industries will

often be the best option to maximise overall economic growth. However, in either case, such types of industrial restructuring are unlikely to take place if these industries have to execute the structural adjustment by themselves; that is, they will have to suffer significant reductions in corporate earnings in the short to medium term (Chang and Rawthorn, 1995). This is exemplified by the resistance of British coal mine owners against the voluntary amalgamation scheme of the 1930s (Kirby, 1973).

If the State, however, provides a reasonable level of support to the constituents of these industries, such industrial restructuring may be undertaken without as much resistance (Chang, 2006, p. 236). This is the idea of "industrial upgrading." There are various examples of different types of support mechanisms across countries to serve this end. For example, while many European countries have an unemployment insurance mechanism, Scandinavian countries combine unemployment insurance and retraining programmes (Renshaw, 1986). According to Chang (2006), 'industrial upgrading' is different from other protective state policies given its 'forward looking' nature; that is, the purpose of this policy is not to preserve the current status quo but to 'upgrade' the existing industrial structure of the economy 'in an orderly manner.'

3.4.5 A Sequential Policy Framework for Economic Development

This paper suggests that the above four industrial policies can be integrated into 'a sequential policy framework' that proposes a 'trajectory' of industrial policy changes along with four stages of industrialisation. According to Thorstein Veblen, "the situation of today shapes the institutions of tomorrow" (in Hodgson, 2002, p. 215); and as Shackle (1970) noted a 'decision' under uncertainty cannot be repeated because "…its very performance destroys forever the conditions in which it was undertaken, which form an essential part of it." North (2005) similarly argues that institutions change over time because the very performance of such institutions alters the conditions in which the institutions were shaped. In this sense, David (1994) contends that institutions are the 'carriers of history.' It is reasonable, therefore, to expect industrial policies to change in accordance with the changes in the quantity and quality of capital stock and technological capabilities an economy possesses, and other social contexts.

Many researchers have argued that since each economy has its own unique social context and institutional setting, the path of economic development must be plural (Polanyi, 1957; Coates, 2000; Hall and Soskice, 2001). However, other authors argue that putting too much emphasis on idiosyncratic social context does not yield many meaningful insights for

understanding the dynamic nature of institutional change and economic growth over time due to the inherent presumption of stasis (Casey 2006, p.2). Therefore, rather than focusing on differences in social context, we attempt to identify some regularity in the dynamics of industrial policy and economic growth across countries.[24]

Indeed, business and economic historians offer clear evidence that support such regularity across globe; for example, big push (Gerschenkron, 1962; Lal, 1998), selective industrial policy through protective measures (Bairoch and Kozul-Wright, 1996; Shafaeddin, 1998), managing competition (Abelshauser, 2005; Amsden and Singh, 1994) and industrial upgrading (Kirby, 1973; Gereffi, 1999) are arguably the most commonly used industrial policy frameworks across countries. Moreover, the dynamic nature industrial policy change is also evident in the industrial policies of many countries. A good example would be the shift in British trade policy in the 19th century and the US in the 20th century. When the domestic industries of these countries were immature, both the British and American government utilised a protective tariff system, which contributed significantly to the development of domestic industries (Shafaeddin, 1998). However, as these domestic industries matured and their foreign competitors were devastated due to the Napoleonic war (Britain) and the First World War (America), these countries called for free-trade to let the domestic industries enjoy economies of scale (Shafaeddin, 1998; Kozul-Wright, 1995).

In addition to the evidence presented by historians, Imbs and Wacziarg (2003) present robust empirical evidence on the patterns of economic growth in a large panel setting for 67 developed and developing countries. Their results show that two distinct patterns occur in economic growth; first, economic development starts from industrial diversification; second, but after certain per capita income levels are reached ($7,000-$9,000), sectoral concentration is commonly observed across countries and within countries (Imbs and Wacziarg, 2003, p.82-84). They argue that the main reason for the observed sequential change is the maturity of the domestic financial market as industrial specialisation cannot occur until the domestic financial market is deep enough to manage the inherent risk of specialisation. Rodrik (2004) interprets this finding as the result of industrial policy because both diversification and specialisation do not occur naturally due to externalities and coordination problems. Once sectoral specialisation is achieved, subsequent productivity gaps and unequal income distributions across sectors are unavoidable and, therefore, 'industrial upgrading' is necessary for backward sectors.

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[24] In this paper the social context is therefore used to encompass factors that 'enable or constrain' the process of economic growth rather than determining the trajectory of the evolutionary process of industrial policy and economic growth.

In light of these, the historical patterns of industrial policy change in this framework can, therefore, be explained in the following ways. First, at the onset of industrialisation, a 'big push' is implemented by an 'autonomous' state to unlock from the preindustrial condition. In this stage, capital stock and technological capabilities are very low. The most critical elements in this unlocking stage are the development of a financial sector and the supply of infrastructure because these two sectors underpin the development of all other areas of the economy (Cimoli et al., 2009).

In the second stage, a 'selective industrial policy' is then used to maximise economic growth through leveraging the levels of capital stock and industrial infrastructure that result from the 'big push'. Compared to the speed of capital stock accumulation, however, technological advancement tends to be slower because typically industrialisation in catching up industries relies on economies of scale with imported technologies in this stage.

In the third stage, where capital stock is relatively abundant compared to the technological advancement, an effective policy to 'manage the degree of competition' to allow for technological capability building is implemented. In doing so, an economy can effectively prevent capital stock from being employed and potentially destroyed in competitively harsh environments. This, therefore, provides a long-term institutional commitment to economic agents and incentivizes the accumulation of greater technological capabilities that can only be learned from the time-consuming repetition of production. A noticeable change that may take place in this stage is an increase in the capacity of businesses to make investment decisions given the capital investment and industry-specific knowledge gained through the previous two stages (McNamara, 1999). Consequently, the State may be relatively weaker and may not maintain legitimacy on industrial policy unless it is in collaboration with business. Corporatist industrial relations has generally been the institutional setting for such collaboration (Casey, 2006).

In the fourth stage, there is likely to be a significant productivity gap between the 'selected' priority industries and other industries. In this stage, the redistribution of productivity and income to other areas and regions of the country is critical to ensuring sustainable growth in the long-term. Substantial productivity gaps and unequal income distributions across sectors and regions can become a major source of social conflict, and any unrest can erode the overall productivity of the economy as a whole - as can be observed from Latin America countries over recent decades (Haggard et al., 1997; Rosevar, 1998). Thus, developing out-dated, backward industries or phasing out declining industries prevents such instability as well as ensuring long-run economic growth.

Figure 3.1 A Sequential Framework of Industrial Policy
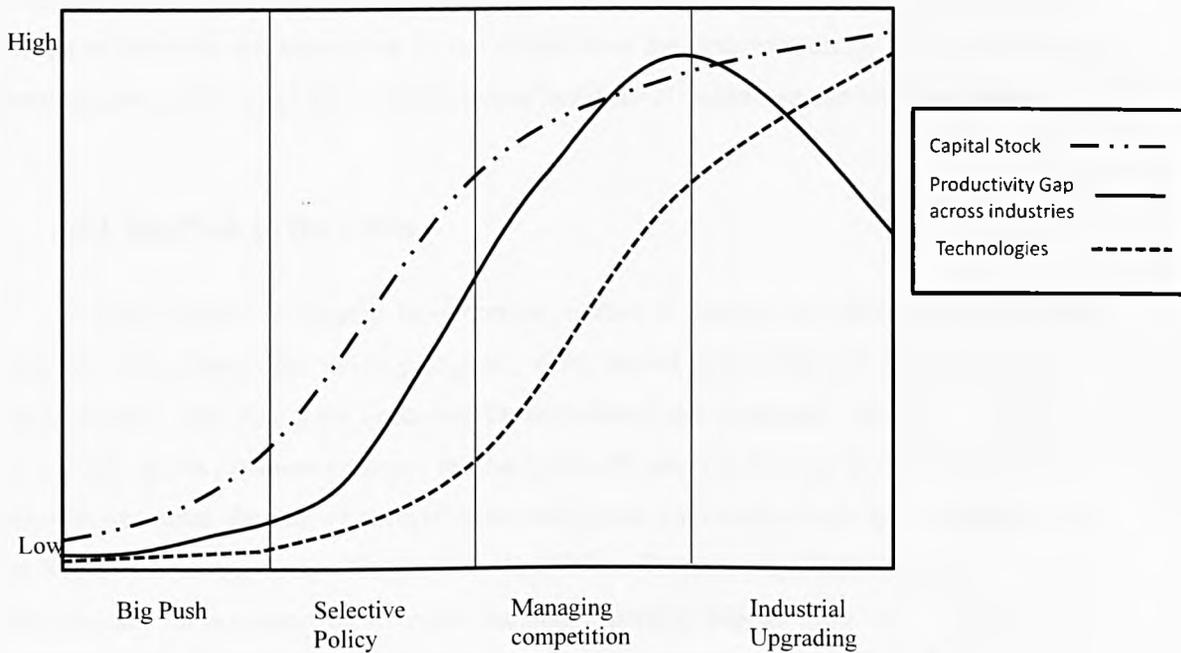
It is also important to note that the four stages of industrial policies that we have identified here are needed repeatedly through time since environments and technologies continuously evolve, creating new opportunities and threats. A good illustration of this can be seen in the rapid development of IT and IT infrastructure over the past 40 years. As we observe, the scope of change that has occurred goes beyond the decision of 'which sector to support'. IT has arguably led to a second 'big push' in many economies resulting in structural changes in production systems, organisational structures, education and infrastructure.

3.5 Applying the Sequential Framework to the Case of South Korea

In this section the sequential framework of industrial policy changes developed above is applied to the case of South Korea for the period 1960 to 1996. South Korea has been chosen to illustrate the framework as the debate over the determinants of Korean economic development characterises the debate between free-market capitalism and interventionism.

3.5.1 Big-Push in the 1960s

South Korean economic development started in earnest in 1962 when the newly launched Park Chung-Hee military regime, which seized power through a military coup in 1961, initiated 'The Five Year Economic Development Plan' (hereafter, The Five Year Plan). As a result of the Japanese Colonial period (1910-45) and the Korean War (1950-53), there was almost a total absence of accessible natural resources, capital stock and technologies in the South Korean economy (Haggard et al., 1997). Thus, the development strategy of the State focused on acquiring these resources, and exporting was the only way to acquire the foreign currency required to purchase them (Ahn, 2007). For this reason, the Park administration shifted its economic policy basis from 'import-substitution' to 'export-orientation' in the first two Five Year Plans (1962-1972). The exporting strategy was simple: 'improvement trade' where domestic firms imported raw materials or half-finished goods and exported finished goods cheaply as wages in the economy were low. Although there was no target industry to promote, light industries such as textiles and plywood became key exporting industries in this period.

In order to promote these exporting industries, there needed to be sufficient industrial infrastructure and reliable financial services. As a result of the low levels of economic development within the country, a fledgling private sector would be unlikely to be able to effectively provide either the industrial infrastructure or the financial support that was necessary. Thus, the Park regime internalised financial flows and infrastructure supplies. More specifically, in 1961 the government first secured control of financial flows through the nationalisation of the shares of five commercial banks,[25] secured control of monetary policy, appointed the presidents of the commercial banks (1962) and established six new State-owned banks between 1961 and 69.[26] Further, by raising the interest rate from 15% to 30% per

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[25] Park's regime imprisoned many businessmen on the charge of having accumulated wealth through 'illicit' means. Although some of them were released, their shares of commercial banks were nationalised (Lee, 1992).

[26] Ex-Im bank (1969), Korean Exchange Bank (1967), The Bank for Medium and Small Firms (1961), Kookmin Bank (1962), First Bank Korea (1962), National Agriculture Cooperative Bank (1961).

annum overnight in 1965, the State shifted the available financial resources in the country from unregulated informal markets to the official banking sector (Cho, 1997).

Second, the administration established several state-owned enterprises to provide the necessary industrial infrastructure and secure a stable supply of raw materials. As such the government established the Korean Electric Power Corporation in 1961, the Korean Resource Corporation and the Korea Water Resource Corporation in 1967 to provide industrial raw materials and industrial complexes, the Korean Expressway Corporation in 1969 to provide industrial infrastructure, and the Korea Trade-Investment Promotion Agency in 1962 to provide research on export markets.

Utilising its control over these key sectors, various incentives were provided to exporting firms. Of these, financial support was the arguably the strongest. Exporting firms were given ready access to credit at preferential rates. While the interest rate on a normal bank loan was about 25% during this period, the exporting credit interest rate was approximately 6% per annum (Cho, 1997). Inflation during this time was also about 15%, and so the real interest rate for exporters was, therefore, negative. In addition to this, the allocating of credit was also directed by the State and so additional credit was provided to those exporters that had better performance. At the same time, commercial banks were compensated with special loans from the central bank that had almost a zero interest charge for any bad loan losses that resulted from providing credit to exporters. In addition, the Korean Development Bank guaranteed exporting firms' direct borrowing from foreign markets where the purpose of the borrowing was related to exporting activities (Cho, 1997; Cho and Kim, 1995).

However, during the period of the first two Five Year Plans, it was not uncommon for the exporting companies to make losses due to a combination of limited technology and managerial inefficiency (Lee, 1992; Cho, 1997). To limit the losses incurred from exporting, the State imposed import quotas and tariffs on foreign goods thereby limiting competition in the home market from foreign imports. Exporting firms were, therefore, able to compensate the losses incurred from their exporting activities with gains in the domestic market. Further, to encourage the acquisition of advanced technologies from developed countries, the South Korean state utilised controls on cross-border financial flows, and so foreign currency from exports could only be used to purchase advanced machinery or technologies (Chang, 2006, p. 24).

In summary, the first two Five-Year-Plans (1962-1972) were a great success and gave the needed 'big push' to the South Korean economy. The GDP growth rate ranged between 8% and 13% per annum and the share of manufacturing in GNI sharply increased from 13.6% to

20.4%. Finally, although the main exporting items were low value-added goods such as textile products and plywood, the share of exports to GNI also surged from 4.1% to 29.3%.

3.5.2 Selective Industrial Policy since 1973

In 1973, President Park officially announced that the government would strategically promote six heavy and chemical industries (hereafter, 'HCI drive'); namely steel, nonferrous metals, machinery (including car manufacturing), electronics, ship building and petrochemicals (NARS, 2007d). Following the announcement of the HCI drive, the third Five Year Plan (1973–1977) was redesigned to incorporate the six selected industries. Actually, the first Five Year Plan (1962–1966) initially included the promotion of several intermediary industries such as steel and chemical industries. However, since the State could not secure financial resources from the US government to support this investment, the administration had to wait until the economy accumulated sufficient capital stock (Lee, 2006, ch2).

The selection of the six priority industries exemplifies the ability of the State to 'pick winners'; there were, of course, the German and Japanese experiences to follow (Dore, 1986), and a degree of consensus as to which industries were going to be successful. Further, the Nixon Doctrine (1969) signalled a shift in US foreign policy (NARS, 2007d) and triggered the South Korean government's desire to produce domestic military goods and the selection of the six priority industries was also closely related to that purpose.[27]

The basic strategy of the HCI drive was to import turn-key based plants or knock-down types of production systems from developed counties to produce Original Equipment Manufacturing (OEM) goods which have large economies of scale (Suh, 2000). This strategy was compatible with the desire of more developed economies' to transfer their polluting industries to developing countries (Ozawa, 2006). However, the South Korean state clearly intended to localise these technologies by developing the technological capabilities of domestic firms (Ministry of Science and Technology, 2008).

In order to promote the six selected industries, the State provided strong support to these sectors. First, greater financial support was provided to HCIs. One notable policy measure was the creation of the National Investment Fund (NIF) in 1974 through

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[27] According to Mr. K.J. Cho, a famous Korean journalist, Mr. Oh Won-Cheol, the senior secretary for economic policy, persuaded President Park to execute the HCI drive arguing that, the chemical industry could provide gun powder; the machine industry, tanks and artillery; shipbuilding, warships; electronics, advanced weapons, and steel could provide raw materials (Cho, 2005)

contributions from banks, insurance companies and public funds, to finance HCI projects at favourable rates (Lim, 2003; Cho, 1997). For example, in 1974 the 3 year interest rate on commercial bank loans was approximately 15%, while the interest rate of NIF finance to HCI projects was 9% (Cho, 1997). The significance of the financial support provided by the NIF is clear. Until its liquidation in 2003, the fund raised $22bn and financed 60% of long-term HCI projects during 1975-1980 (Cho and Kim, 1995). In addition, encouraged by the State, the banking sector provided substantial amounts of 'policy loans' to HCI firms at preferential rates. As a consequence, the proportion of policy-related bank loans to total bank loans rose from 47.6% in 1972 to 64.7% in 1979 (Ahn, 2007).

In addition to providing financial support through loans to HCI firms, the State also used fiscal policy through a favourable tax regime to create additional incentives. For example, HCI firms could choose one of the following three tax breaks: first, an 8% investment credit for five years; second, a 100% tax rebate for the first three years and a 50% rebate for the subsequent two years on corporate income; third, a 100% accelerated depreciation allowance. In addition to these tax breaks, a reduced tariff rate (70-100%) was applied on raw materials. The result of these tax breaks was to make the effective corporate tax rate for selected industries between 20-25%, while for other industries the rate was 40-50% (Park, 2002).

All of these supports were underpinned by industrial regulations which had two major policy goals, namely, to maximise economies of scale and technical capability building. As such, to ensure HCI firms had the biggest facilities, the State pushed industries to have only a small number of 'specialised' production facilities with 'internationally competitive scale' in each industry. As a result, by the end of the 1970s, Korea had the largest shipyard, cement plant and heavy machinery plant in the world (Kim, 1993).

Second, various policies were implemented to increase technological capability. For instance, at least 30% of HCI projects were to be financed by domestic equity capital and foreign direct investment (FDI) from multi-national companies was only allowed in specific circumstances; namely, where the foreign investor provided a stable supply of raw materials, was a long-term seller of produced goods or was transferring technology to domestic firms. Moreover, the government imposed restrictions on foreign ownership where foreign multi-nationals were transferring technology. In such cases, the share of FDI to total investment could not exceed 50% to prevent domestic firms from being left as subcontractors to multi-national firms from developed countries (EPB, 1981). In restricting ownership in this way the government ensured that the technology that was flowing into HCI firms increased the

technological capacity within the economy, rather than simply being located within the borders of the country, while remaining under the control of a foreign owner (ibid).

Despite the substantial support from the State as illustrated above, the start of the HCI drive was tentative. As a consequence of uncertainty, private industrialists did not initially fully embrace investment in these industries as there was limited experience within the economy as a whole concerning these sectors. Private investment across these various industries was, therefore, limited with only 30% of HCI projects attracting investment. To address this problem, the State implemented various complementary policies to signal the long-term commitment of the government to these sectors. First, the State became directly involved in several HCI industries in order to give a clear signal to the private sector of its long-term commitment with the establishment of Korea General Chemical (1973) and Korea Heavy Industry (1973). Second, the State strongly regulated the domestic markets for HCI industries to protect initial investors from increased competition from investors who set up competing firms in the future. This allowed those private industrialists who invested at the start of the HCI drive to gain the maximum benefit from economies of scale. Table 3.1 summarises the difference in the State's support between HCIs and other light industries.

Table 3.1 State Support for HCI and Light Industries in 1970s

Support	HCI industries	Other light industries
Effective Protection*	71.2%	-2.3%
Regulation on Entry	Yes	Yes
R&D support	Yes	No
reduction in utility bill	Yes	No
Effective corporate tax rate	20-25%	40-50%

* 'Effective protection' is a measure of the total effect of the entire tariff structure on the value-added per output in each industry. It is obtained as [(tariff paid for finished goods-tariff paid for raw materials)/value-added in case of no tariff].

Sources: Korean Development Institute, Industrial Policies and Incentives (1982); Park, Industry and Protection (2002).

After being convinced of the State's strong commitment, private industrialists joined the HCI drive and since 1977 the average share of the State's investment in manufacturing industries decreased rapidly from 49.7% in 1972-76, to 18.8% in 1977-80 (Park, 2002; Wong, 1999).

As a result of the HCI drive, the size of the HCI industries as a percentage of the manufacturing sector had grown from 37.9% in 1972 to 58.3% in 1979. The types of imported

technologies had slowly changed from packaged technologies to unpackaged technology. Consequently, as Suh (2000) and Wong (1999) show the production pattern within HCI improved changing from OEM toward Original Design Manufacturing (ODM) and Original Idea Manufacturing (OIM) [28]. Reflecting these changes, the ratio of expenditure on technology imports to total expenditure on technologies sharply decreased from about 90% in 1975 to 45% in 1981 (Suh, 2000). During this period the South Korean economy grew at approximately 10.3% per annum giving further support to the benefits of the State intervening in the transformation of industrial structures.

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[28] While in OEM, buyers provide detailed designs and production methods to domestic producers, in ODM, buyers needed to provide only broad product requirement leaving the design details to producers. In OIM, the producer develops their own products but sells them under the buyer's name. For further detail, see Suh (2000) and Wong (1999).

3.5.3 Managed Competition and Temporary Support in the 1980s

Subsequent to the HCI drive, the capital stock in the economy increased rapidly. From Table 3.2 it can be seen that from 1968–83 the aggregate net capital stock growth rate was 13.9% per annum, and this was higher for the private sector which accounted for 83.8% of the total net capital stock by 1983 and had grown 16.5% per annum over the period. This was largely due to aggressive investment in HCIs by large business conglomerates, known as *chaebol*: though the State had regulated the market entry of firms since the 1960s, the State as a policy priority provided a visible long-term commitment at the initial stage of the HCI drive to stimulate sufficient private sector investment in HCI (Lee, 1992). Once this commitment was explicit, increasing numbers of private sector firms entered the market and this is highlighted by the sharp increase in the number of member firms within the top 30 *chaebols* rising from 126 to 429,[29] with most of these *chaebols* competing in each of the 6 selected HCI industries (Chang, 2006). Despite the high growth in capital stock, the technological capabilities of Korean firms still lagged behind with 40% of total expenditure on technological advancement being spent on importing technologies (Suh, 2000).

Table 3.2 Net capital stock 1968-83

	1968	1983	Multiple	Growth rate
Net capital stock(a)	289,616	2,042,529	7.1	13.9%
Private Sector(b)	181,155	1,711,986	9.5	16.5%
(b/a) (%)	(62.6%)	(83.8%)		

Note: unit=KRW100 million. Source: Estimation of Total Capital Stock in Korea, (Kim, 1996).

The second oil shock in 1979 significantly reduced global demand for HCI goods and the Korean economy recorded a -1.7% growth rate in 1980, which was the first negative growth figure since 1962 when the first Five Year Plan was implemented. Faced with this crisis, the new military regime led by President Chun Doo-Hwan in 1980 started to implement policies to 'manage competition' more actively with the initiation of the 'Industrial Rationalisation Programmes.' The basic approach of this policy was to 'maximise the scale economy effect' and 'preserve potential opportunities for technological capability building' through state-led mergers and acquisitions.

During the 1980s there were more than eight industrial rationalisation programmes. The first was executed in 1980 across the automobile, transformer equipment, naval diesel, and heavy electrical machinery industries (NARS, 2007d). For example, in the naval diesel

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[29] Of the 303 firms that joined the top 30 chaebols, 202 were newly created. See Lee (1992)

industry, one of the three existing companies was forced to shut down, and the other two were forced to specialise. *Hyundai* had to produce engines that were greater than 6,000hp and *Ssangyong* had to produce engines that were under 6,000hp. In the transformer equipment industry, *Hyosung* acquired two other competitors (*Ssangyong* and *Kolong*) and became a monopoly in the over 154KV transformer market. *Hyundai* meanwhile could only produce transformers for internal group use. *Gumsung* (now LG) and two other existing firms were forced to produce pole transformers and circuit breakers. Similar rationalisation programmes were subsequently implemented in both the fertiliser (1981) and shipping industries (1982) (NARS, 2007b).

While the early rationalisation programmes had been ad-hoc, the programme became institutionalised with the introduction of the 'Industry Development Law' (IDL) in 1986. According to IDL, the Ministry of Commerce and Industry (MCI) could designate an industry under consideration as either a 're-enforceable industry' or a 'declining industry' after the Industrial Development Committee (IDC) discussed and concluded about a specific industry. Where an industry was classified as a 're-enforceable industry', the committee developed a 'rationalisation programme' that provided a tailored support package which included subsidised loans, tax exemptions and fixed term exemptions from anti-trust laws. Although applications by the 'dominant part' of industry were required, the MCI could arbitrarily designate an industry as re-enforceable where there were no voluntary applications from the industry (NARS, 2007a).

Following the introduction of IDL, car manufacturing, construction vehicles, diesel engines, and heavy electric equipment industries were designated as 're-enforceable industries'. The State, therefore, banned new entrants to these markets until 1989. As with previous rationalisations the State imposed restrictions on what each company could produce. For example, in the car manufacturing industry, the production rights for passenger cars were awarded to *Hyundai*, *Kia* and *Daewoo*, while the production rights for trucks and buses went to *Hyundai, Daewoo, Kia* and *Donga*. In the construction vehicle sector, *Samsung* was allowed to produce excavators, bulldozers and cranes, while *Daewoo* was restricted to producing excavators. The rationalisation programmes under IDL were subsequently applied to power generating equipment (after a second rationalisation in 1987) and ship building (1989) industries (NARS, 2007c).

Through this programme of rationalisation and protection from competition, the South Korean economy regained its international competitiveness with the GDP growth rate for the period of 1981-89 averaging 9.8% per annum. In addition to this, South Korean exporters

experienced favourable international market conditions in the late 1980's as low-interest rates, low-oil prices and the dollar exchange rate made Korean exports cheaper relative to Japanese exports,[30] with GDP growth from 1986-89 averaging 12%. Moreover, the increase in technological capabilities during the 1980s was equally remarkable. The percentage of expenditure on technology imports decreased from 50% in 1980 to 25-30% by the late 1980s as a percentage of total expenditure on technology. Business expenditure on technology for industrial production meanwhile increased from less than 0.5% to over 1.5% of total business expenditure.

3.5.4 Industrial Upgrading for Backward Industries

With increases in education, income and social awareness, the South Korean people started to criticise the social inequalities that were observed between workers in different industries and different regions. Consequently, there were increasingly strong demands for democratisation across South Korean society in the mid 1980s[31]. Faced with these demands, the South Korean state began a programme of upgrading those industries that were not part of the selected industry strategy.

Some of the industrial policies that were implemented during the 1980s and 1990s that can be categorised as 'industrial upgrading' achieved this goal through two different means. First, those industries that were categorised as backward but re-enforceable industries were upgraded through 're-tooling' and so outdated physical capital was replaced and human capital was improved through training. The second part of this strategy was the 'phasing out' of declining industries in an orderly manner (Chang, 2007).

The best example of 're-tooling' was the Textile Industry Rationalisation Programme which was announced in 1986. During the 1960s and the 1970s the South Korean textile industry experienced rapid growth with textile exports accounting for approximately 30% of all exports in the 1970s.[32] However, in the 1980s, this industry faced sharp increases in labour costs and a shortage of skilled workers. Further, as less developed countries such as China started to develop their textile industries, the South Korean textile industry could not compete.

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[30] Usually, a weak dollar is not good for non-US exporters. However, for Korean exporters it was good because it resulted in a strong Yen; this undermined the price competitiveness of Japanese exports making Korean exports more attractive (McKinnon and Schnabl, 2003)

[31] Facing increased pressure for democracy President Chun Doo-Whan's military regime accepted a democratic constitution and Presidential elections were held in 1987 and the newly elected government took office in 1988.

32 Korean Fashion Journal 2007 web page, available at:
http://www.okfashion.co.kr/index.cgi?action=detail&number=2774&thread=81r02

In 1986, the Korean Federation of Textile Industries (KOFOTI) applied for an industrial rationalisation programme following IDL.[33] The Ministry of Commerce and Industry (MCI) designated the industry as a 're-enforceable industry' with satisfactory technological capabilities but ageing capital stock. Thus, the focus of the rationalisation programme was on the upgrading of out-dated production facilities. To this end, the MCI provided approximately $100million of loans to the textile industry with an interest charge of 5% per annum.[34] The length of the loan was 10 years, there was, however, a three-year grace period and so repayments only occurred in the final seven years of the loan. Recipients of these policy loans scrapped machinery that was over 9 years old and replaced it with modern equipment so that their mills could shift to higher value-added products. From 1986 to 1989, approximately 29,100 old machines were scrapped and 17,400 new machines were installed. In addition to this, the MCI extended $375 million in short-term loans at 7% per annum until 1995, banned additional entrants to the market and provided a 10% tax reduction for capital invested in new machines between 1986–1992.

As a result of the rationalisation programme, the textile industry successfully upgraded its production facilities. From Table 3.3 it can be seen that the automation ratio increased from 24.6% in 1986 to 45% in 1989. During the same period, the value-added per worker increased from KRW 8.5 million to KRW 10.1 million.

Table 3.3 The Results of the Textile Industry Rationalisation Program

Performance category	1986	1989
Ratio of old machinery	68%	49%
Automation ratio	24.9%	45%
Value-added/worker (KRW, million)	8.5	10.1

Source: Kim (1994), The restructuring of Textile and Garment industry in Korea (p. 187)

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[33] See, Kim (1994) and McNamara (1999)
[34] In 1987, for example, the three-year corporate bond yield rate was over 12%.

The best example of 'phasing out' was the coal mining industry. The number of coal mines in the country peaked in 1988 with 347 mines, employing 62,260 workers, producing 24 million tons per annum[35]. However, as with other countries across the World, the demand for coal started to decline from the mid 1980s when oil prices stabilised and energy-usage patterns changed. Faced with a declining industry, the MCI developed the 'Coal Mining Industry Rationalisation' programme in 1988 under the Coal Mining Industry Law (CMIL). The programme included various supports for the industry. First, in order to reduce coal production to an appropriate level, the State provided mine owners with KRW 8,116 per tonne for a reduction in production, and exempted the industry from tax and forest restoration charges. Second, the State supported those miners who were made redundant by granting income subsidies, scholarships for their children, and subsidised loans with an interest rate of 5% per annum. Considering the three-year corporate bond yield rate was over 14% in 1988, the 5% rate on these loans was generous. Moreover, repayments only commenced after 5 years of receiving the loan thereafter the loan had to be paid back in five years.

Due to the rationalisation programme, the number of coal mines decreased sharply from 347 in 1988 to 11 by 1996, and the number of miners reduced from 62,620 to approximately 10,000. Most of the industrialists who were in the coal mining industry entered into the emerging city gas businesses. Despite the support that was provided, the decline of the coal mining industry resulted in the rapid collapse of several local communities in the *Kangwon* province where coal extraction was almost the sole economic activity. In order to address this problem, the State intervened again in 1995. Under this plan, coal production was planned to be managed to 4.5million tonnes per year. Moreover, in order to rejuvenate local communities and diversify the local economy, the State established a joint venture with local authorities to develop a casino hotel for the first time in South Korea. In 2000 the casino hotel opened, and the complex has become one of the largest integrated tourism complexes in South Korea with the profit from the hotel being spent on the development of local communities.

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[35] See, Korea Coal Corporation (2001) and Jeongseon County (2010)

3.6 Conclusion

For many scholars and commentators the inauguration of the WTO heralded the beginning of the end for state intervention in economic development. Until the recent financial crisis free-markets and competition were widely viewed as the most effective mean of allocating economic resources and creating economic growth and this was enshrined in the WTO. However, the onset of the credit crunch resulted in substantial amounts of state intervention in the banking sector, and the wider economy, by governments that had previously eschewed interventionism in favour of largely unfettered free-markets. The question over interventionism as opposed to free-markets has again come to the fore in economic and political debate, with comparisons being made between the flagging economies of those in the West with those in the East where government plays a central role in directing economic development.

Given this renewed interest in state intervention and the role of the State in economic development we have developed a sequential framework that can explain both historical changes in industrial policy and the impact on economic growth. This framework of analysis is then applied to the case of South Korea from 1960 to 1996 and shows that state intervention in the economy can be successful and can be the catalyst for economic growth. Crucially, this is only possible where intervention is a dynamic policy which is responsive to the changes in the quality and quantity of the capital stock and the technological capabilities within the economy as well as the social context in which any policies will be implemented. Although we only consider the South Korean case, we believe the theoretical framework developed may have general applicability. However, a theory cannot be proven by a single case, and so the theoretical framework we have developed will be researched further in different settings in future work.

Chapter 4 : The Agency Problem of State-owned Enterprises and Performance Contracts

4.1 Introduction

It is a common phenomenon that the State holds the ownership of firms in capitalist economies. The size and scope of the SOE [36] sector increased during the 20th century as a result of the emergence of the welfare State, the Great Depression and several financial crises. Although this tendency has ceased due to the recent privatisation wave across countries, the SOE sector is still significant in terms of its size and contribution to GDP in many countries (OECD, 2005). SOEs have good theoretical and practical justifications for their existence, however, they have long been criticised for inherently extreme agency problem and resultant inefficiency. To address the problems, there have been two policy approaches—privatisation and the reform of institutional arrangements that surround SOEs.

The purpose of this chapter is to introduce Performance Contracts (hereafter, PCs) as a policy measures for addressing the agency problem of SOEs and improving the performance of SOEs. To understand PCs, it is necessary to understand why States in capitalist economies own firms and what the sources of inefficiency in SOEs are. These issues are discussed in the following section 4.2 and 4.3. Then, section 4.5 examines the theoretical foundations of PCs and whether PCs have actually improved the performance of SOEs, addressing the agency problems. Finally, section 4.6 introduces the Korean PC, called the 'Annual Business Performance Evaluation' (ABPE), to provide a more specific basis for the empirical study in Chapter 5.

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[36] This study defines 'State-owned enterprise' as 'a productive asset or organisation held in a corporate form which is directly or indirectly owned by the State'. Thus, organisations held not in a corporate form such as State-run hospitals and governmental departments are excluded from consideration.

4.2 Why States Own Firms in Capitalist Economies

The question, why States in capitalist economies own companies for certain goals is equivalent to an alternative question, why do States not use a market mechanism or governmental organisations for such goals. As the question indicates, SOEs are utilised when the company system can do the tasks better than governmental organisations, but market mechanisms for such tasks do not work well. Given that such governmental tasks serve public interests, the conceptual advantage of SOEs is that company-level 'efficiency' and 'public interest' can be pursued at the same time (Islam, 1993). Given these, this section briefly reviews more specific reasons why the State owns firms.

First, as mentioned above, market failure is the most frequently mentioned reason for the existence of SOEs. For instance, in cases of natural monopolies and positive externalities, the production of goods and services is at less than the socially desirable level. The State may intervene in the market to direct the firms to produce at socially desirable levels with the losses from such interventions being compensated by the State. If the firms are nationalised, the State can more easily direct the firms to do so (Berliner, 1999).

Second, firms even in (potentially) competitive markets are also often nationalised for industrial policy (Megginson and Netter, 2001). For example, the State may use a SOE as a vehicle to phase out declining industries or introduce newly rising industries where a huge amount of wind-up or start-up costs are needed under uncertainty. As explained in Chapter 2, such structural changes do not naturally take place in a decentralised market due to the coordination problems. For these reasons, many States own a large number of firms in such industries (OECD, 2005). Firms in the financial, transportation, utility and other types of infrastructure industries can be the best examples which hardly function well in the early stage of industrialisation (Estrin and Perotin, 1991).

SOEs have also been used to enhance the economic equality of a society by providing certain goods and services 'in the national interest' at low price, the deficit from which is usually compensated by public funds. Policy-makers have broadened this category to include as many industries as possible to maximise the budget (Estrin and Perotin, 1991).

4.3 Sources of Inefficiency in SOEs

Although SOEs have long been utilised for various reasons, it is well known that the most critical problem with SOEs is their inefficiency, due to inherently high agency costs (Boycko et al., 1996). For example, Mueller (1989) and Vining and Boardman (1992) reviewed empirical studies of SOEs and private firms across countries and found that private firms are generally more efficient than SOEs. More recent studies have shown that, in many cases, the efficiency of former SOEs significantly improved after privatisation (Boubakri and Cosset, 1998; Megginson et al., 1994; D'souza and Megginson, 1999). In addition to agency costs arising from general principal-agency relationships, researchers generally agree that the following five factors are the main sources of the unique agency problem in SOEs.

The lack of property rights or ownership

From the perspective of property rights theory, there is no residual claimant or owner of SOEs. The property right theory suggests that it is residual claimants who drive firm to be efficient (Alchian and Demsetz, 1972; Grossman, 1986). Otherwise, they receive nothing from the firm. When a firm has no residual claimant, therefore, it will be operated less efficiently. The residual claimant or owner of SOEs is the conceptually all citizens in the economy because they are the owner of the State. However, individual citizens cannot directly benefit from efficient operation of SOEs nor directly influence the operation. Although bureaucrats and politicians actually control SOEs but they do not have the ownership of the residual cash flow the firms (Shleifer and Vishny, 1996). Therefore, they do not have incentive to actively monitor the management of SOEs. De Alessi (1980) further claims that since the ownership of SOEs is non-transferable, it inhibits the capitalisation of future consequences into current transfer prices and reduces the owners' (i.e., the State) incentives to monitor managerial behaviour. In these circumstances, it would be natural for SOE managers to have a stronger incentive to shirk than their counterparts in the private sector.

Vague and multiple objectives and the measurement problem

Private sector firms have a clear single goal: a maximum profit. Even though specific steps to achieve the gaol may vary, the objective of private sector firms is simple, single and unchanging (Estrin and Perotin, 1991). However, SOEs typically have multiple and vague organisational goals. For instance, besides efficient operation, most SOEs have social goals such as serving to universality of service, income re-distribution, consumer representation and

more employment because SOEs have been utilised as a tool for the correction of market failures, industrial policy and technological advance (*ibid*). If SOEs have the same goal with private sector corporations, there is no reason for the State holds the ownership of the firms(Vickers and Yarrow, 1995). Unfortunately, however, it is often very difficult to measure the degree to which SOEs are fulfilling their roles in terms of the above social goals (Estrin and Perotin, 1991). While investors of private sector firms can easily find information on the profitability of the invested firms from stock market and accounting reports, it is almost impossible to measure the performance of SOEs in terms of, for example, 'universality of service' and 'contribution to technological progress'. Notably, such social goals prevent the State from appropriately measuring the performance of SOEs.

Another issue is the priority on multiple organisational goals of SOEs. Even in cases where multiple organisational objectives are reasonably measurable, the measurement problem still remains unless the priorities on the multiple goals are clearly defined (Holmstrom and Milgrom, 1991). For example, a certain SOE may have 'creating more job opportunities' as one goal and 'being efficient' as another. In this case, measuring the overall performance of the firm fairly is impossible without additional guidance.

Due to these factors, the State rarely measure the performance of SOEs, which put SOE managers in a better condition for enjoying comfortable life than their counter part in private sector firms, whose performance is relatively easily measured via share price and accounting measures (Alessi, 1987). The absence of performance measurement on SOE managers also rules out the application of incentive scheme that motivates the managers in private sector firms.

Unnecessary interventions from the State and rent-seeking

According to neo-utilitarian public choice models, politicians and bureaucrats who have significant influencing powers over the operation of SOEs are claimed to intervene in SOE managers in pursuit of their own benefits at the expense of the efficient operation of SOEs (Shleifer and Vishny, 1996). For example, incumbent politicians need political supports (i.e., votes) for staying in their office (Buchanan et al., 1980). To get more votes, they need to provide their political supporters with incentives sufficient to retain their support; more job creations and investment in their constituencies can be the example. Politicians may exert their influencing power on the managers of SOEs to extract such incentives from SOEs. Of course, such investment decisions in SOEs do not necessarily guarantee an efficient operation of the firms.

Bureaucrats are seen to seek budget maximisation by encouraging SOE managers to spend as much resources of SOEs as possible. Budget maximizing model assumes that bureaucrats are trying to maximise their utility level which is comprised of perks, stemming from budget size they handle (Niskanen, 1975). Therefore, bureaucrats are expected to maximise budget size that they control. Under this assumption, it would be higher than socially desirable level where marginal cost and marginal benefits are equated because they may deceive decision makers (politicians or electors) to increase the budget as long as the average benefit is higher than the average cost. This argument can directly be applied to the relationship between bureaucrats and SOE. Since bureaucrats can increase their utility level by increasing the budget size or expenditure of SOEs they can influence, SOEs is urged to spend more resources than is required, which is another source of inefficiency in SOEs.

Many commentators also point out that even in cases where bureaucrats and politicians are benevolent, any intervention from them would not be beneficial to SOEs as they typically lack enough information for efficient decision and/or ability to process the information gathered (Krueger, 1990; Buchanan et al., 1980). Whatever the case, SOE managers typically have weaker control than their counter parts in private sector firms on input-output relationship in their organisations due to the intervention from politicians and bureaucrats, which constrains SOE managers from making the most efficient decisions.

Commitment from the State

Pursuing the public interest, the State typically provides a certain degree of financial or non-financial commitment to SOEs. Such a commitment is especially necessary if SOEs are involved in areas with market-failure or for industrial policy purpose. For example, when a SOE is operating in an area with positive externalities, the State typically subsidises the SOE in order to make the production level socially desirable. If investment risk or uncertainty is high, investment from the State on the area is able to diversity the risk over all citizens. In both cases, support from the State is not related to economic performance of SOEs but for compensating loss or providing signal to the market that the State may provide unlimited access to public fund to the firm. Kornai (1986) name this kind of situation as "soft budget constraint".

From the transaction costs economics perspective, such commitment is necessary for SOEs to reduce uncertainty (Williamson, 1979), but this encourages SOEs not to economise in their operations. For instance, when SOEs are making deficit, it is not clear whether the

deficit is from over production or internal inefficiency. Therefore, governmental subsidy on SOEs can be subsidy on the inefficiency of SOEs.

Political concern is also one of important reasons why the State provides virtually unlimited access to public fund with SOEs. When SOEs are even on the verge of bankruptcy due to managerial inefficiency, the State cannot easily let the firms file for bankruptcy because bankruptcy of SOEs may incur various social and political problems such as unstable public services and lay-offs, the cost of which can be higher than the cost of correction for inefficiency in SOEs. Therefore, the State typically bail-out the endangered SOEs as long as the related public and political concerns outweigh the financial loss from the bail-out. Since SOE managers know this, they have incentive to shirk.

The lack of market discipline

Since SOEs are typically involved in imperfect markets where competition is limited, the managers of SOEs are less affected by market discipline. In a competitive market, the performance of competitors can be a good reference for judging the performance of a firm. Further, competition significantly threatens the survival of firms. To survive, firms should continuously economise their operation, advance technology and organisational strategy (Schumpeter, 1934; Goldstein, 1995). Therefore, SOE managers have a weaker incentive to do so because there is a weaker or no market discipline (Megginson and Netter, 2001).

In short, the sources of the extremely high agency costs in SOEs are the lack of actual ownership on the cash flow of SOEs, rarely measurable and multiple goals, unnecessary interventions and commitment from the State, and market discipline. Estrin and Perotin (1991) argue that institutional arrangements that effectively address the five sources of inefficiency in SOEs will mitigate the agency problems of SOEs (Vickers and Yarrow, 1995).

4.4 Two Approaches for Addressing Inefficiency in SOEs

To reduce the inefficiency in the SOE sector, two approaches have been discussed and employed over the decades. As is well known, the dominant approach has been privatisation. The proponents of privatisation argue that, by transferring the ownership of SOEs to the private sector, privatisation identifies the 'owners' of the cash flow of the firms who will drive the managers to maximise the value of their ownership through re-specifying the organisation's goals (Alessi, 1987; Boycko et al., 1996). The British government has been at the head of this wave since the 1980s and many countries have joined the wave since then. According to Megginson and Netter (2001), the SOE share of GDP declined from about 16% to 7% during the period of 1980~1995 due to the global privatisation trend.

Since the 1980s, a number of empirical studies have been conducted to investigate whether privatisation worked or not. Megginson and Netter (2001) provide a comprehensive review of 33 empirical studies on this issue. They conclude from 22 of the reviewed studies that "at least, a limited support for privatisation can be offered in industrialised countries". However, they found that the empirical studies on Central and Eastern European countries were inconclusive and concluded that privatisation may fail unless complementary institutional arrangements such as a corporate governance structure are appropriately developed. Their conclusion indicates that simply transferring the ownership of firms from the State to the private sector does not solve the problem.

The second approach is improving the institutional structure imposed on SOEs, while keeping State ownership. Scholars in favour of this approach claim that, logically, the source of SOE inefficiency is not State ownership itself but the poorly designed regulation and incentives provided by the State (Vickers and Yarrow, 1995; Berliner, 1999). Hence, if an appropriate institutional structure is given to SOEs, they argue that SOEs can be as efficient as private firms (Vining and Boardman, 1992; Boardman and Vining, 1989; Vickers and Yarrow, 1991; Berliner, 1999). Their arguments seem more reasonable if we consider the fact that privatisation does not automatically address 'public interests', which is one of the fundamental reasons why the State owns firms.

In order to improve the institutional structure, a broad range of institutional devices can be considered. Within corporate governance literature in general, such devices can be largely grouped into two. The first is internal governance mechanisms. Board of directors has long been regarded as the key internal governance mechanism to address the agency problems in corporations. Fama and Jensen (1983) argue that shareholders can reduce the agency cost by appointing directors and delegating their controlling power on the firm to them to monitor

manager on behalf of themselves inside the firm. Remuneration is also widely discussed device. Optimal incentive contract literature argues that appropriately designed incentive mechanism can motivate managers to act in the best interest of the principals (Baker 1992; Jensen and Meckling, 1991). Therefore, incentive contract for manager have widely been discussed. Recently, many commentators also note the importance of workers and, therefore, worker participation, profit sharing and worker ownership are frequently suggested as an important policy alternatives to overcome the agency problem (Jones and Svejnar, 1985). The underpinning idea is that these devices reduces labour turnover and, hence, increase workers' tenure within the firm, which may have positive impact on the accumulation of workers' firm-specific human capital (Levin, 1980). Internal accounting report and audit system are also important institutional arrangement for controlling agency problem.

External governance mechanisms are the other group. According to the corporate governance literature, the most important external governance mechanism is stock market (Keasey et al., 2005). Under the assumption of efficient market, share price contains almost all information about the performance of firm or management. Therefore, agency problem can be effectively addressed if there is efficient market for shares of corporations and remuneration policy is tied with the share price. External auditing system and corporate information disclosure are also important issue to address the agency problem in general because they also provide valuable information on the performance of management and firm.

In the context of SOEs, however, not all of them are applicable. For example, the ownership of SOEs is typically not transferable as discussed in previous section and, therefore, stock market is unavailable for addressing agency problem in SOEs. Accounting report and audit system rarely carry sufficient information on the performance of SOE managers because the price of goods and services of SOEs on which accounting figures are based is determined by policy rather than market. Although workers' participation in profit sharing is recently gaining interest of many commentators, it is not allowed in many countries, including South Korea. Incentive contract scheme has been widely used in public sector since 1980s, it is still difficult how to define and measure the performance of SOEs due to the measurement problems discussed in previous section.

Therefore, there are only a limited number of governance mechanisms that are relevant to the context of SOEs. This perhaps explains why privatisation has been the dominant approach for dealing with agency problem in SOEs. However, the experiences of some countries demonstrate that agency problem in SOEs can be significantly improved, using the limited number of governance mechanisms. The most widely known example is

Chinese 'dual track' which incorporates partial privatisation and introducing incentive mechanism for SOEs. According to Li (1997), for example, by transferring decision-making authority from the State to SOEs and providing incentive mechanisms to SOE managers, the Chinese government could dramatically increase the total productivity in Chinese SOEs.

Indeed, more and more governments are trying to address agency problem of SOEs by improving governance structure since 1980s with New Public Management (NPM) becoming the leading philosophy of reforming public sector across countries (Hood, 1995; Verbeeten, 2008; Goddard et al., 2004). Incentive mechanisms and improvement of board structure have been argued as the key policy means by the proponents of NPM.

This study assumes that there are certain reasons why the State is unable to privatise SOEs, which can be empirically supported by the still significant size of the SOE sector across countries (OECD, 2005). Under this constraint, policy makers should contemplate the way in which the institutional structure imposed on SOEs is improved under State ownership. As discussed before, the most applicable and widely used institutional arrangements are incentive contract and board of directors. Therefore, the current thesis investigates these two devices and their interaction in the remained part. Chapter 4 and 5 elaborate the 'performance contract' (PC) as an incentive scheme for SOEs and Chapter 6 and 7 investigate the role of board of directors and its interaction with performance contract scheme in the context of SOEs.

4.5 Performance Contracts

4.5.1 Theoretical Foundations

A performance contract (PC) in the context of SOEs might be defined as a (quasi) contractual agreement between the State and the manager of the SOE regarding the performance of the SOE, which typically comprises the following four components: i) organisational goals and targets; ii) measures (or scoring methods) with which the actual performance can be assessed; iii) a feedback mechanism such as incentive payments or preferred resource allocations depending on the assessment results; iv) giving a certain degree of autonomy to the managers (Shirley and Xu, 1998). Whatever the name or the legal form it takes, PC can be seen as a form of the incentive contracts which have been widely used to motivate the managers of private sector firms (Shirley and Xu, 2001).[37]

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[37] In this study, the term .PC refers to all types of performance review schemes, including performance contract, memorandum of understanding, management contract or performance plan etc.

Agency theory proposes that in general principal-agency relationships with information asymmetry, incentives may align the interests of the agents with those of the principals, thereby promoting agents to act in the best interests of the principals (Jensen and Meckling, 1976), as long as the information asymmetry is appropriately addressed (Sappington, 1991). However, the ways in which the PC decreases the unique agency problem of SOEs are more complex. Proponents (e.g., Jones, 1991) explain the mechanism as follows.

First, the PC translates the vague multi-goals of SOEs into a limited number of tangible goals by limiting and specifying targets and measures through the negotiation between the bureaucrats and the manger of SOEs (Verbeeten, 2008; Speklé and Verbeeten, 2009; Shirley and Xu, 2001; Islam, 1993). Once targets and measures are specified, SOEs may prevent the diffusion of organisational energy and resources (Rangan, 2004; Verbeeten, 2008). Further, if weights are appropriately assigned to the measures to capture the relative importance of the stakeholder concerns, the PC may provide the SOE managers with clear guidance on how to allocate organisational resources to achieve the goals.

Second, the PC can be used by SOE managers to deflect unnecessary interventions from bureaucrats and politicians (Islam, 1993). Unnecessary State interventions often prevent SOE managers from making optimal decisions. If a PC is imposed, SOE managers are accountable for their performance and therefore have an incentive to protect themselves from such interventions. In this sense, PC may, at least partly, compensate the lack of ownership (or property rights) of SOEs and this possibility may increase as the binding power of the PC increases (Shirley and Xu, 2001; Nellis, 1989).

Third, if organisational performances are accurately measured and the feedback mechanism is sufficient for SOE managers not to shirk, the PC may be a partial substitute for market discipline by punishing poorly performing managers and rewarding well-performing managers (Nellis, 1989).

In addition, the theoretical benefits of performance measurement can also hold in the PC. For example, the performance information produced by the PC can be used for organisational learning, and setting and modifying the organisational strategy (Henri, 2006; Speklé and Verbeeten, 2009). In sum, a well-designed PC can be expected to mitigate the inherent agency problems of SOEs.

4.5.2 The Origin and Typology of Performance Contracts

The origin of the PC can be traced back to 'Nora Report' (1967) prepared by a parliamentary committee in France, chaired by Simon Nora (Islam, 1993). The report identified the sources of inefficiency in French SOEs as excessive interventions from the State and vague organisational goals. As a solution, the report suggested a (quasi) contractual agreement between the State and SOE managers (Nellis, 1989).

With the previously discussed theoretical background, PCs were diffused to many countries during the 1980s~90s and the World Bank contributed to this through its 'Structural Adjustment Program' which provided recipient countries with special loans and technical support for the reform of SOEs (Islam, 1993). Through the World Bank program, 11 Francophone African countries adopted the PC in the 1980s (Islam, 1993). Another group of countries such as Greece, Turkey, Pakistan, India, China, and South Korea adopted the PC independently in the 1980s (WorldBank, 1995; OECD, 2005). Recently, the World Bank (1995) found 562 PC cases in 32 developing countries. The OECD (2005) finds that at least eight OECD member countries are implementing PCs for their SOE sectors.

With New Public Management (NPM) becoming the leading philosophy for 're-inventing government', the PC has received greater attention across countries (Verbeeten, 2008). The key suggestion from NPM is to "measure the performance of public organizations and relate rewarding for public managers to their performances" (Hood, 1995), which is identical to the PC. The Star Rating System in the British National Healthcare Service (NHS) (Goddard et al., 2004) and the Program Assessment Rating Tool (PART) in the US (Propper and Wilson, 2003) can be understood as variants of the PC implemented in the context of public organisations.

There is a wide variation in how PCs are designed and implemented in practice across countries. In terms of the binding power of the agreement, PCs can be classified into three types: formal contract (e.g., the French case), the strongest one; agreement (e.g., the Indian MOU); plan (e.g., the Australian performance plan), the weakest. In terms of the types of performance measures, PCs can be categorized into 'French style' and 'Signalling system' (Commonwealth-Secretariat, 1995). Basically, the former has only a few quantitative measures while the latter includes a wide variety of qualitative and quantitative measures. Accordingly, the French styles PCs do not weight measures, while weighting is an important issue in the Signalling system (ibid.).

4.5.3 Empirical Evidence on the Efficacy of PCs

In spite of its wide geographical coverage and long history, there are only a few empirical studies on whether PCs really improve the performance of SOEs and, furthermore, the results are inconclusive (Verbeeten, 2008; Speklé and Verbeeten, 2009; Shirley and Xu, 2001). For example, Trivedi (1990) finds that the Indian PC improved the dialogue between SOE managers and bureaucrats but the impact of the PC on firm performance was not rigorously investigated. Gosh (1997) examines whether the Indian PC improved the performances of 12 Indian SOEs and finds some positive impacts. Park (2006) finds some mixed impacts of Korean PCs on the organisational competence in 12 Korean SOE.

On the contrary, the majority of empirical studies fail to find significant PC/performance relationships. For example, Islam (1993) finds insignificant PC/performance relationships in his case studies on Indian and Pakistani experiences and attributes this to the fact that the States often ignored the managerial autonomy and its contractual duties, such as providing the resources required to achieve targets or incentive payments agreed in the PC. Nellis (1998) finds ambiguous results from his qualitative researches on French and several African cases. He concludes that the overall institutional environment (e.g., the legal system and social relationships) affects the efficacy of the PC. Shirley and Xu (1998) find that the PC did not improve total factor productivity at 12 companies in 6 countries. Similarly, Shirley and Xu (2001) find insignificant associations between the PC and profitability/productivity increase in 500 Chinese SOEs.

Even if we extend the context where PCs are implemented into non-corporate type public organisations such as public universities, police stations and social service agencies, the results are the same. For example, Dranove et al. (2003) investigate the PC/performance relationship in US hospitals and they conclude that the use of the PC decreased the social welfare of patients at least in the short term because the high-powered incentive led hospital staff to engage in the selection of patients with less severe conditions. Bevan and Hood (2006) examine the PC/performance relationship in English healthcare organisations. Although they find a significant improvement in the 'reported' performance, they raised doubts about whether these results are 'genuine' or from 'gaming'. Verbeeten (2008) investigated whether PCs improve the performance of Dutch public organisations and he finds that PCs improve the performance only when performance measures are clearly defined.

Researchers commonly attributed the disappointing empirical results to the following three factors: i) the lack of 'sensible' performance measures; ii) insufficient rewarding

mechanisms; iii) the lack of commitment from the State to the PC (Shirley and Xu, 2001; Dranove et al., 2002; Verbeeten, 2008; Nellis, 1989; Islam, 1993).

In sum, although the PC has been suggested as an alternative to privatisation, the empirical results question the efficacy of PCs. Some researchers such as Speklé and Verbeeten (2009) argue that the above three problems boil down to the first because if the measures are not sensible, and therefore the PC results are not reliable, the State is legitimised to provide a low incentive and only a limited commitment to PC. Thus, the most critical issue with the PC is to identify what kinds of measures should be used and how such measures can be generated. Chapter 5 answers these questions with an empirical analysis of the South Korean case. The remainder of this chapter introduces the South Korean PC in detail to provide a specific background for the empirical analysis in Chapter 5.

4.6 The Annual Business Performance Evaluation

The Korean 'Annual Business Performance Evaluation' for SOEs (ABPE) is a form of the PC officially introduced in 1983. By providing incentives and operational autonomy to SOEs and reducing control from the State, the ABPE aims to improve the performance of Korean SOEs. The following subsections outline the overall characteristics and process of ABPE, and explain how the ABPE has changed over time from 1983 until today, focusing on performance measures, the weights attached to measures, scoring methods and feedback mechanisms.

4.6.1 Overall Characteristics of the Korean ABPE

Although the Korean ABPE was officially introduced in 1983, it is now based on the 'Act of the Management of Public Institutions' enacted in 2007. The Act defines the term, 'Public Institution' as an organisation that meets one of the following conditions:

- *founded directly by law or the government*
- *the share of subsidy from the government (including income from the monopoly status given by the government) takes more than 50% of total income*
- *the shares owned by the government or other public institutions are more than 30% of total shares.*

There are about 300 public institutions in Korea and they are categorized into three groups: 'Public Enterprises' (PE), 'Quasi Government Institutions' (QGI) and 'Other' PIs (OPI). PEs are basically big firms [38] in the utility, network and infrastructure industries. QGIs are basically conducting government-entrusted tasks such as the industrial promotion service, public fund management and various social services. Thus, they are financially more dependent on the State than PEs. The other PIs are classified as OPIs. The OPI group has a wide range of organisational forms and business areas, from research institutes and national universities to financial institutions and broadcasting companies. According to the Act, every PE and QGI should undertake an ABPE. Hence, there are about 100 firms (i.e., PIs) to which the ABPE is applied.

The overall characteristics of the Korean ABPE can be summarised into three features. First of all, it has a wide variety of quantitative and qualitative performance measures (Murthy, 1990; Shirley, 1989a). This is in a stark contrast to the French style PCs which usually have

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[38] According to the law, PEs should have more than 50 employees and more than 50% of corporate income is from independent sources and QGIs are non-PE with more than 50 employees.

few quantitative measures (Nellis, 1989). Theoretically, a large number of measures may reduce the incentive of managers to distort their behaviour (Baker, 2002), but they entail higher maintenance costs. Second, the ABPE is directly linked to a high-powered incentive payment system applying to all individual employees and managers of Korean SOEs that undertake the ABPE (MPB, 2007). For example, an employee in a best performing firm may receive 500% of her monthly salary as a bonus. The third one is strong commitment from the South Korean government. This has been possible because the ABPE has been implemented by one ministry which has possessed dominant power within the Korean government (WorldBank, 1995).[39] These characters coincide with the three determinants of the efficacy of the PC discussed in the previous section. Therefore, the Korean ABPE has been recognised as one of the most successful PCs by many commentators (Shirley, 1989a; Nellis, 1989; Murthy, 1990; WorldBank, 1995).

4.6.2 The Procedure of the ABPE

Figure 4.1 illustrates the overall ABPE procedure. It starts from developing an 'Evaluation Guide' for individual firms, which specifies the performance criteria, indicators, scoring method, and some specific considerations that should be taken into account when actual performance is assessed (step 1). The Ministry of Strategy and Finance (MOSF), in charge of ABPE, has to agree with SOEs to finalise the Evaluation Guide before the beginning of the target year (t). Then, SOEs operate during the target year (step 2).

In February of the 't+1' year, the MOSF organises a Panel of Examiners comprising about 100 independent experts, most of whom are academics, professional consultants and Certified Public Accountants (step 3). All examiners-to-be must prove their degree of expertise in the relevant areas, and that they do not have any conflict of interests[40] in assessing the performance of SOEs.

In step 4, by March 20th each year, SOEs that undertake an ABPE (hereafter, ABPE firms) should submit an 'Annual Business Performance Report' (ABPR) that covers the actual results achieved against the targets set in the 'Evaluation Guide' and what kind of efforts were

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[39] Until 1996, this body was the Economic Planning Board (EPB). During 2000-2007, the Ministry of Planning and Budget (MPB) took the role, and the Ministry of Strategy and Finance (MOSF) is in charge of the ABPE since 2008.

[40] Examples include involvement in consulting projects or having a NED position during the previous three years.

made to achieve these results. Then, the panel of examiners starts its evaluation (step 5). The evaluation is primarily based on the ABPR and multiple on-site investigations. Each performance indicator is collectively assessed by a least three examiners.

After assessment by the panel of examiners, the results are reported to and ratified by the Steering Committee on the Operation of Public Institutions, chaired by the Minister of Strategy and Finance (step 6). At the same time, the committee decides the incentive payment schemes the employees and managers of individual SOEs will be awarded based on the ABPE results.

As a final step (step 7), the evaluation results are reported to the President of South Korea, who appoints the managers of SOEs, and to relevant committees of the National Assembly. Furthermore, the results are publicly announced, which is believed to strengthen the accountability of the SOE managers. Although it is not a legal obligation, special feedback sessions are given to ABPE firms. During the session, examiners explain the main achievements as well as common problems found from the evaluation process, and staff from ABPE firms can also comment on or complain about the evaluation process and the results.

Figure 4.1: Overall ABPE process
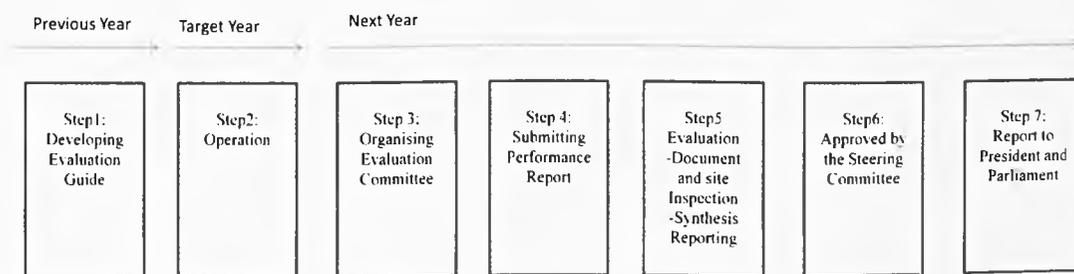
4.6.3 Performance Criteria, Measures and Weight

According to the 'White Book on ABPE' (MPB, 2003), performance measures should be chosen in line with the following principles: i) measurable; ii) controllable and improvable by managerial efforts; iii) relatively important; iv) distinguishable from others; v) persistently measurable through the years, enough to be assessed against their past records.

Since 1985 a few performance criteria have been created and modified until 2006. For example, in 1985, there were six performance criteria—*General management, Project targets, Administration, Efficiency, Service quality* and *R&D*. The six criteria were re-organised into three performance categories—*General management, Main Projects* and *Administration,* and this continued to exist until 2006. Table 4.1 illustrates the criteria and indicators of a firm. The basic idea of this approach was to see the performance of three major parts of organisation respectively; that is, 'top management', 'business units' and 'administrative units'. Therefore, it was easy to tell which part produced good performance and which are not. This approach also made it easier for SOE managers to allocate accountabilities across the various units in their organisations.

However, this approach was criticised by many commentators. First, they claimed that there were too many performance measures and indicators, entailing excessive assessment costs (MPB, 2007; Heinrich and Marschke, 2010). Second, they claimed that not enough attention was given to the relationship between performance measures (Na, 2003; Na and Lee, 2008; MPB, 2007). For example, Na (2003) claimed that it was hard for the consumers of ABPE reports to recognise any internal relationships between the categories and measures either conceptually or empirically (Na, 2003). Third, the relatively unclear definitions of qualitative measures were also criticised for leaving a significant degree of discretionary power in the examiners' hands, which was often the source of doubts about the fairness and credibility of the ABPE results (MPB, 2007).

In response to the criticism, the Ministry of Planning and Budget (MPB, the former body of MOSF) re-designed the performance criteria and indicators, as seen in Figure 4.2 and Table 4.2. To construct the new performance criteria, TQM theories, the Malcom Baldridge National Quality Award (MBNQA) and the European Foundation of Quality Management (EFQM) models were benchmarked (MPB, 2007). Compared with the old performance criteria that are based on sectional approach in Table 4.1, one might find that the new criteria in Table 4.2 are constructed based on work flows within organisation. More concretely, it is assumed that excellent leadership and strategy affect internal operations and system which produce excellent organisational results. This is the underlying idea of TQM (Meyer and

Collier, 2001). One might, therefore, expect sequentially positive impacts from the criteria in left hand side to those of the right hand side in Figure 4.2. This contrasts sharply with the vague relationships between the three categories of performance criteria in Table 4.1. Furthermore, by adopting TQM approach, MPB could reduce the number of performance indicators for individual firm from about 40~45 to 30, which significantly alleviated the burden on SOE managers in preparing performance evaluation process.

The weights given to the performance criteria and indicators have also been changed in response to the changes in the economic environment and stakeholder concerns. For example, in 1986, the sum of weights given to the 'long-term management' measures was only 4% of the total weights (see Table 4.1) while the sum of weights given to the corresponding indicators reached 20% in 2008 (see Table 4.2). This change reflects the growing concerns of the State and stakeholders on the increased uncertainty that surround the South Korean economy after the 1997 Asian crisis.

The relative weights assigned to qualitative and quantitative measures have also gradually changed. In 1986, the total weight given to quantitative measures was 63% (see Table 4.1) but in 2008 it decreased to only 45% (see Table 4.2). This change also reflects the shifts of the State and the other stakeholder concern from short-term results toward organisational competence in the long term, in accordance with the environmental changes.

Table.4.1: The Performance Measures of Korea Electric Power Corporation (1986)

Performance criteria and Measures	Indicators	Scoring Method*	Weight
1. General Management			**<30>**
- Fixed Capital Productivity	Value added/Fixed Capital	Relative Target	27
- General Management Efficiency		5grades	3
2. Organisational Objectives			**<47>**
a. Resource Development			(7)
- Power Plant construction	Progress rates of 13 plants	Result/target	3
-Accuracy of demand prediction	prediction effort rate	Normal dist.	2
-Plant development plan	developing process, contents etc.	5grades	2
b. Generation, Distribution and Sales			(28)
-Nuclear plant Utilisation	Average loading/capacity (71.1%)	Result/target	2
-Thermal efficiency	860kcal/heat consumption rate(96.7%	Result/target	3
-Distribution loss rate	Distribution loss rate(6.3%)	Result/target	2
-Plan for Distribution	feasibility etc.	5grades	1
-Cost management	total cash paid /power sales	Relative Target	10
-Voltage Normality	Hours of optimal voltage/total operating hours(96.1%)	Result/target	2
-Frequency	Hours within rated frequency/total operating hours (98.5%)	Result/target	2
-Outage duration	Hours of outage*n. Of household/total operating hours (98.5%)	Result/target	1
-Operational efficiency of main projects	evaluating main projects individually	5grades	5
c. General management			(6)
-Inventory management	average inventory=f(sales)	Normal dist.	5
-Financial cost management	financial cost/average debt	β dist.	1
3.Administration			**<23>**
-Long-term management	implementation, response to changes, linkage between short-term plans etc.	5grades	4
- Improvement in Administration	board meeting. HRM, organisation management, budget, energy saving etc.	5grades	7
-Internal Performance Management	target, measurement, incentive etc.	5grades	7
- Service quality	service improvement etc.	5grades	2
-R&D	R&D investment, training programs	5grades	3
Total			**<100>**
Quantitative indicators			**(63)**
Qualitative indicators			**(35)**

Note. About scoring method, a detained explanation is in following section.

Source: White Book of Annual Business Performance Evaluation (MPB, 2005)

Figure 4.2. Performance criteria and indicators in the ABPE model

Leadership & Strategy	System	Result
Leadership	**Key Business Process**	**Key Business Results**
Leadership	Business 1	Business 1
Board of Directors	Business 2	Business 2
Customer Satisfaction	Business 3	Business 3
		CS Results
		CS survey result
		Social Responsibility
Strategy	**Administration**	**Efficiency Results**
Vision & Strategy	Financial management	Managerial Expense Financial Performance
Key Business Plans	Organisation Remuneration	Labour Productivity Capital Productivity
	Labour Relations	Labour Cost
	Internal Performance Management	

Note. The pentagonal shapes located on the head of the dotted rectangles represent three categories of performance criteria, rectangles with solid line represent performance criteria and items below each of performance criterion are indicators.

Source: Ministry of Planning and Budget, Korea (2007)

Table 4.2: The Performance Measures of Korea Electric Power Corporation (2008)

Category	Criteria	Indicators	Scoring Method	Weight
Leadership & Strategy (20%)	Leadership	Leadership	6 grades	3
		Board & Audit	6 grades	4
		CS focus	6 grades	3
		Business ethics	6 grades	2
	Strategy	Vision & Strategy	6 grades	3
		Main Project Plan	6 grades	5
System (35%)	Key Project Process	Key project Process		
		(1) Transmission and Distribution	6 grades	
		(1)-1. Construction and management of transmission facilities	6 grades	3
		(1)-2. Construction and management of distribution facilities	6 grades	4
		(2) Demand-Supply management	....	
		(2)-1.	6 grades	4
		(3) Others		
		(3)-1 ...	6 grades	2
		(3)-2 ...		2
	Administration	Financial management	6 grades	3
		Organizational management	6 grades	3
		Remuneration	6 grades	5
		Labour relations	6 grades	3
		Performance management	6 grades	3
Results (45%)	Key Project Results	Key project results		
		(1) Transmission and Distribution		
		(1)-1. Transmission cost management	Normal Dist.	2
		(1)-1. Distribution cost management	Normal Dist.	2
		(1)-3. Voltage normality	Relative Target	3
		(1)-4. Failure rate level	Relative Target	4
		(2) Demand-Supply management	Relative Target	4
	CS results	Customer result	Relative Target	5
		Labour productivity	Relative Target	5
		Capital productivity	Relative Target	5
	Efficiency Results	Operating expense	Relative Target	4
		Labour cost	Relative Target	7
		Financial result	Relative Target	2
		Social result	Relative Target	2
Total		Quantitative		<45>
		Qualitative		<55>

Source Ministry of Strategy and Finance, Republic of Korea (2008)

4.6.4 Target Setting and Scoring Method

The ABPE has been interested in 'change' caused by managerial efforts rather than the 'absolute level' which may have a significant amount of noise. This idea can be illustrated by the following equation:

Organisational performance =ΔOrganisational Results - Δ Exogenous factors

Even where performance measures are well defined, how to set targets and how to assess the achievements are also critical issues to the successful implementation of the PC. In the early days of ABPEs, they were very simple. Most quantitative targets were set by negotiation between SOE managers and bureaucrats. Then, the assessment results were obtained by comparing actual results against the targets set in the Evaluation Guide, which was called the 'Result/Target method'. However, SOEs seemed to game on the quantitative measures. For example, the average scores for quantitative measures using *Result/Target* method reached on average 98.06% for the period of 1983~2002, indicating that the targets were set too low (MPB, 2005). The qualitative measures had only three grades in 1983—*Excellent, Normal* and *Bad*—which often failed to distinguish, for example, 'good' from 'just normal'. As a result, most SOEs received the *Good* grade for their qualitative measures in 1980s. Therefore, the difference in incentive bonuses received by the best and the worst performers was not significant enough to motivate managers to exert extra efforts (MPB, 2005).

These problems were criticised by several commentators and the Korean State modified the target-setting and measurement method. In 1996, the scale for qualitative measures was expanded from three grades to nine grades to capture relatively small differences across SOEs. In 2007, the 9-grade scale was re-organised into a 6-grade scale, but the scoring standards became more sophisticated. For example, the managerial efforts for each qualitative measure are awarded as one of six grades (S-A-B-C-D-E) in the following three perspectives: whether the 'approach' of the efforts is systematic (Approach perspective); whether the 'deployment' of the efforts is systematic and effective (Deployment perspective); whether the process and the results of efforts are analysed, assessed and shared for further improvements (Learning and Innovation perspective).

The assessment method for quantitative measures also changed in 1989; the actual achievements are currently assessed against 'past records' rather than set targets in order to overcome the gaming behaviours of SOEs. The basic idea is to consider 'how difficult it is to achieve this year's results compared to its past history (Shirley, 1989a). The 'difficulty' is assessed using the following three methods; *Normal Distribution Method* when a normal

distribution function is used; *β- Distribution Method* when *β*-Distribution *is used*; *Relative Target Method*, using the relative positions of this year's records to the distance between maximum and minimum bounded by its standard deviation of 5 years of data (for more details, see Table 4.3). The advantage of this approach is that targets do not need to be negotiated because they are automatically set by choosing one of the four scoring methods in Table 4.3. SOE managers and the State just need to agree on the choice of scoring methods. Further, the choice is subject to 'data availability rules'. For example, the *Result/Target* method is allowed only if more than three years' records are not available, which actually prevents the use of the *Result/Target* method. In cases where more than 5 years' records are available, the *Normal Distribution* method or the *β- Distribution* method should be used.

Finally, scores for individual measures are aggregated to form a composite score for the individual firm. Until 2006, ordinal rankings were obtained and announced to the public as the final ABPE results, but since 2007 the score has only been used to grade the overall performance of the individual firm based on the 6-scale grades (S-A-B-C-D-E).

Table 4.3: Four target setting and scoring methods

Methods	How to measure the difficulty	Applicable to
Normal distribution Method	Using regression, expected output and standard deviation are obtained. Then the actual outputs is assess against at which probability the actual output may take place.	measure which has output data for more than 10 years
'β- distribution Method'	Considering maximum, minimum outputs within 5 years and last year's output, expected outputs and standard deviation are obtained using beta distribution. Then, the output is assessed at which probability of the beta distribution the actual output might take place. *Expected output=(a+4c+b)/6 *STDV=(a-b)/6, where a=max, b=min, c=previous year	Measure which has output data for 5 ~10 years
Relative Target Method	Compare the given maximum and minimum targets set by the standard deviation of past history and the actual result using following equation * Score=(actual Result-Min target)/(Max-Min target) * Max target=Standard*110% * Min target=Standard*80%	Measure which has data less than 5 years
Result/Agreed Target	Comparing actual results against agreed targets	Indicators that have less than three years record.

4.6.5 Incentive Bonus Scheme and other Feedback Channels

The ABPE has various feedback channels. The most important channel is awarding an incentive bonus to all employees and the managers of SOEs based on the individual firm's overall ABPE results. As shown in Table 4.5, the incentive gap between the best and the worst performers has been consistently widened from 100~300% to 200~500% of the average monthly salary of individual employees[41] (see Tables 4.5). In 2000, a new incentive bonus scheme for SOE managers was introduced, with the bonus ranging from 0~200% of annual salary.

A practical issue on the incentive payment is whether the incentive scheme is strong enough to overcome SOE managers' incentive to shirk, generating better performance (Shirely and Xu, 2001; Islam, 1993; Verbeeten, 2008). According to Shirley (1998), in most cases, incentive payment is not provided or too low to motivate improvement in most of the firms, which significantly erodes the efficacy of performance contract. In this regard, many commentators evaluate South Korean case as one of the most successful cases in the World (Shirley, 1989a; Murthy, 1990). It would be very difficult to calculate an optimal incentive payment level in practice and to judge whether Korean case is within the optimal level but it can be reasonably said that South Korean government continuously increased the incentive payment level and this provide Korean SOE managers with a strong commitment that the government rewards better performance.

In addition to incentive payment, there are two non-pecuniary feedback channels. The first is punishing the managers of poorly performing firms. They may receive an official written warning from MOSF. MOSF can also recommend the dismissal of poorly performing managers to the President. While there are about ten SOE managers who receive the written warning from MOSF in each year, there was only one recommendation for dismissal of poorly performing manager over last 25 years.

Another non-pecuniary feedback channel is to check how the managerial problems pointed out in the previous year's ABPE is addressed in this year. According to the Evaluation Guide, this is an important point to be checked by examiners. Thus, the managerial problems identified by the examiners should not be neglected, which strongly coerces SOE manager to address the problem.

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[41] But the actual bonus received by an individual employee is typically adjusted from the firm rate, based on his/her individual performance measured by the internal performance management system.

Table.4.4 Changes in formula to Calculate Firm level Incentive Payment Rate

Period	Formula
1983~1984	▲ Incentive rate= A:300%, B:250%, C:200%, D:150%, E:100%
1985~1990	▲ Incentive rate= 100% + (total score - 75) × 10% (Min 100%, Max 300)
1991~1993	▲ Incentive rate = 125% + (total score-75)×10% (Min 125%, Max 325)
1994	▲ Incentive rate= 165% + (total score-75)×10% (Min 165%, Max 365%)
1995~1996	▲ Incentive rate= 125%+(total score-75))×20% (Min 125%, Max 425%)
1997	▲ Incentive rate= [(total score- 80) / 20] × 500% (Min 0% , Max 500%)
1998~2002	▲ Incentive rate = 100% + (total score - 50) / 50 × 400% (Min 100%, Max 500%)
2003	▲ Incentive rate = 180% + (total score – 62.5) / 25 × 320%
2003~2007	▲ Incentive rate=200%+ [(total score-best score in league)/(best score-worse score in league)]*300%
▲ Incentive payment= Average individual monthly salary×incentive payment rate	

Source: Ministry of Planning and Budget, Republic of Korea (2003)

4.7 Summary and conclusion

This chapter reviews the sources of extremely high agency costs and inefficiency problems in SOEs and the two dominant policy approaches—privatisation and PCs—for addressing such problems. Though privatisation has been the dominant policy in recent decades, many commentators are questioning the efficacy of privatisation, arguing that it necessarily excludes the possibility of pursuing 'public interests' and, more importantly, that the sources of inefficiency are not from State ownership itself but from the poorly designed institutions surrounding SOEs.

A group of scholars have argued that the PC can be an alternative policy measure to privatisation for addressing the agency problem of the SOEs. However, the existing empirical studies question the efficacy of PCs in practice. Researchers seem to agree on the three determinants of the efficacy of PCs; the lack of sensible measures, insufficient incentive and the State's reneging on its obligations. Given the backgrounds, Chapter 5 investigates what kinds of measures should be used for PCs and how such measures can be generated with empirical analysis using data from the Korean ABPE.

The latter part of this chapter introduced the Korean ABPE in detail and how it has been changed from 1983 up to the present. Although the explanations are primarily to provide more specific background for the empirical analysis of Chapter 5, they also independently offer an historical account of how the Korean ABPE has changed in response to the changes in the institutional environment over time.

Chapter 5 : Can Performance Contracts Improve the Performance of SOEs? : Evidence From South Korea

5.1 Introduction

This study analyzes the way in which performance contracts should be designed so as to effectively promote state-owned enterprises (SOEs) to perform better. Despite the waves of privatization of SOEs that have occurred, SOEs still comprise a significant proportion of output across many countries, with the sector's turnover accounting for 5-10% of GDP in developed countries, and much greater proportion in former socialist and developing counties[42] (OECD, 2005). However, it is a widely held view that the agency problems of SOEs are serious that the inefficiency of SOEs is one of the major sources of drag on economic growth in many countries (WorldBank, 1995; Boycko et al., 1996; Shleifer and Vishny, 1996). Along with privatisation, performance contracts have often been used in many countries to address the agency problems of SOEs (Shirley and Xu, 2001; WorldBank, 1995).

The performance contract (hereafter, PC) refers to a written agreement between SOE managers and the State on the organisational goals the SOE should achieve, allocating decision rights to the manager, performance measures for assessing the extent to which the goals are achieved and incentive payment awarded for the actual achievement (Heinrich and Marschke, 2010; Verbeeten, 2008; Shirley and Xu, 2001). PCs are a variant of the incentive contracts which are often used in private sector firms to motivate managers. Since the 1980s New Public Management (NPM) has become a leading philosophy for 're-inventing' the public sector. PCs have been suggested as a key policy means by proponents of NPM to address the agency problems of SOEs and other public organisations, and to motivate them to perform better (Hood, 1995; Jones, 1991; Islam, 1993). Underpinning this idea is the belief that the incentive mechanisms of PCs can motivate SOE managers, thereby limiting shirking. Moreover, vague and multiple organisational goals can be transformed to clearly defined goals and as a result of the structure and potential rewards for achievement set out in the PC, SOE managers have the right and the incentives to resist unnecessary intervention from bureaucrats and politicians.

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[42] For example, in the Slovak Republic and Turkey, this ratio (turnover/GDP) is over 20%. See OECD (2005, p.21)

However, empirical evidence on, 'whether PCs actually improve the performance of SOEs and public organisations' is limited and inconclusive (Shirley and Xu, 2001; Van Helden, 2005). Therefore, the efficacy of PCs in practice is questionable (Heinrich, 2002; Islam, 1993; Shirley and Xu, 2001). Researchers generally attribute the disappointing empirical results to three factors: the lack of 'sensible' performance measures, insufficient incentive and a lack of commitment from the State to PCs. However, as Verbeeten (2008, p. 428) and Shirley and Xu (2001, p. 175) point out, the first issue, the lack of 'sensible' measures, can be seen as the most critical factor because, if the measures of PCs are not 'sensible' and, as a consequence, PC results are not reliable, then the State is justified in being reluctant to provide high-powered incentives and strong commitment to such contracts.

Accordingly, the current study investigates 'how PCs should be structured in order to effectively motivate SOEs to perform better, focusing on i) what kinds of performance measures are 'sensible' for motivating SOEs and ii) whether PCs with 'sensible' performance measures can actually improve the performance of SOEs. To empirically investigate these issues, we conduct a relatively large-scale empirical study, using actual performance data from the South Korean PC, the Annual Business Performance Evaluation (ABPE).

In doing so, the current study contributes to the existing literature of performance contracts in following three respects. First, based on the theories of organizational effectiveness, optimal incentive contracts and quality management, it identifies 'what constitutes sensible performance measures' for SOEs. Although researchers attribute the source of insignificant PC—SOE performance relationships to a lack of sensible performance measures, in fact, the existing studies only offers one or two specific issues - e.g., distortion (Baker, 2002); clarity in goal setting (Verbeeten, 2008); positive performance effects (Shirley and Xu, 2001). The current study fills in this gap by suggesting four conditions; namely, appropriate performance criteria measurability, limiting distortion problems and positive causal links between performance measures as criteria for 'sensible' PC measures. Second, we propose to use the principals of Total Quality Management (TQM) as a platform for generating specific 'sensible' PC measures. Since the TQM principles provide a wide range of factors that arguably constitute organisational performance in general, practitioners may design sensible PC measures through selecting and modifying TQM principles to achieve the organisational goals that they desire. The Korean ABPE was recently reformed in this way. Therefore, we empirically test whether the Korean PC for SOEs meets the four conditions for sensible PC measures. Finally, as the results of the empirical analysis, the current study provides empirical evidence on 'whether PCs can actually improve the performance of SOEs where PCs incorporate sensible measures'. Although many researchers argue that this should

be the case, there is no empirical evidence to validate this assertion. Our analysis therefore extends the existing literature of PCs by providing new empirical evidence and policy implications on 'how measures should be constructed in order to effectively motivate SOE to perform better.

The remainder of this paper is structured as following. First, Section 5.2 reviews the theoretical backgrounds of PC and draws out the four issues that should be addressed by PC from related theories. Section 5.3 discusses how PCs can address the four issues by taking benefit of TQM. Section 5.4 introduces the South Korean Annual Business Performance Evaluation (ABPE) and develops research hypotheses to test the arguments presented in Section 5.3. Section 5.5 introduces the methodologies and empirical models used in this chapter, and Section 5.6 reports the empirical results, while Section 5.7 discusses the results and offers conclusion.

5.2 Background and Theories

5.2.1 Background of Performance Contracts

Although SOEs have been a common institutional arrangement across countries for addressing market failures, industrial promotion and other social goals, SOEs have long been criticized for being inefficient. As discussed in section 4.3, Researchers attribute the sources of the problems to multiple and vague goals (Estrin and Perotin, 1991), the lack of market discipline (Boardman and Vining, 1989), the lack of owners who have a financial interest to intervene in the management (Alchian and Demsetz, 1972) and, finally, unnecessary control from politicians and bureaucrats for their private benefit (Shleifer and Vishny, 1996).

In order to address the sources of inefficiency in SOEs, many governments have utilised PCs. As discussed in section 4.5, PC may align the interest of agents to those of principals (Jensen and Meckling, 1976), translate multiple and vague organisational goals into more tangible ones (Locke and Latham, 1990), and encourage SOE managers to resist unnecessary intervention from bureaucrats and politicians(Islam, 1993). The lack of market discipline can be compensated by performance revision (Propper and Wilson, 2003) and informational asymmetry between SOE mangers and the State can also be lessened by the negotiation process in PCs (Jones, 1991). Nevertheless, there is only a limited number of empirical studies on whether PCs actually improve the performance of SOEs and the results are still inconclusive (Shirley and Xu, 2001).[43] Researchers generally attribute the results to (a) a lack of 'sensible' measures, (b) insufficient rewards, and (c) a lack of commitment of resources and managerial autonomy from the State to the contracts (Verbeeten, 2008; Shirley and Xu, 2001; Islam, 1993; Murthy, 1990; Nellis, 1989).

5.2.2 What are 'Sensible' Measures?

Of the three factors that determine the efficacy of PCs, this study focuses on the lack of 'sensible' measures because if PC measures are sensible and, therefore, PC results are reliable, there is no reason for the State to be reluctant in providing sufficient rewards and commitment to PCs (Yang and Holzer, 2006; Baker, 2002; Shirley and Xu, 2001; Verbeeten, 2008). Therefore, the fundamental question that arises is: what measures are 'sensible' for PCs in the context of SOEs?

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[43] For more detail, see section 4.5.3.

Measuring organizational performance should begin with the questions, how do we define performance and what factors (i.e., performance criteria) constitute performance. The theory of organizational effectiveness asserts that organizational performance should be defined using a 'correct' framework to avoid omitting any factor that significantly influences the existence and operation of the organization (Dess and Robinson Jr, 1984, p.265). The literature of optimal incentive contracts also supports this, claiming that omitting such factors encourages managers to ignore them to the detriment of 'real' performance[44] (Holmstrom and Milgrom, 1991; Feltham and Xie, 1994; Baker, 2002).

The literature on organizational effectiveness offers four types of framework to define organizational performance (Selden and Sowa, 2004). The rational goal model assumes that organizations exist to achieve certain goals and, therefore, the performance criteria should be the extent to which an organization reaches its goals (Etzioni, 1964). The narrowest but most widely utilised criterion for firms are economic goals (e.g., profit) but some internal factors such as workforce management and process are also often argued as additional performance criteria because they are the predictors of future achievement (Venkatraman and Ramanujam, 1986; Selden and Sowa, 2004; Ittner et al., 1997). The system resource model defines performance as the survival of an organization which is heavily dependent on the acquisition of necessary resources to sustain its operations. Here performance should be measured as the ability to acquire such resources (Yuchtman and Seashore, 1967; Pfeffer and Salancik, 1978). The stakeholder model defines organizational performance as satisfying the key stakeholders who significantly influence the existence and operation of the organization, (Boschken, 1994). Finally, the multi-dimensional framework integrates all of the above to provide a comprehensive framework (Quinn and Rohrbaugh, 1981; Cameron and Whetten, 1981, 1983).

Many researchers claim that the selection of a 'correct' framework depends on the organizational context (Cameron, 1986; Selden and Sowa, 2004; Venkatraman and Ramanujam, 1986). For example, for firms in competitive markets, the rational goal model is reasonable while for public organizations, a multi-dimensional framework should be used (Cameron and Whetten, 1983). For SOEs, their performance should therefore be defined through a multi-dimensional framework because they should pursue social goals as well as economic goals; securing public funds or other types of public resources is critical due to their dependence on the State, which can be possible only when they satisfy key stakeholders who influence such resource allocation. Therefore, 'sensible' performance criteria for a SOE should include; i) the degree to which the firm reaches its economic and social goals, ii) the

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[44] Baker (2002) terms this type of managerial activity of agent as 'distortion' (p. 730).

degree to which the firm satisfies its stakeholders, iii) its internal systems that contribute to such goals and finally, iv) its ability to secure necessary resources to sustain its functioning.

Once the performance criteria are defined, how to measure each criterion becomes an issue. As identified above, the performance criteria for SOEs are, in most instances, not directly observable constructs and, therefore, they can be measured only through some observable indicator(s). Such constructs are difficult to measure by a single indicator without measurement error which suggests the use of multi-indicators (Bentler, 1986; Fornell and Larcker, 1981). The literature of optimal incentive contracts also advocates the use of multi-indicators in order to address noise and distortion problems. For example, Baker et al.(1993) argue that when there is a significant amount of exogenous noise in quantitative indicators, introducing subjective indicators may "back out" such noise. Feltham and Xie (1994) also argue that multi-indicators can decrease (but not perfectly) the distortion problem, since it leaves smaller room for managers to distort-. However, Ahire and Devaraj (2001) assert that such multi-indicators should exhibit a certain degree of convergence in order for them to consistently measure a unique criterion.

Finally, when measurability is assured, the relationships between the performance criteria and indicators become an issue. In fact, no PCs can measure every managerial issues (Holmstrom and Milgrom, 1991). Further, some performance criteria have higher weights than others due to differences in their relative importance (Baker, 2002). Therefore, PCs tend to have distortion problem between managerial issues that are measured with heavy weights and the ones that are omitted or measured with light weights (Holmstrom and Milgrom, 1991; Baker, 2002). The literature of quality management offers an important insight as to how to address this problem. Since modern firms comprise multiple sub-units, firm level performance heavily depends on the interaction between them (Baker, 2002). Given this, Nabitz et al. (2001) and Oakland and Oakland (1998) argue that if managerial actions promoted by performance criteria and indicators are designed to have 'positive interactions' between them, it will discourage managers from making inappropriate trade-offs between various managerial responsibilities (Nabitz et al., 2001; Oakland and Oakland, 1998). The reason is that in this circumstance it is very difficult for mangers to improve managerial issues that are heavily measured without improving other managerial issues (Nabitz et al., 2001; Flynn et al., 1995). Therefore, if such positive interactions are assured in PCs, SOE managers should develop a 'balanced strategy' to achieve overall excellence. Further, since one of the primary purpose of PCs is to motivate SOEs to generate better organizational results, managerial activities promoted by the performance criteria of PCs and their indicators should have positive effects on organizational results (Shirley and Xu, 2001; Islam, 1993).

Given these, this study proposes that PC should address the following four issues:

(1) whether the performance criteria are sensibly defined, considering the organizational context of SOEs

(2) whether the indicators are successfully measuring the performance criteria

(3) whether there exists positive inter-correlations between performance criteria within a certain domain

(4) whether positive causal links exist between the performance criteria of managerial activities and organizational results (or goals).

To the best of the authors' knowledge, none of the existing empirical studies on PCs consider all of the four issues. For example, Shirley and Xu (2001)'s empirical study just considers PC as a dummy variable and investigate its associations with several productivity indices. By doing this, these authors implicitly assume that the performance of SOEs is to improve productivity, ignoring social goals and stakeholder concerns. Further, by treating the PC as a dummy variable, they fail to investigate the internal relationships PC measures create. Verbeeten (2008) meanwhile investigates whether clearly defined goals have positive associations with the quantitative and qualitative performance in PCs of Dutch public organizations, thereby addressing the second and fourth issues. However, this analysis simply relies on survey respondents' perception of 'measurability' rather than directly investigating whether the indicators are reliably measuring the identified performance criteria. Further, similar to Shirley and Xu (2001), the adequacy of the performance criteria is not considered.

5.3 TQM Principles in Performance Contracts

Given the four conditions for 'sensible' performance measures of SOEs, a question arises; how practitioners can in practice construct a set of specific performance measures? In this section, we investigate the possibility of using TQM principles as a basis for generating specific measures which meet the four conditions.

5.3.1 Three Key Features of TQM

TQM can be referred to as a management philosophy that comprises some guiding principles and practices that embody the ways in which an organization should be managed in order to perform better (Sun, 2000; Powell, 1995). Although there are numerous definitions of TQM, perhaps one of the most influential one is from the "Report of the Total Quality

Leadership Steering Committee and Working Councils" (1992). The council defined TQM as follows;

> *"...a people-focused management system that aims at the continual increase of customer satisfaction at a continually lower real cost. Total Quality is a total system approach (not a separate area or program), and an integral part of high-level strategy; it works horizontally across functions and departments, involves all employees, top to bottom, and extends backwards and forwards to include the supply chain and customer chain." (Evans, 1992 , p.2)*

There are three key features of TQM. The first feature is its comprehensiveness. As the name indicates, TQM aims to involve 'everyone' and 'everything' (Sun, 2000). However, since managers cannot actually manage everything and everyone, researchers have tried to identify a set of 'key principles' that are essential to achieve superior performance (Motwani, 2001). In the early days of TQM, Deming's set of 14 points (Deming and Study, 1982) was one of the most popular. Recently, researchers of TQM have refined these principles. For example, Curkovic et al. (2000) defines the 10 elements of TQM as follows: (1) continuous improvement; (2) meeting customers' requirements; (3) long-range planning; (4) increased employee involvement; (5) process management; (6) competitive benchmarking; (7) team-based problem-solving; (8) constant measurement of results; (9) closer relationships with customers; and (10) commitment from the management. Rahman and Bullock (2005) and Lewis et al. (2006) classify the principles and practices into two parts: soft (social) TQM that include leadership, teamwork, and training and employee involvement, and hard (technical) that cover internal systems and procedures. In sum, as illustrated in Table 5.1, it can be seen that leadership and strategic planning, customer focus, workforce management, internal process, and measurement constitute the key principles of TQM, and these seem to encompass almost all factors that are critical to organizational performance.

Second, TQM emphasizes the relatedness of TQM principles. As seen in the above definition, the individual principles of TQM cannot be implemented in isolation because the implementation of one managerial program is reciprocally related to other dimensions (Dow et al., 1999; Bou-Llusar et al., 2009). Thus, in order for an organization to perform better, various managerial activities should be closely inter-related, thereby supporting one another (Flynn et al., 1995; Hackman and Wageman, 1995).

Third, researchers of TQM seem to broadly agree that the optimal management of TQM principles will lead to improving organizational results (Powell, 1995; Samson and

Terziovski, 1999; Hendricks and Singhal, 1997) because TQM provides superior value to customers and stakeholders by identifying their needs, responding to changes in markets and improving the efficiency of internal processes (Reed et al., 1996; Anderson, 1995).

TQM theories, however, need a systematic method that translates the theoretical arguments into more tangible language (Bou-Llusar et al., 2009). A number of researchers propose and empirically verify that the Malcom Baldridge National Quality Award (MBNQA) model introduced in the U.S. and European Foundation for Quality Management (EFQM) model that has been applied in Europe to recognize organizational excellence, can be valid operational models of TQM by showing that the aforementioned key features of TQM are reproduced in the two models (Curkovic et al., 2000; Meyer and Collier, 2001; Bou-Llusar et al., 2009). Table 5.1 illustrates how the MBNQA and EFQM operationalise TQM principles into performance criteria.

Table 5.1: Comparison between TQM principles and the Performance Criteria of MBNQA, EFQM, and ABPE Models

Various views on TQM Principles			MBNQA (2007)	EFQM (2003)	ABPE model (2007)
Powel (1995)	Sila and Ebrahimpour (2002)	Curkovic et al.(2000)			
Committed leadership Adoption and communication of TQM	Leadership & top management commitment	Management commitment	Leadership	Leadership	Leadership
		Long range planning	Strategic Planning	Policy and Strategy	Strategy
Closer customer relationships	Customer focus & satisfaction	Meeting customers' requirements, Closer relationship with customers	Customer Focus		Customer satisfaction (in Leadership)
Measurement	Quality information and performance measurement	Constant measurement of results	Measurement		Administration (performance management)
Increased training Employee empowerment Open organization	Employee training Teamwork, involvement,	Employee involvement Team-based problem solving	Workforce focus	People management	Administration (Organization management)
Process improvement Zero-defects mentality Flexible manufacturing Benchmarking	Process management Continuous improvement and innovation	Process management Continuous improvement Competitive benchmarking	Process management	Processes Partnerships & Resources	Key project process Administration (financial management)
Supplier relationships			Results	Key performance result Customer result People result Society Result	Key project result Customer result Efficiency result Society result

5.3.2 TQM as a Basis for Generating Sensible Performance Measures

This subsection elaborates why TQM can be used as a basis for generating 'sensible' measures for PCs with respect to the four conditions of; the adequacy of performance criteria, measurability, distortion problems and positive causal links.

First, it is argued that the performance of SOEs can be properly defined through the TQM framework because the framework can be thought as one of the broadest multi-dimensional frameworks. As previously discussed, for PCs, a broad multi-dimensional framework is needed to include i) economic and social goals, ii) stakeholder satisfaction, iii) internal systems that contribute to achieving such goals, and iv) organizational ability to secure the necessary resources. As seen in Table 5.1, TQM principles and the operational models of TQM include all of the above four factors (criteria) that constitute the performance of SOEs. For example, economic and social goals, and stakeholder satisfaction are included in the EFQM; the ability to secure resources corresponds to leadership and strategic planning criteria in the MBNQA and EFQM; internal systems are covered by the customer focus, partnership, supplier relations, workforce focus and process management criteria that are commonly present in the models in Table 5.1. It can be argued that TQM is too broad for certain types of SOEs that have easily measurable goals (e.g., SOEs in competitive markets) but a broad framework is better than a narrow one for two reasons. First, selecting criteria and measures from extant criteria that have been empirically validated is much easier than creating new ones. In selecting the criteria from the TQM framework, as Cameron and Whetten (1983) argue, the State and SOE managers can exercise value judgment through the negotiation process of constructing the PC. Second, if any key factors are omitted, distortion problems will be unavoidable (Holmstrom and Milgrom, 1991; Feltham and Xie, 1994).

Second, regarding the measurability, PCs can take advantage of the well-defined and statistically validated criteria and their indicators in the MBNQA and EFQM models. Many researchers have empirically validated that the criteria of the MBNQA and EFQM models are properly represented by their performance indicators (Ahire et al., 1996; Curkovic et al., 2000; Bou-Llusar et al., 2009). Therefore, by choosing relevant indicators from these models, PCs can ensure measurability for the identified criteria.

Third, the positive inter-relationships between TQM principles have two important meanings in a PC. First, if the positive inter-relationships are reproduced in a PC, it will indicate that the performance criteria of the contract 'reliably' capture the overall performance of firms (Ahire and Devaraj, 2001). Moreover, the positive inter-relationships can discourage SOE managers from trying to distort the managerial actions related to performance criteria of

the PC. Given the existence of the inter-relationships, any managerial actions to distort will therefore not impact solely on the criteria that they are trying to influence. Consequently, SOE managers cannot easily make trade-offs between the different criteria (Nabitz et al., 2001). For example, SOE managers would not be able to sacrifice customer satisfaction via changing internal systems to focus on achieving economic goals if both of these factors are measured as part of the PC, and are inter-correlated. Inter-relationships therefore force SOE managers to implement a balanced strategy to achieve overall performance (Stainer, 1997).

Finally, by utilizing TQM principles, PCs can promote SOEs to generate better organizational outputs. As mentioned before, many empirical studies support that the optimal management of TQM principles leads firms to generate better organizational results (Powell, 1995; Samson and Terziovski, 1999; Hendricks and Singhal, 1997). In the MBNQA model, such causal links are expressed as "Leadership drives the System which creates Results" (Meyer and Collier, 2001). In the EFQM model, the following applies, "excellent results with respect to performance, customers, people and society are achieved through leadership driving policy and strategy, which is delivered through people, partnerships and resources, and processes" (EFQM, 2003). If such causal links are reproduced in a PC, the inherent incentive mechanisms in the PC will effectively promote SOEs to generate better organizational results.

Nevertheless, some caveats to this do apply. First, simply imitating a TQM framework may not guarantee the reproduction of the four potential benefits of TQM in a PC context. TQM and PCs are very different in terms of their underpinning philosophy and methods. TQM is grounded on 'voluntary involvement' and 'teamwork', and performance is measured by the 'self-assessment'. PCs however are based on agency theory that assumes self-interested agents, and so, 'incentive alignment' and 'external monitoring' are crucial. These differences can be the sources of potential problem when TQM principles are applied to PCs.

First, the perverse effects of incentive mechanisms in PCs on teamwork can be a potential issue (Carson et al., 1991; Deming, 2000; 1986; Scholtes, 1993). Although PCs assess firm level performance, incentive schemes associated with PCs are often related to internal performance appraisal systems that target individuals. Deming (2000; 1986) defines (internal) performance appraisal as one of the "seven deadly diseases" because it necessarily attributes problems to individuals rather than the system. Similarly, Scholtes (1993) argues, performance appraisal inevitably compares and rates individual contributions, which, in turn, creates losers and cynics which ultimately damage teamwork. Second, the incentive mechanisms of PCs may create information asymmetry problems which are not assumed within TQM. Scholtes (1993) argues that performance appraisal makes information on

performance 'inconsistent and unreliable' because examinees have incentives to exaggerate their performance. Further, the external examiners may fail to consistently give scores on the various indicators across firms unless there is a mechanism to ensure examiners consistent in their assessments. If this is the case, then, the measurement problem becomes a critical issue. The final issue is the possible effect of modification of the criteria and indicators of TQM frameworks such as the MBNQA and EFQM models; since every firm's environment/context is different, modification is unavoidable and, accordingly, if the modification is inappropriate to capture what the original criteria and indicators are intended to do, the potential benefits of TQM might not be materialised in the PC.

Although these potential problems should not be overlooked, they do not seem to preclude TQM principles from working in the context of PCs. For instance, the perverse effects of incentive mechanism on teamwork can be mitigated when the internal performance appraisal system is, for example, based on team-based performance. Furthermore, the incentive mechanisms of PCs can promote a more rigorous implementation of TQM principles (Masterson and Taylor, 1996) in SOE sector. Many researchers commonly attribute the reason why the application of TQM to public sector organizations fails to internal inertia such as resistance to change and persistent overreliance on bureaucratic rules (McGowan, 1995; Swiss, 1992; Cohen and Brand, 1993). They assert the main source of the inertia is that top executives of public sector organizations are failing to provide commitment to the implementation of TQM because they are not significantly bothered by the need of change (see Keehley, 1992; McGowan, 1995) and this perhaps also applies to SOE sectors. Therefore, the incentive mechanism of PCs can be a strong motivation for the top management of SOEs to initiate organizational change. As for the information asymmetry problem, diversifying the sources of performance information (e.g., customers and suppliers) can ease the problems (Cua et al., 2001). Further, if highly skilled experts act as examiners and clear guidelines are given to them, the consistency in assessment might be secured. It is also important for participants in PCs (bureaucrats, examiners and SOE managers) to understand the underlying philosophy of TQM so as not to undermine its potential benefits through modification process (Soltani et al., 2006; Bowman, 1994).

In sum, it can be said that whether the potential benefits of TQM principles will work when they are used to build a PC depends on the actual design and operation not purely on theories. Therefore, in the rest part of this study, we empirically investigate whether PCs can actually improve the performance of SOEs when TQM principles are underlying basis for performance measures of the contracts, using South Korean PCs.

5.4 South Korean ABPE and Research Hypotheses

5.4.1 South Korean Performance Contracts

As introduced in section 4.6, the South Korean performance contract is called the 'Annual Business Performance Evaluation' (ABPE). It was introduced in 1984 to improve the performance of Korean SOEs. Currently about 70 Korean SOEs are subject to the ABPE contract. In 2007, the Korean government reformed the performance criteria and indicators of the ABPE in to incorporate TQM principles. Consequently, the ABPE has three categories and seven criteria as seen Figure 4.2. The definitions and check points for each performance criterion present in Table 5.2.

Compared with the performance criteria of the MBNQA, and EFQM models[45], the two criteria in the 'Leadership & Strategy' category of the ABPE correspond to the leadership and strategic planning criteria of the MBNQA; the two criteria in 'System' correspond to the workforce focus, process and measurement criteria of the MBNQA; the three criteria in the 'Result' category match up with the result criteria of the EFQM models.

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45. see Table 5.1

Table 5. 2: The Performance Indicators of the ABPE

Indicators	Sub-Items
Leadership	The management properly defines organizational philosophy and values. The management is making efforts to share the defined values with employees and stakeholders. The implementation of these efforts is systematic and effective.
Board of Directors	Board of directors is well organized to address the problems faced by the firm. Board process is well organized and resources are provided to board members. Board members are actively participating in board activities.
CS focus	CS strategy is well defined and effectively implemented.
Vision & Strategy	Organizational vision is clearly defined and strategies are well developed and effectively implemented to achieve the defined vision.
Key business Plan	Plans for key business are developed in consideration of the vision and the strategies. Long-term targets, resource allocation, monitoring plans are integrated in the plans
Key business Process	The business process and systems for the key projects are systematically designed and effectively implemented following the plans. The process and systems are continuously modified in order to respond to the changes in environment.
Financial management	Financial management system is systematically designed and effectively implemented to have a sustainable and sound financial structure.
Organizational management	Organizational structure is systematically designed for the implementation of the organizational strategies and key project plans. Accountabilities and authorities are systematically aligned in accordance with organizational structure. Human resource management (HRM) and human resource development (HRD)plans are integrated with organizational strategy and effectively implemented.
Remuneration	Remuneration policy is appropriate and integrated with performance information. There are systematic and effective efforts to reduce labour costs.
Labour relations	There is a well defined strategy for labour relations and the strategy is systematically integrated with the implementation of overall organizational strategy. The strategy is effectively implemented and continuously improved. Labour agreement is reasonable.
Internal Performance management	Internal performance management system measures, analyzes, evaluates, and improves organizational performance in various organizational levels. The performance management system is closely linked to other areas- remuneration policy, organizational strategy, HRM and HRD
Key business results	The degree to which each key business results improve * 2~3 quantitative indices are employed for each project
Customer result	The degree to which customer satisfaction improves
Labour productivity	The degree to which the labour productivity improves
Capital productivity	The degree to which the capital productivity improves
Operating expense	The degree to which the operating expenses-sales ratio improves
Labour cost	The degree to which the labour cost-sales ratio improves
Financial result	The degree to which key financial indices improve
Social responsibilities	The degree to which organization meets the social responsibilities defined in the Evaluation Guide

5.4.2 Research Hypotheses

This sub-subsection develops four research hypotheses to test whether the TQM-based South Korean ABPE addresses the four issues that PCs for SOEs should address; i) whether the performance criteria are sensibly defined with respect to organizational context; ii) whether indicators are successfully measuring the identified performance criteria, iii) whether distortion problems can be effectively addressed; and finally, iv) whether the performance criteria and indicators have positive causal links to generate better organizational outputs.

5.4.2.1 The Validity of Performance Criteria

As Tables 5.1 and 5.2 show, the performance criteria of the ABPE correspond to TQM principles, covering economic goals and social goals (key project results, efficiency indices), stakeholder satisfaction (customer satisfaction, social responsibility), internal systems and ability to secure necessary resources (key business processes, workforce management, leadership and strategy). However, this coverage is only conceptual and, should, therefore, be tested analyze whether such criteria are validly measured by their indicators. Hence, the first hypothesis is,

> H1: The performance criteria of the ABPE are measured by their indicators with construct validity.

5.4.2.2 Inter-Correlations between Performance Criteria

The second and third hypotheses concern whether the distortion of managerial activities can be effectively addressed. If the ABPE has positive inter-correlations between the performance criteria for managerial activities, this indicates that the impact of managerial actions on different criteria are not isolated and so SOE managers cannot easily make trade-offs between their different managerial responsibilities (Nabitz et al., 2001) to try and receive a higher incentive payment. Consequently, if such effects exist this induces SOE managers to implement a balanced strategy to achieve overall excellence across the performance criteria (Stainer and Stainer, 1995; Oakland and Oakland, 1998). Therefore, in the ABPE, inter-correlations should exist between the performance criteria for managerial activities to reduce the potential distortion problems caused by managerial gaming of the PC.

In addition, if the ABPE has positive inter-correlations between the performance criteria for organizational results, this indicates that achievement in one result criterion contributes to achievement in other criteria (Oakland and Oakland, 1998; Nabitz et al., 2001),

thereby encouraging SOE managers to achieve overall excellence in organizational results, as this will result in a higher incentive payment.

Many researchers however find that the inter-correlations may take place in complex ways, making it difficult to discern individual effects (Eskildsen et al., 2000). Following Dijkstra(1997), Dow et al. (1999), and Bou-Llusar et al.(2009), this study assumes that changes in one performance criterion are reciprocally related to changes in the others within a certain domain. Empirically, such reciprocal relationships can be illustrated by the existence of a second-order latent factor for such a domain. Therefore, two second-order latent factors are hypothesized to exist—one for the performance criteria for managerial activities (i.e., the criteria in 'Leadership & Strategy' and 'System' categories), and the other for the performance criteria for organizational results (i.e., the criteria in 'Result' category). Hence, the second and the third hypotheses are,

H2: In ABPE, there exists a second-order latent factor that represents the inter-correlations between the performance criteria for managerial activities.

H3: In ABPE, there exists a second-order latent factors that represents the inter-correlations between the performance criteria for organizational results.

5.4.2.3 The Influence of the ABPE on Organizational Results

As one of the ultimate purposes of PCs is to improve the organizational results of SOEs, in ABPE, an overall excellence in managerial activities should result in an overall excellence in organizational results. Following Dijkstra'(1997) and Bou-Llusar et al.(2009), this study assumes that such causal relationship exist between the two second-order latent factors. Hence, the fourth hypothesis states,

H4: In ABPE, there is a causal relationship from the second-order latent factor for managerial activities to the second-order latent factor for organizational results.

5.5 Methodology and Model

5.5.1 Sample

In order to test our four hypotheses, all 2008 ABPE results data for 76 firms and 2009 ABPE data for 55 firms[46] were pooled to generate 131 sample cases in order to meet the minimum sample size (n=100) required for Structural Equation Modelling (Medsker et al., 1994). Since the population is small to apply the bootstrapping solution,[47] pooling the data of the two years seems to be a reasonable way to overcome the small sample size problem under the assumption of time-invarying coefficients and non-existence of firm-specific factors. The data were generated from the ABPE procedure explained in section 4.1 and collected from an official website, named 'All Information in One' (ALIO), on which all South Korean SOEs mandatorily disclose their corporate information.

Descriptive statistics for the sample firms are provided in Table 5.3. Of the 76 firms in 2008 data, 24 firms are in utilities and relatively large in terms of their number of employees and asset size. 18 firms are financial institutions that provide financial services. The other 34 firms are service industry firms involved in a range of areas including, retailing, engineering, industrial promotion, social service and so on. Table 5.3 shows, the sample firms vary in terms of size, industry and financial performance within each industry.

Table 5.3: The Summary Statistics of Sample Firms

Industry	Number of employee	Asset [a]	Operating Profit [a]	Number of Sample Cases		
				2008	2009	Total
Utilities	3,919	14,500	108	24	24	48
	(7,740)	(19,900)	(996)			
Financial	2,181	5,251	126	18	18	36
	(2,840)	(4,659)	(496)			
Services	943	403	11	34	13	47
	(976)	(904)	(44)			
Total				76	55	131

Note. Statistics are means (standard deviations). Asset price and operating profit is in a billion Korean won which is equivalent to USD 100,000.

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[46]. In 2009, 21 relatively small firms are assessed only with the three result criteria, making them not comparable with other firms. Therefore, they were excluded from the sample.

[47]. To overcome the small sample problem, bootstrapping is often employed. However, researchers argue that bootstrapping is not appropriate if the sample size is not large because bootstrapping sample distribution depends on the accuracy of the estimates drawn from original data and a large sample size is necessary to ensure such accuracy (Byrne, 2001; Young, 1996).

5.5.2 Empirical Model

To clearly represent the TQM features of the ABPE, the original ABPE model is re-organized to form an empirical model (see Figure 5.2) that conceptually represents a PC with a TQM framework. To do this, the seven original criteria of the ABPE (i.e., leadership, strategy, key project process, administration, key project results, customer satisfaction result, and efficiency result, see Figure 5.1.) is re-organized into new criteria that represent TQM principles; those are the *leadership, strategy, process, workforce, K-result, E-result* and *S-result* criteria and these are presented in the oval shapes in Figure 5.2. The 'administration' criterion of the ABPE is spilt into the *workforce* and *process* criteria. The 'key project process' is an independent criterion in the ABPE but it is treated as an indicator of the *process* criterion in the empirical model. The 'key project result' and 'efficiency result' criteria of the ABPE are renamed *K-result* and *E-result*; the 'customer satisfaction result' criterion and 'social responsibility' indicator in the ABPE form *S-result* criterion. If the new seven criteria have construct validity, Hypothesis 1 can be accepted. In addition, two second-order latent factors are introduced to the model: the first captures the inter-correlations between the criteria for managerial activities and the second captures the inter-correlations between criteria for organizational results. Following the EQFM model we call the first construct *Enabler*, and the second *Result*. If the two constructs are found to exist, Hypotheses 2 and 3 can be accepted. Finally, a causal relationship from the *Enabler* construct to the *Result* construct is hypothesized to test Hypothesis 4.

The performance indicators of the original criteria in Table 5.2 are also re-allocated to follow the changes in their criteria and appear in rectangular shapes in Figure 5.2. In the ABPE, each firm had approximately 30 performance indicators, 17 of which are common indicators[48] that apply to every firm, and the rest are 'are firm-specific indicators for the 'project processes' and 'key project result' criteria. The firm-specific indicators in these two criteria are averaged to generate two composite indicators. Two important principles of the ABPE validate this aggregation; first, the total weight given to each criterion is the same across all firms; second, all indicators in these criteria were generated through the same principles and assessed against the same standard. Although the primary purpose of the aggregation is to make the performance of firms with respect to these criteria comparable, the aggregated indicator has two additional advantages. First, it improves multivariate-normality which is critical to the maximum likelihood estimation (Bou-Llusar et al., 2009). Second, it

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[48].Though the 'capital productivity' indicator applies to more than 20 firms, it was dropped for the consistency in analysis.

reduces the number of parameters to be estimated, increasing the stability of the parameter estimates (Bagozzi and Edwards, 1998; Bandalos and Finney, 2001; Little et al., 2002).

When the empirical model in Figure 5.2 is compared with the MBNQA and the EFQM models, the 'measurement' criterion of the MBNQA is included in the *workforce* criterion of the empirical model as an indicator (INTPMS), and 'customer focus' of the MBNQA is included in the *process* criterion as an indicator (CS focus). The three criteria in the Result domain in Figure 5.2 are similar to those of the EFQM model. Following Structural Equation Modeling (SEM) convention [49], the criteria are presented in oval shapes, the indicators in rectangles, and the one-headed arrows represent the direction of casual effects in Figure 5.2.

Figure 5.1: Empirical Model to be Analyzed
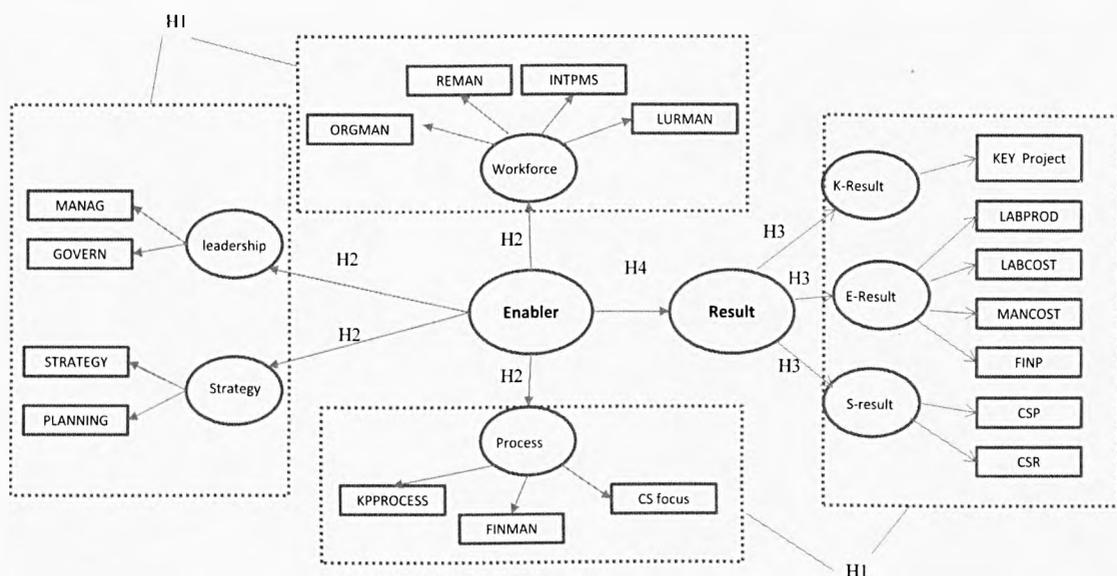
5.5.3 Methods and Statistical Procedure

To test the four hypotheses developed in section 4.2, we apply an SEM methodology.[50] SEM consists of two parts; a measurement part that specifies the relationship between latent variables (the seven performance criteria in the empirical model) and their indicators; a structural part that represents the relationship among the latent variables. Compared to multiple regression method, SEM offers two distinct advantages. First, it allows researchers to effectively examine 'constructs' which are not directly measurable. In the multiple regression method such constructs are typically represented by a directly observable proxy variable where no measurement error is assumed. However, ignoring measurement errors often leads to biased estimation results (Diamantopoulos et al., 2000). In SEM the constructs are measured through multi-indicators that are expected to have measurement errors. Thus, SEM can provide a more efficient estimator than multiple regression method. Second, SEM allows researchers to investigate a wider range of relationships between (latent) variables. While the multiple regression method assumes only unidirectional relations from independent variables to a dependent variable, in reality these relationships can be more complex. For instance, some independent variables may be determined by other independent variables or two or more variables may have reciprocal relationships. SEM is able to deal with such relationships (Smith and Langfield-Smith, 2004). Since this study aims to empirically investigate the measurability (H1) of various performance criteria and their relationships (H2, H3 and H4), SEM is the most suitable research method for this study.

To test the Hypothesis 1, a four-step construct validity test procedure suggested by Ahire and Devaraj (2001) and followed by Bou-Llusar et al. (2009) is used. According to Ahire and Devaraj (2001), indicators for a construct should represent a single dimension (uni-dimensionality); a significant amount of its variance should be explained by the indicators (reliability); the indicators must show a certain degree of convergence (convergence validity); finally, the construct should differ from others (discriminant validity).

If the construct validity of the performance criteria are assured, then, the tests of Hypothesis 2-4 will be carried out by estimating the coefficients of the empirical model. Before testing these hypotheses, the overall model fit are checked by applying several commonly used model fit indices, namely the Satorra-Bentler scaled χ^2 statistics (S-B χ^2), the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), the Bentler-Barnett Normed Fit Index (BBNFI) and the Bentler Barnett Non-Normed Fit Index (BBNNFI) (Eskildsen et al., 2000; Diamantopoulos et al., 2000; Bou-Llusar et al., 2009). If

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[50] Structural Educational Model method is explained in detail in Appendix

these indices exceed their respective thresholds the empirical model can be seen as successfully capturing the 'true' relationships between the criteria of the empirical model.

The estimation and tests of coefficients in Figure 5.2 will be carried out using the statistical software EQS 6.10 (Bentler, 1995). The estimation method is maximum likelihood and the test of coefficients is carried out using 't-test' (Diamantopoulos et al., 2000). However, the maximum likelihood method may return biased estimates if the data used violate the assumption of multivariate normality (Evans). To avoid any possible influence of non-normality issue, the continuous variables are log-transformed and all the χ^2 statistics are scaled following the method suggested by Satorra and Bentler (1994). Therefore, all the tests are based on Satorra-Bentler scaled χ^2 statistics (S-B χ^2).[51]

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[51] Test statistics used in this chapter is explained in detail in Appendix

5.6 Empirical Results

This section reports the empirical results. First, sub-section 6.1 reports the results of the construct validity test. Based on the construct validity test results, a couple of modifications are made to the original empirical model in Figure 5.2 to investigate the relationships between the criteria more clearly. Then, the estimation results of the modified model are reported in subsection 6.2. Finally, to demonstrate the robustness of the estimated model, this study additionally estimates two alternative models and compares the results with those of the originally estimated model.

5.6.1   The Validity of Performance Criteria

As discussed in section 5.4.2.1, to be sensible performance measures, individual performance criteria in the ABPE should be firstly measurable. The measurability holds if i) the indicators of each performance criterion represent a single dimension (uni-dimensionality), ii) indicators for each criterion share a significant amount of variance (reliability),   iii) different measurement approaches (i.e., indicators) have a certain degree of convergence (convergent validity) and, finally, iv) different groups of indicators should represent different dimensions (Ahire and Devaraj, 2001). This subsection elaborates the meaning of each test and reports the test results.

5.6.1.1 Uni-dimensionality

Uni-dimensionality refers to the extent to which indicators that are designed to measure one construct are strongly associated with each other, representing one dimension. Uni-dimensionality is a necessary condition for construct reliability (Ahire and Devaraj, 2001). To test the uni-dimensionality, confirmatory factor analysis (CFA) was conducted (Jöreskog and Sörbom, 1989; Long, 1983). A Comparative Fit Index (CFI) greater than 0.9 and a Root Mean Square Error of Approximation (RMSEA) below 0.09 can be accepted as indications of uni-dimensionality (*ibid*).

Table 5.4 shows CFA results for the uni-dimensionality test for the performance criteria of the empirical model. Initially, CFA was carried out for each of the seven performance criteria: namely, *leadership, strategy, workforce, process*, *K-result, E-result and S-result*. However, the CFA results for the *leadership* and *strategy* criteria exhibited relatively high RMSEA values (RMSEA=0.182), indicating a potential issue. To address this, the

leadership and *strategy* criteria were combined into one criterion termed *L&S*; both the CFI and RMSEA values of this combined performance criterion reached acceptable levels (CFI=0.975, RMSEA=0.096). The CFA results[52] for the other five dimensions were all at acceptable levels as seen in Table 5.4. However, in undertaking this procedure, the Lagrange Multiplier (LM) test results indicated that the 'Financial performance' indicator has strong cross loadings with many other performance criteria. This indicator was accordingly dropped and, therefore, the uni-dimensionality test results in Table 5.4 and the following test procedure were based on the 17 performance indicators and the six performance dimensions.

Table 5.4: Uni-dimensionality and Reliability Test Results of the Empirical Model

Criteria	Uni-dimensionality					Reliability	
	S-B χ^2	d.f	p-value	CFI	RMSEA	Cronbach alpha(α)	Composite Reliability
L&S	6.610	3	0.085	0.975	0.096	0.898	0.903
Workforce	0.088	2	0.927	1.000	0.000	0.832	0.832
Process	2.041	1	0.153	0.990	0.073	0.724	0.734
K-Result	9.920	7	0.193	0.950	0.057	0.542	0.720
E-Result	9.920	7	0.193	0.950	0.057	0.617	0.720
S-Result	9.920	7	0.193	0.950	0.057	0.542	0.720

5.6.1.2 Construct Reliability

Construct reliability refers to the degree of internal consistency between the indicators for a construct. If indicators explain a significant amount of the variance of the construct, the indicators are said to be 'reliable' (Ahire and Devaraj, 2001). Cronbach's alpha (α) value is widely employed to test construct reliability and for theoretically established constructs, 0.70 should be the threshold, and for emerging constructs, 0.60 is often accepted (*ibid*). This study also employs 'composite reliability' to provide additional information on the construct reliability (Bou-Llusar et al., 2009). This is obtained by calculating the ratio of the squared sum of indicator loadings divided by the squared sum of indicator loadings and error variances (*ibid*).

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[52] Since *K-Result* and *S-Result* have no more than two indicators; CFAs were undertaken for the three constructs together.

Table 5.4 shows that the Cronbach's alpha values (Column 6) of each performance criterion is over 0.60 except *K-Result* and *S-Result* criteria (α =0.542). However, the composite reliability values for all the six performance criteria are over the threshold (0.60) (Column 7). From these results, we conclude that the indicators overall are measuring the six performance criteria with 'reliability'.

5.6.1.3 Convergent Validity

Convergent validity is the extent to which various approaches to measuring the same construct yield similar results. Since an individual indicator can be regarded as a different method of measuring the same construct, the convergent validity of a construct can be assessed by the degree of convergence of its indicators (Ahire and Devaraj, 2001). To test this in practice, the Bentler-Bonnet Normed Fit Index (BBNFI) is used. The threshold value of the BBNFI is around 0.80-0.90 (Ahire and Devaraj, 2001; Diamantopoulos et al., 2000). As Table 5.5 shows, all the BBNFI values of the six performance criteria are over 0.885 indicating the 'convergent validity' of the six performance criteria.

Table 5. 5: Convergent and Discriminant Validity Test Results

| Criteria | Convergent Validity | Discriminant Validity | | | | |
| | | Average Inter-Scale Correlation | | | Average Correlations | |
	BBNFI	AVISC	α	α -AVISC	scale items	scale-nonscale items
L&S	0.991	0.520	0.898	0.375	0.687	0.341
Workforce	1.000	0.476	0.832	0.356	0.549	0.340
Process	0.990	0.509	0.724	0.215	0.469	0.282
K-result	0.885	-0.017	0.542	0.559	-	-
E-result	0.885	0.130	0.617	0.487	0.354	0.096
S-result	0.885	0.339	0.542	0.203	0.316	0.205

5.6.1.4 Discriminant Validity

'Discriminant validity' refers to the degree to which a construct differs from other constructs. Following Bou-Llousar et al. (2009), two different tests are employed to investigate the discriminant validity of the six performance dimensions. First, it is checked whether the Cronbach's α value of each performance criterion is larger than the average inter-scale correlation (AVISC). Second, the average correlation between the scale indicators is

checked to establish whether it is greater than the average correlation between the scale and non-scale indicators.

From Table 5.5 the discriminant validity test results show that the six performance dimensions differed from each others. First, the Cronbach's α value of each performance criterion is greater than AVISC (Table 5.5, Column 4). Second, the average correlations between the scale indicators were higher than those of scale and non-scale indicators except for *K-Result* (Columns 5&6, Table 5.5). Since the *K-Result* had only one composite indicator, the correlation within scale indicators could not be obtained. Nevertheless, this study assumes that the *K-Result* also meets discriminant validity because, as previously explained in subsection 5.2, this dimension is represented by the composite index comprising 7-15 indicators designed to measure the organizational results with respect to the key projects area.

In sum, the above four-step construct validity test results illustrate that five of the seven performance criteria of the model presented in Figure 5.2 are found to have construct validity and so does the combination of *leadership* and *strategy* constructs. This modification seems reasonable when we consider that the two criteria commonly measure the activities of the top management team and some existing empirical studies on TQM consider these two criteria as one dimension (e.g., 'strategic system' in Curkovic et al., 2000). Given the overall results, we can accept our first hypothesis that the performance criteria of the ABPE model are measurable, which confirms that the ABPE meet the first condition for sensible measure.

5.6.2 Modification of the Empirical Model

Following the construct validity test results, two modifications are made to the empirical model in Figure 5.2 to allow for more stable estimation results. First, following the construct validity results, the *leadership* and *strategy* criteria are combined into one criterion, named *L&S*. Second, the 'financial performance' indicator is dropped due to its cross-loadings with many other criteria. The modified model is illustrated in Figure 5.3 and this model is used to test Hypotheses 2, 3 and 4.

Figure 5.2: The Modified Structural Models
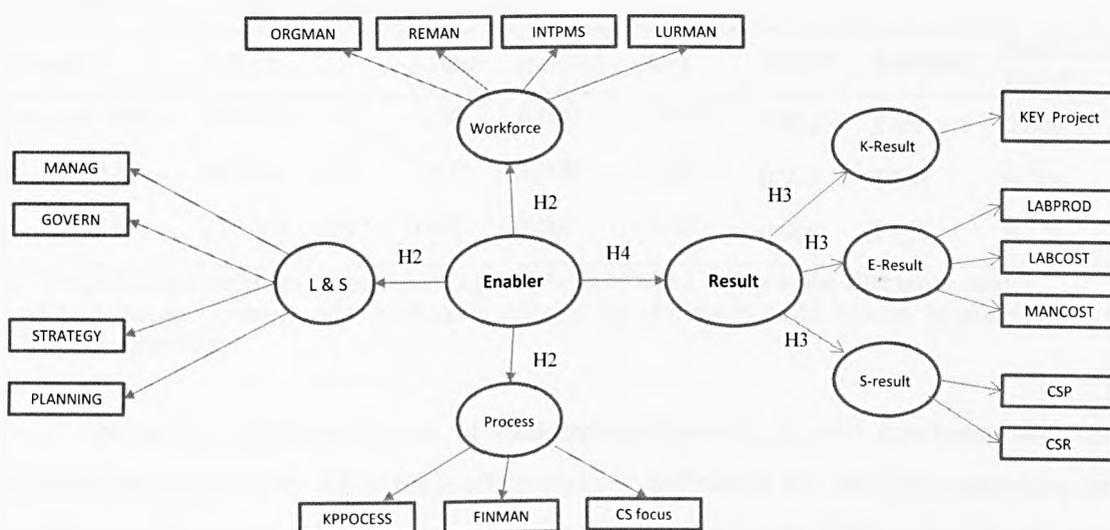
The correlation matrix of the six performance criteria is provided in the Table 5.6. It shows that all criteria except K-res criterion have significant level of correlations between them. This is not surprising because the criteria are based on TQM theory. The insignificant and low level of correlations of *K-res* criterion indicate possible problem, which is further investigated in following subjections.

Table 5.6: The Correlation Matrix of the Performance Criteria

	L&S	workforce	process	E-result	S-result	K-result
L&S	1.000					
workforce	0.859***	1.000				
process	0.956***	0.899***	1.000			
E-res	0.179**	0.168**	0.187**	1.000		
S-res	0.544***	0.511***	0.569***	0.106	1.000	
K-res	0.062	-0.058	-0.064	0.012	-0.037	1.000

Note: Coefficient with *** is significant at 1% level, **, at 5% , *, at 10% .

5.6.3 Estimation Results for the Modified Model

5.6.3.1 Overall Model Fit and the Measurement Model

As discussed earlier, to assess whether the model represents the 'real' relationships between the observed data, multiple goodness-of-fit indices are checked (Eskildsen et al., 2000; Evans). The second row of Table 5.7 shows the values of the indices of the modified model in Figure 5.3. All of these indices are found to be over the thresholds for each test, indicating that the model can be regarded as successfully representing the real relationships in the observed data.

Table 5.7: Overall Model Fit Indices

Models [a]	S-B $\chi2$	d.f.	p-value	RMSEA	CFI	BBNFI	BBNNFI	Parsimony BNNFI
Original Model	59.0151	113	1.000	0.000	1.000	0.974	1.03	0.809
A- Model I	56.5054	111	1.000	0.000	1.000	0.975	1.031	0.796
A- Model II	73.5706	109	0.996	0.000	1.000	0.968	1.021	0.776

a. 'Original model' refers to the model in Figure 5.3, 'A-Model I' refers to the alternative model without 'Result' constructs and 'A-Model II' refers to the alternative model without 'Enabler' and 'Result' constructs.

Next, the estimation results of measurement models are also consistent with the expectations in the model. All of the coefficients are significant at the 1% level, supporting the construct validity test results in section 6.1. The parameter estimates for the coefficients from the six performance criteria to their indicators, corresponding standard errors, t-statistics, and R^2 values for the measurement model are provided in Table 5.8. Given the estimation results, the specification of the empirical model in Figure 5.3 is adequate and, thereby, Hypotheses 2, 3 and 4 can be tested using this model specification.

5.6.3.2 The Existence of Inter-Correlations

Table 5.9 lists the parameter estimates of relationships among the six performance criteria and the two second-order latent factors, corresponding t-statistics and R^2 values. Regarding Hypothesis 2, all the coefficients from the *Enabler* construct to *L&S, workforce* and *process* criteria are found to be significant at 1% level (Rows 3-5, Table 5.9). Further, the R^2 values are such that the *Enabler* construct explains more than 80% of variances in the *L&S, workforce* and *process* criteria. All of these empirical results consistently support the existence

of the *Enabler* construct that represents the inter-correlations between *L&S, workforce* and *process* criteria and, therefore, Hypothesis 2 can be accepted.

However, as to the existence of the *Result* construct (Hypothesis 3), the empirical evidence is not as strong as the case of the *Enabler* construct. The coefficients from the *Result* construct to the *E-result* (β=0.269, t=0.233) and *S-result* (β=0.839) [53] criteria are found to be significant at 1% level and the R^2 values are also at a reasonable level, indicating that 70.4% of the variance in the *S-result* and 7.3% of the variance in the *E-result* can be explained by the *Result* construct. However, the coefficient of the *K-result* is insignificant at the 10% level, and the R^2 value is zero (β=0.018, t=0.233, R^2=0.00). The results indicate that the *Result* construct cannot explain the variance in the *K-result*. Therefore, it is concluded that the *Result* construct only represents the inter-correlations between the *E-result* and *S-result* criteria. Therefore, Hypothesis 3 is accepted for these two criteria.

5.6.3.3 Positive Causal Relationships

Being mindful of the empirical support for Hypothesis 3, the relationship from the *Enabler* construct to the *Result* construct is further investigated to test Hypothesis 4. According to the results (Row 6, Table 5.9), the *Enabler* construct has a significant and positive impact on the *Result* construct (β=0.659, t=4.632) at 1% level. The R^2 value implies that the *Enabler* construct explains about 43.5% of the variance in the *Result* construct. Since the *Enabler* construct can be interpreted as the overall excellence in the *L&S, workforce* and *process* criteria, the significant and positive coefficients means that the optimal management of the *L&S, workforce* and *process* criteria leads organizations to generate better results with respect to the social goals (*S-result*) and organizational efficiency (*E-result*) (but not with respect to key project outputs, *K-result*). We cannot therefore fully accept our fourth hypothesis, nor can we fully reject. The insignificant coefficients for the *K-result* criterion are further investigated in the following robustness section.

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[53] For the *S-result* criterion, t-value is not obtained because this criterion is used to fix the unit of the 'Result' construct.

Table5. 8 : Estimation Result for the Empirical Model (Measurement Part)

Criteria	Indicator	Estimate [a]	S.E	t-value	R^2
Leadership	MANAG [b]	0.894	-	-	0.799
	GOVERN	0.698***	0.049	16.051	0.488
	STRAT	0.867***	0.048	20.090	0.752
	PLAN	0.876***	0.052	18.698	0.767
Workforce	ORGMAN	0.805	-	-	0.648
	REMAN	0.688***	0.094	9.069	0.473
	LUMAN	0.699***	0.082	10.531	0.489
	INTPC	0.771***	0.091	10.563	0.595
Process	KBPROC	0.849	-	-	0.720
	FINMAN	0.702***	0.095	8.725	0.493
	CSFOCUS	0.555***	0.075	8.668	0.308
K-Result	KBPERF	1.000	-	-	1.000
E-Result	LABCO	1.092	-	-	1.000
	LABP	0.349***	0.143	2.239	0.122
	MANCO	0.467***	0.155	2.758	0.218
S-Result	CSP	0.503	-	-	0.253
	CSR	0.627***	0.241	5.177	0.393

a. The above results are for 'Original model' and all of the estimates are from standardized solutions to be comparable to other estimates. An estimate with *** indicates it is significant at 1% level.

b. Indicators that do not have standard error and t-value were standardized indicators to fix the unit of their latent variables.

Table 5.9: Estimation Results for the Empirical Model (Structural Part)

Relationships	Estimates [a]	S.E	t-value	R^2
Enabler –> L&S	0.957***	0.050	17.203	0.916
Enabler –> Workforce	0.901***	0.040	17.916	0.811
Enabler–> Process	1.000***	0.048	17.793	1.000
Enabler–> Result	0.659***	0.060	4.632	0.435
Result –> K-Result	0.018	0.182	0.233	0.000
Result –> E-Result	0.269***	0.212	3.286	0.073
Result –> S-Result	0.8391 [b]	-	-	0.704

a. All of the estimates are from standardized solutions to be comparable to other estimates. An estimates with *** indicates it is significant at 1% level.

b. Since S-result criterion was a standardized to fix the unit of the 'Result' construct, the estimate for these two does not have standard error and t-value.

5.6.4 Robustness

To provide additional evidence on the robustness of the empirical model above, we investigate whether our empirical results change significantly in different model specifications. We therefore estimate two alternative models and compare these results to those of the original model in Figure 5.3. First, considering the empirical evidence on the existence of the *Result* construct, in the first alternative model (A-Model I), the *Result* construct is removed from the original model in order to investigate the direct effects of the *Enabler* construct on the three result criteria. In addition, the correlations between the residual variances of the three result criteria are introduced. The overall model fit indices and the parameter estimates of the two alternative models are reported in Table 5.7 and in Table 5.10 respectively. In term of overall model fit, the A-Model I seems better than the original model because its S-B χ^2 value (56.50) was smaller than that of original model (59.016) with other fit indices being equal (Row 3, Table 5.7). However, when the Parsimony-BBNFI index (James et al. 1982) is calculated to consider the simplicity of the models, the original model (0.809) is better than the A-Model I (0.796). Further, from the A-Model I, no empirical evidence is found refute or call into question the empirical results of the original model: the coefficient from the *Enabler* construct to *K-result* is still insignificant at the 10% level (-1.536) and R^2 value is still too small (0.5%) with all other coefficients being significant at 1% level (see Table 5.10).

Table 5.10: Estimation Results for A-Model I (Structural Part)

Relationships	Estimates [a]	S.E	t-value	R^2
Enabler->L&S	0.958***	0.049	17.390	0.918
Enabler->Workforce	0.899***	0.040	18.134	0.808
Enabler-> Process	1.000***	0.048	17.677	1.000
Enabler -> K-Res	–0.070	0.045	–1.536	0.005
Enabler ->E-Res	0.184***	0.044	4.421	0.034
Enabler-> S-Res	0.552***	0.061	4.555	0.305

a. All of the estimates are from standardized solutions to be comparable to other estimates. An estimates with *** indicates it is significant at 1% level.

In the second alternative model (A-Model II), both of the second-order latent factors, the *Enabler* and *Result* constructs are removed and the three criteria (*L&S, Workforce and Process*) in the Enabler domain are treated as independent variables in order to examine the individual effects from the three criteria in the Enabler domain to the three result criteria. In addition, the correlations between the three criteria in the Enabler domain and the correlation between the residual variance of the three criteria in the Result domain are introduced. In terms of the model fit, this model is found to be inferior to the original model as S-B χ^2 value (73.57) is larger and the degree of freedom is smaller (*df*=109, Row 3, Table 5.7) than those of the original model (Row, 2 Table 5.7).[54]

Given the above empirical results of the two alternative models, it can be said that the original model provides the best representation of the data of the Korean ABPE and, therefore, the test results for Hypotheses 2, 3 and 4 in the previous sections are robust. Excluding the *K-result*, the results lead us to conclude that the Korean ABPE meet the four conditions for 'sensible' performance measures; appropriate performance criteria, measurability, limiting distortion problem and positive causal links between performance criteria.

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[54] Therefore, the estimation results of this model are not reported.

5.7 Discussion and Conclusion

5.7.1 The Efficacy of PCs on the Performance of SOEs

The current study investigates how PCs should be constructed in order to effectively motivate SOEs to perform better. From extant theories, this study draws out four conditions that a PC should meet; namely, i) appropriate performance criteria that consider organizational context, ii) measurability of performance criteria, iii) limiting distortion problems and iv) positive causal relationships between performance criteria.

We then proposes the use of TQM principles as a basis for generating specific PC measures that meet the four conditions identified. Although TQM has been widely attempted in public sector organisations across countries as a managerial initiative for organisational change (e.g., Swiss, 1992), its applicability to the context of PCs has received less attention due to the differences in underlying philosophy and method (Deming, 2000; 1986; Scholtes, 1993). Nevertheless, we offer an explanation on why TQM can be beneficially used in the PC context with respect to the four conditions for 'sensible' PC measures. That is, first, TQM provides a wide variety of issues that constitute the performance of SOEs and, therefore, PCs may take advantage of the issues in constructing performance criteria. Second, the measurability can be easily secured if the statistically verified indicators of MBNQA or EFQM model that materialises TQM theory. Third, the distortion problem and causal relationship between performance criteria of a PC can be addressed when the positive inter-correlations and causal relationships in TQM principles are reproduced in the PC.

Then these arguments are empirically tested using the South Korean PC, ABPE, which is recently re-built based on TQM. Therefore, we test whether the performance criteria of ABPE are measurable (H1), have positive inter-correlations among them (H2 and 3) and causal relationships from the criteria for managerial activities to the criteria for organisational results (H4). The empirical results show that ABPE generally meets the four conditions, indicating that the performance measures of the ABPE are 'sensible', and the ABPE engenders better performance. The results provide new evidence that PCs can actually improve the performance of SOEs where the PCs incorporate sensible measures, which has rarely been empirically supported. In addition, the results offer a policy implication on how PC should be constructed to effectively motivate SOEs to perform better.

5.7.2 Implications for the ABPE

As the results of empirical analysis on the Korean ABPE, we offer three specific implications on how to improve the measures of the ABPE. The most critical issue to address is that the *K-result* criterion, which is to capture the key business results, is found to have insignificant relationships with other performance criteria. There are four possibilities that may explain the results.

The first is that the indicators of the *K-result* are inappropriately aggregated in this study. As previously mentioned, since every firm has different indicators for *K-result*, we obtain a composite index through averaging the scores on the indicators for individual firms. If the aggregation is inappropriate, the empirical model may fail to capture 'true' relationships that underlie the data. However, this possibility cannot be empirically investigated because the firm-specific indicators are not directly comparable across firms. The second possibility is that Korean SOEs manipulate their key business results data. While the indicators of the other five performance criteria are scored by the external examiners, survey results and accounting standards, the data used for measuring the *K-result* are reported by the SOEs. Therefore, those are the easiest for SOEs to manipulate. If this is the case, the indicators should be redesigned. The third possibility is that the key business results are determined by politically driven resource allocations rather than input-output relationships and/or market discipline. This interpretation justifies the reason why PCs should include stakeholder concerns (Boschken, 1994) and the ability to secure necessary resources (Pfeffer and Salancik, 1978) as the performance criteria of SOEs. If this is the case, strengthening performance criteria related to these issues is needed to capture 'true' relationships the *K-results* criterion creates. Finally, there is a possibility that the other five criteria have long-term relationships with the *K-result*, and if this is the case, the insignificant relationships can be just regarded as short-term noise, which can be ignored as the other five criteria 'back out' the short-term noise (Baker, 2002). A longitudinal analysis may reveal whether there are such long-term relationships but it is currently unavailable due to the lack of panel data.

Next, a significant level of over-lap is found between the *Leadership* and *Strategy* criteria, indicating that the four indicators of the two criteria are virtually measuring the same performance area. If these two criteria are designed to represent significantly different areas, the indicators should be improved. Otherwise, some of the indicators can be dropped to increase the cost-effectiveness of the ABPE.

Finally, the 'Financial Result' indicator, which is designed to capture the extent to which key financial indices improve, is found to have strong cross-loadings with many other criteria, indicating that the indicator is poorly designed. Hence, it should be redesigned to capture a unique performance dimension initially it was intended to represent.

Chapter 6 : Corporate Governance of SOEs; Theoretical Background and Practices in South Korea

6.1 Introduction

As previously discussed in Chapter 4, the reasons why the State utilises SOEs are twofold: company level efficiency and public interests. To ensure that SOEs serve public interests, a certain degree of State control is necessary but a company level efficiency can be expected only when a certain degree of managerial autonomy is given to SOEs. From an agency theory perspective, by monitoring managers, SOE boards balance managerial autonomy and State control (Fama and Jensen, 1983). In addition to this, as their counter parts in private sector firms, SOE boards can be seen as adding value to their firms by bringing external resources (Pfeffer and Salancik, 1978) and formulating corporate strategy (Judge and Zeithaml, 1992).

However, 'how corporate boards add value to firms' may differ across firms because different firms face different institutional environments which create different managerial issues and institutional pressures that arguably influence the role of the board (Johnson et al., 1996, p. 465). The third part of this thesis therefore investigates how different levels of State control influence SOE boards/firm performance relationships because State control is the most critical environmental factor that influences the operation of SOEs. This chapter briefly reviews the corporate governance of SOEs, focusing on the board of directors and State control as a background chapter to Chapter 7 which empirically analyses how the two mechanisms interact.

Section 6.2 briefly reviews why corporate governance matters in the context of SOEs, with a focus on the board of directors and State control. From an agency theory perspective, it is noted that by monitoring managers, SOE boards balance State control and the autonomy of SOEs. Then, section 6.3 briefly reviews how SOE boards can add value to firms in three different theoretical perspectives, and identifies what potentially influence the role of SOE boards. Section 6.4 introduces the corporate governance of the South Korean SOEs to provide a more specific background for empirical analysis in Chapter 7.

6.2 Why Corporate Governance Matters in SOEs

6.2.1 Agency Theory, the Board of Directors and State Control

From the agency theory perspective, corporate governance means the relationship between the shareholder and manager, because corporate governance arises from the separation of managerial control from the ownership of the corporation (Fama and Jensen, 1983; Jensen and Meckling, 1976). Then, why does such separation take place? According to Fama and Jensen (1983, p.312), in the context of private sector firms, the separation takes place for two reasons: first, if a firm is controlled by a professional manager who possesses 'superior managerial skills', the organisation is better equipped to adapt to the complex environment: second, shareholders may diversify their assets to reduce risk through the separation of ownership from corporate control,.

The separation of managerial control from ownership necessarily involves a certain degree of 'managerial autonomy'. Otherwise, the 'superior managerial skill' does not have any meaning. However, as the manager has a different utility function from that of the shareholders, he/she may utilise the managerial autonomy for their own interest at the expense of the shareholders' wealth (Jensen and Meckling, 1976). To reduce this problem (i.e., the agency cost), shareholders appoint directors and delegate their controlling power of the firm to them in order to monitor the manager on behalf of themselves inside the firm (Fama and Jensen, 1983).

In addition to the board of directors, the literature of corporate governance recognises a number of governance mechanisms, such as financial reporting and auditing systems, incentive contracts, the direct exercise of ownership (e.g., the appointment of the CEO and board members, and direct monitoring) and a market for corporate control, and so on (Keasey et al., 2005).

As discussed in Chapter 4, agency problems are more serious in SOEs than in private sector firms. SOE managers have a strong incentive to shirk (Vickers and Yarrow, 1995) because, firstly, there is no individual owner of SOE who has enough incentive to actively monitor SOE managers, claiming the ownership of the cash flow in the firms (Alchian and Demsetz, 1972); secondly, due to the vague organisational goals, their managerial performances cannot be easily measured (Estrin and Perotin, 1991); thirdly, the commitment from the State (soft budget constraint, Kornai, 1986) and unnecessary intervention (Shleifer and Vishny, 1996) also prevent SOE managers from making efficient decision grounded on

their superior managerial skills. Therefore, corporate governance of SOEs is arguably as important issue as that of private sector firms.

However, most of the corporate governance mechanisms mentioned above do not work in the context of SOEs. For example, a 'stock market-based' governance mechanism (i.e., market for corporate control) is not available because SOE shares (i.e., ownership) are non-tradable. Further, when SOEs are operating in areas with market failures, the meanings of financial reporting and auditing system are significantly reduced because the price of exchange and the accounting figures do not carry full information about the economic performance of the organisation. If we exclude the PC, the board of directors and the exercise of ownership are the only working governance mechanisms in the context of SOEs. These two mechanisms are closely related because the roles of the SOE board are significantly subject to the scope of State control. The next sub-section elaborates more on this issue.

6.2.2 Boards as the boundary of State Control and the Autonomy of SOEs

The State has the right to appoint and fire the CEO and the directors of SOEs as an owner, but the State does not act merely as the owner of SOEs. The State provides SOEs with public funds to enable them to achieve social goals as well as economic efficiency. Hence, it is natural for the State to control SOEs (Ramanadham, 1974) and, in practice, the State holds formal and informal power to directly intervene in the management of SOEs, which distinguishes State ownership from the ownership of private shareholders (Islam, 1993). So, a question arises: what should be the scope of State control?

Given the 'superior decision-making skill' of the manager (Fama and Jensen, 1983, p.312), researchers in favour of the neo-utilitarian approach argue that the scope of State control should be minimised (Lopez-de-Silanes et al., 1997; Boycko et al., 1996; Shleifer and Vishny, 1996). They regard bureaucrats and politicians who actually exercise the ownership of SOEs as 'rent-seekers' or 'rational vote-maximisers' who are ready to abuse their control powers over SOE managers for their private interests or political survivals. Therefore, they argue that any type of State intervention in SOE managers is 'unnecessary' and to the detriment of the performance of SOEs (e.g., Shleifer and Vishny, 1996), which leads them to call for privatisation (Boycko et al., 1996; Lopez-de-Silanes et al., 1997).

On the contrary, many commentators argue that a certain scope of State control is necessary (Vickers and Yarrow, 1995; Estrin and Perotin, 1991; Islam, 1993; Ramanadham, 1974). They criticise the neo-utilitarian approach for three reasons. First, they claim that the

causal link from 'managerial autonomy' to improved organisational performance is debatable (Jones, 1981 cited in Islam, 1993). For example, Shirley (1989b) found that an excessive autonomy in Brazilian SOEs led powerful Brazilian SOEs to spend a huge amount of money on dubious projects, creating subsidiaries without any government oversight. Similar evidence was found from the Canadian Crown Companies (Adie and Thomas, 1982). Second, regarding the motivation of bureaucrats and politicians, if we consider the 'socially embedded autonomy' of bureaucrats and the institutional constraints imposed on them, as discussed in Chapter 2 (see sub-section 2.4.2), it can be expected that bureaucrats and politicians may utilise the control power in a 'right' direction (Evans, 1989; Johnson, 1982; Wade, 1990). Third, they point out that the neo-utilitarian approach overlooks public interests, the fundamental reason why the State owns SOEs (Vickers and Yarrow, 1995; Estrin and Perotin, 1991). In fact, if a perfect degree of autonomy is desirable to a SOE, there is no reason for the State to own the firm. Hence, they argue that the 'commercial mandate' (i.e., efficiency) should be balanced with public interests (Vickers and Yarrow, 1995).

Islam (1993) argues that the scope of State control should be decided in consideration of both the 'autonomy' and the 'accountability' of SOEs because autonomy without accountability can cause disastrous problems, as observed in the Brazilian and Canadian cases. According to him, 'accountability' can be asked for only when a corresponding degree of 'autonomy' is given (ibid., p. 134): as the autonomy of SOEs is bounded by the scope of State control, the three factors interact and balancing the three becomes a critical issue (ibid., p. 134). In this sense, the board of directors is a key mechanism for balancing the three; that is, by delegating an appropriate scope of control power to SOE boards for monitoring managerial autonomy, the State can provide a significant level of managerial autonomy to SOEs, securing accountability within the organisations. Therefore, the duties and authorities of SOE boards actually reflect the 'boundaries' between State control and the 'organisational' autonomy of SOEs.

In sum, there is a trade-off between the scope of State control and the autonomy of SOEs, which fundamentally determines the performance of SOEs. The board of directors is the key governance mechanism that balances the two imperatives, reflecting the boundary between the two.

6.3 How SOE Boards Contribute to their Organisations

In the previous section, we discussed why the board of directors is the key governance mechanism based on agency theory. The underlying assumption of agency theory is that a corporation exists to serve the interests of its shareholders (Shleifer and Vishny, 1996, p. 737). From this perspective, it can be said that SOE boards are expected to contribute to the State by monitoring the management.

However, as discussed in Chapter 5, corporations exist not only for achieving their economic goals (i.e., maximising shareholders' wealth) but also for their own existence and satisfying stakeholders (see sub-section 5.2.2). Hence, a growing number of researchers agree that corporate governance should be understood in a wider sense (Johnson et al., 1996; Richard et al., 2009; Pfeffer and Salancik, 1978; Hillman, 2005; Judge and Dobbins, 1995). For example, the OECD (1999) understands corporate governance as follows:

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

In this perspective, the board of directors should contribute to the firm through not only 'monitoring' the management but also providing 'the means' of attaining those objectives. This goes for the SOE board as well. Since SOEs pursue economic goals and social interest, and significantly owe their existence to the State which is subject to politically driven decision-making, it does not seem to be appropriate to understand the complex roles of SOE boards by simply applying agency theory. Therefore, this section elaborates on how SOE boards can contribute to their firms in a broader perspective.

6.3.1 The Resource Dependence Perspective

Resource dependence theory offers one of the most influential explanations of how corporate boards contribute to their firms. That is, the board of directors is a vehicle of a firm to manage its external dependencies to reduce the uncertainty the firm faces (Pfeffer and Salancik, 1978; Hillman et al., 2000). As discussed in Chapter 3, 'uncertainty' refers to the lack of any relevant knowledge or resource to predict what will happen in the future (North, 2005) and, therefore, uncertainty significantly constrains corporate decisions on resource

controls, corporate strategy formulation and day-to-day operations (Hillman et al., 2000). Therefore, resource dependence theory argues that by appointing individuals who are able to bring external resources (e.g., knowledge, skills, information, and access to key stakeholders) as board members, firms can decrease the degree of uncertainty they face.

The resource dependence perspective is also very useful in explaining why SOEs, newly privatised firms and regulated firms have many former bureaucrats and politicians as board members (Hillman, 2005). As previously mentioned, the State imposes various regulations that significantly constrain opportunities that SOEs can take as well as providing SOEs with the necessary resources (Boubakri et al., 2008). Therefore, if former bureaucrats and politicians, who have a significant degree of working experience in related government departments and/or influencing power on the incumbents, are present in the boardroom, the organisation may significantly reduce the degree of uncertainty from the State (Lester et al., 2008; Hillman, 2005).

6.3.2 The Service Role Perspective

In addition to the agency theory and resource dependence theory, the 'service role' of corporate board has been extensively studied. Researchers in favour of this perspective argue that, in practice, the most salient role of corporate boards is to 'advice and counsel' managers (Mace, 1971; Lorsch and MacIver, 1989; Johnson et al., 1996; Demb and Neubauer, 1992; Judge and Zeithaml, 1992; Judge and Dobbins, 1995). Of such roles, recently, 'strategy formulation' has been gaining greater attention as uncertainty in the business environment increases (Pugliese et al., 2009).

This strategy formulation perspective helps us to understand one of the most important functions of SOE boards. That is, recent decades have seen privatisations and market de-regulations, and competition is consequently getting tougher even in industries where SOEs are involved. For example, until 2001, the Korean Electric Power Corporation (KEPCO) was a monopoly in the Korean power industry. In 2001, the Korean State separated power generating plants from KEPCO and reorganised the power plants into six independent power generating companies to promote competition between them. In such circumstance, setting and modifying organisational strategy is becoming a more critical issue for these SOEs. Some countries (e.g., New Zealand) clearly identify the review of organisational strategy or strategy formulation as one of the roles SOE boards should perform (OECD, 2005, p.96).

6.3.3 A Multi-theoretical Perspective

Although the above theories individually explain a certain aspect of board function, a growing number of scholars recognise that no single theory has the capacity to fully explain the complex reality of board function (Roberts et al., 2005; Hillman and Dalziel, 2003; Daily et al., 2003; Ward et al., 2009). For example, Mace (1971, p.178) finds that "directors serve as a source of advice and counsel, serve as some sort of discipline, and act in a crisis situation". In Demb and Neubauer (1992)'s extensive cross-national survey, 80% of directors agreed that they were involved in setting strategy, 45% in overseeing and monitoring the top management and CEO. From extensive interviews with directors of UK FTSE 350 firms, Roberts et al. (2005) draw the conclusion that in effective corporate boards, non-executives are "engaged but non-executive," "challenging but supportive" and "independent but involved". Therefore, they argue that a multi-theoretical approach is essential to understand how corporate boards add value (Daily et al., 2003) because the problems to be dealt with by corporate boards are multi-faceted (Roberts et al., 2005).

As discussed previously, for SOE boards, monitoring is a critical issue but resource provision and strategy formulation roles are also important tasks. However, it can be reasonably argued that there is a primary focus among such multi-roles, and it may differ across firms because different firms have different internal situations, markets and institutional environments (Baysinger and Zardkoohi, 1986; Ward et al., 2009; Demsetz and Lehn, 1985; Lioukas et al., 1993). The following three sub-sections discuss factors that seem to influence the focus of the multi-roles of SOE boards.

6.3.3.1 The Presence of Alternative Function

If there is another institutional device designed to monitor the management, it can be expected that the primary focus of SOE boards may shift from monitoring to other functions due to the institutional complementarities (Booth et al., 2002; Becher et al., 2005b; Becher and Frye, 2011). Since a governance mechanism is costly to implement (Shleifer and Vishny, 1996; Baker and Gompers, 2003), if there is another institutional mechanism for monitoring the management, the benefit of monitoring by the corporate board may be significantly reduced (Demsetz and Lehn, 1985; Joskow et al., 1993) and therefore, it would be more efficient for the board to engage in other functions, such as strategy formulation or resource provision (Booth et al., 2002). Given the arguments, a number of empirical studies have investigated the relationship between 'regulations' and the board of directors' roles in the context of private sector firms. Some of them find a 'substitution effect' (Joskow et al., 1993;

Baysinger and Zardkoohi, 1986; Becher et al., 2005a) but others find a 'complementary effect' (Becher and Frye, 2011; Hagendorff et al., 2010).

In similar ways, if the State directly decides the organisational goals and strategy, SOE boards have no reason to allocate their resources to this function. In such circumstance, the strategic roles will be invisible in SOE boards.

6.3.3.2 Ownership Distribution within the Government

Another factor which is particularly critical to SOEs is which government entity exercises the ownership of SOEs (OECD, 2005). This is important in practice because bureaucrats are not homogeneous across governmental entities. The literature on organisational studies proposes that the behaviours of individuals may differ from organisation to organisation because they experience different organisational socialisation and identification processes (Ge et al., 2010; Schein, 2010). Therefore, within the government, different entities may have different organisational goals and perspectives. For example, since the finance ministry is typically focused on financial and efficiency issues, if the ownership of SOEs is given to the finance ministry, it will exercise the ownership to drive SOEs to be more efficient: on the other hand, if the ownership function is given to a sector ministry (e.g., the ministry of industries or ministry of health care), which is arguably concerned about sector-specific interests and regards the SOE as an industrial policy means, the ministry will exercise the ownership so as to serve such interests (OECD, 2005p.27~33).

Regarding this issue, an OECD report [55] (2005) identifies three types of ownership distribution models within the State: 'sector model', 'dual model' and 'centralised model'.[56] In the sector model, the ownership is solely exercised by individual sector ministries (OECD, 2005p. 29). Hence, the ownership function and industrial regulations on the SOE are carried out by the same government body. According to the report, this type was dominant in most OECD countries until the 1970s and still exists in some countries such as the Slovak Republic, Finland and Germany. The benefit of this model is that sector-specific expertise can be utilised, but efficiency issues are often overlooked.

The second is the 'dual model', where the sector ministry and a 'common' ministry (e.g., finance ministry) share ownership of the SOEs (OECD, 2005p.30). According to the report, this model has been used in Greece, Italy, Mexico, Australia, New Zealand and Turkey.

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[55] The Comparative Report on Corporate Governance of State-Owned Assets' (OECD, 2005)

[56] The description of the three models is based on a summary of the OECD report (2005).

The common ministry typically takes a leading role in assessing and reporting overall performance of SOEs to some other higher bodies. In Turkey, for example, the Treasury is in charge of PCs but as for the board, one board member is appointed by the Treasury and others are appointed by the sector ministry. The report argues that the advantage of this model is adding an efficiency perspective in exercising the ownership function, but it warns that the ownership functions should be clearly defined, balanced and coordinated across the related governmental entities.

Figure 6.1: Corporate Governance Models for SOEs in OECD Countries
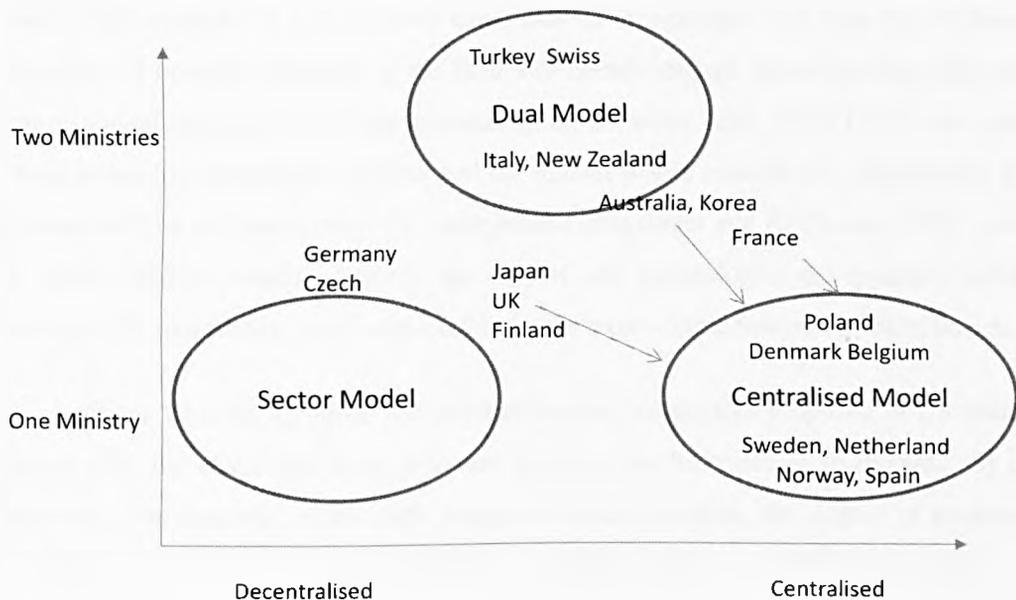
Source: The Comparative Report on Corporate Governance of State-Owned Assets' (OECD, 2005)

The last is the 'centralised model' in which the ownership of SOEs is solely exercised by a 'common' entity, which is the finance ministry (in Denmark, The Netherlands and Spain) or a specifically established government entity (in France, Poland and the UK). The report finds that this model is the results of SOE reforms in Western European economies and transition economies during the 1990s~2000s. According to the report, the most distinct benefit of this model is its strong emphasis on efficiency, which is possible through completely separating the ownership function from the industrial regulation function. Further, the report adds, the 'centralisation' may facilitate the consistency of the ownership policy across industries. Nevertheless, too much emphasis on efficiency issues may result in overlooking the public interests that SOEs also have to pursue.

In practice, however, it is not clearly identifiable which country uses which model, although one noticeable change over time is the shift from the sector model to the centralised model, as seen in Figure.6.1 (OECD, 2005p. 34). Hence, the direction of institutional changes may illustrate the changes in the perspective from which the State exercises its ownership of SOEs.

6.3.3.3 Market Conditions: Maturity and Competition

Market conditions are also expected to have significant effects on the role of corporate boards. For example, if a firm faces harsh market competition and very fast technological progress, the board of directors of the firm will mainly engage in formulating and reviewing organisational strategy rather than monitoring; on the other hand, if the firm is in an industry where technological progress is slow and the market is less competitive, the primary focus of its board will be on 'monitoring' the management (Baysinger and Zardkoohi, 1986; Lioukas et al., 1993). In the context of SOEs, the market and technologies are typically stable and, therefore, the monitoring role is expected to be the most visible function of SOE boards.

If we take the dynamic institutional change perspective proposed in Chapter 3 (see section 3.3), the scope and focus of board function can be expected to dynamically change over time. For example, in the early stages of industrialisation, the degree of uncertainty is typically very high even in the industries in which SOEs are operating, because in such circumstances it is extremely difficult to find professional managers with superior decision-making skills and industrial knowledge, which necessarily requires a wider range of State controls to reduce uncertainty (or transaction costs). As a result, the function of the SOE board may be a less important issue. As the industries mature, however, participants in the industries come to know much more about managerial skills and industry-specific rules and, therefore, many professionals with managerial skills and experiences emerge (Lioukas et al., 1993, p.43), which necessarily will require an increase in the autonomy SOEs; therefore, the role of SOE boards will be extended.

6.4 Corporate governance of Korean SOEs

This section introduces the corporate governance of Korean SOEs in order to provide a more specific background for the empirical analysis in Chapter 7. As discussed before, the board of directors and State control are the most important governance mechanisms in the context of SOEs. Therefore, the explanations will focus on these two mechanisms. Further, in so doing, I will explain the corporate governance of Korean SOEs in historical approach to help understand why the current system have emerged and how significantly the three determinants of SOE boards (i.e., the alternative institutions, ownership distribution within the State and market conditions, discussed in section 6.3.3) have mattered in the Korean SOE sector over time.

6.4.1 Sector Model: until 2007

Before 2007, corporate governance of Korean SOEs could be largely classified as the 'sector model' (OECD, 2005). Sector ministries exercised the ownership of their SOEs individually and there were no general guidelines or coherent principles on how SOEs should be controlled. This was mainly due to the fact that Korean SOEs were established by sector ministries in 1960s and 1970s by means of industrial policy (Chang, 2006). For example, the Korean Electric Power Corporation (KEPCO), Korean Gas Corporation (KOGAS), Korean National Oil and Korean Coal Corporations and Korean Resource Corporation (KRC) were founded by the Ministry of Commerce and Industry (MCI) to supply utility services and natural resources; Korean Expressway (KX), Korean Land Corporation (KLC) and Korea Appraisal Board (KAB) were founded by the Ministry of Construction and Transportation (MOCT) to provide industrial infrastructure such as highways, industrial parks and so on; Ex-Im bank, Korean Exchange Bank (KEB), Korean Development Bank (KDB) the Industrial Bank of Korea (IBK), and the Korea Credit Guarantee Fund (KCGF) were founded by the Ministry of Finance (MOF) to supply financial services.[57]

Hence, there were wide variations in the legal forms and governance systems. For example, some SOEs were established by special legislation (e.g., KCGF), while some others were directly founded by joint stock company law (e.g., KAB) or special laws that applied joint stock company law (e.g., KX, KEPCO and KOGAS).

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[57] These are based on the information disclosed on an official website (www.alio.go.kr) run by the Ministry of Strategy and Finance (MOSF) for SOE information disclosure.

As their legal bases were different, the corporate governance systems were also different across SOEs. For example, in some SOEs, board members were directly nominated by the sector ministry (KX, KOGAS), while in other cases they were nominated by general meetings (e.g., KEPCO, KAB). In some SOEs, bureaucrats were present at board meetings as board members, while in other cases this was not allowed. There were no NEDs, or NEDs were a minority in many cases[58], while in other cases, NEDs were to be the majority of the board members (e.g., KX, KEPCO). This situation lasted until 2007.

Despite the wide variety of legal forms and governance systems, there were two common features. First, the sector ministry held a comprehensive *ex ante* control power to approve managerial decisions even on day-to-day operations, regardless of what the articles of association Stated (MPB, 2003). In fact, almost all managerial decisions were to be approved by their parent sector ministry in advance: the scope included not only investment decisions and budgeting, but also budget execution, employment of middle class managers and commodity procurements (ibid.). Thus, one might say that the managements of Korean SOEs could do nothing without permission from their parent ministry (Song, 1986). Given the control power, most SOE managers were from their parent ministries.[59] Thus, SOEs and the parent sector ministries were vertically integrated. Second, although the board of directors existed, it comprised executives, each of whom was in charge of one internal unit of the firm.[60] Hence, SOE boards were 'functional committees', the main responsibilities of which were implementing the allocated functions and supporting the CEO rather than monitoring (MPB, 2003:p.20). Since the parent sector ministry exercised the comprehensive ex-ante control, it seems natural that the monitoring roles were not an important issue at all.

As the economy grew, however, this ex-ante control system exposed various problems (Song 1983; Yoon, 1998). As Ramamurti (1987) and Shirley (1989a) pointed out, since Korean bureaucrats found it difficult to control strategic issues of SOEs they control, the issues of such *ex-ante* control tended to be minor issues, such as line item expenditures, minor fault finding, the purchase of materials, the increase in the number of lower level employees and so on (Yoon, 1998). To control such things, more and more control mechanisms were needed, which became additional sources of inefficiency. For example, the total number of ex-

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[58] Until 2007, 21 SOEs had no NED or NEDs were not in the majority in SOE boards (MPB, 2007).

[59] For example, 78% of CEOs of 102 Korean SOEs were either former government officials (61%) or former politicians (17%) during the period of 1993~1998 (an article in 'State Affairs Briefing', 31/08/2006).

[60] Until 1983, there were no non-executive directors in Korean SOEs, and only after 1983 were NED positions created in 24 SOEs (MPB, 2003).

ante consultations, permissions and reports, conducted by Korea Electric Power Corporation (KEPCO), the biggest SOE in Korea, with various governmental bodies was recorded at 18,239 in 1980 (Song, 1983). Even business trips abroad and overnight duty had to be approved (MPB, 2005). The excessive intervention made the management of SOEs become passive and preoccupied with 'red tape'.

Another problem was uncoordinated supervisions and controls by various governmental bodies. Although the ownership was exercised by the sector (parent) ministries, as seen in the left side of Figure 6.2, the Economic Planning Board (EPB) also had a strong influence via budgeting, the Ministry of Finance (MOF) maintained a tight control on accounting and financial affairs, the National Audit Committee had the power to audit and inspect, and, finally, the Procurement Office intervened in commodity procurement. Unfortunately, however, there was no clear boundary between the controlling entities and, sometimes their supervisions conflicted (Song, 1986; MPB, 2003). In these circumstances, the management of SOEs could not be flexible and creative enough to respond to the rapidly changing economic environment.

6.4.1.1 Government Invested Institutions since 1983

In 1983, the Korean government reformed the corporate governance system, targeting the 24 largest SOEs.[61] The features of the reform can be summarised in four respects. First, the Korean government created a group of SOEs called "Government Invested Institutions" (GII), [62] to which a new common governance system was applied. In the new system, the board of directors of a GII comprised no more than 15 directors, and non-executive director (NED) positions were introduced for the first time to monitor the executives. Further, NEDs were to be the majority of the board. The CEOs of GIIs had to be nominated through a recommendation committee comprising outsiders and NEDs.

Second, GIIs were given a significant degree of autonomy in exchange for undertaking an 'Annual Business Performance Evaluation' (ABPE). For example, GIIs could carry out commodity procurement by themselves and finalise their budge without prior permission from the State. Further, in 1991, it was officially prohibited for the State to appoint incumbent bureaucrats as board members of GIIs in order to increase the autonomy of GIIs.

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[61] The reform was implemented by the Act on the Management of Government Invested Institutions in 1983.

[62] The definition of a GII is "a corporation, more than 50% of whose total share was held by the State, and designated as GII by the State". In 1984, there were 24 GIIs.

Third, the ownership of GIIs was shared by the sector ministry and the EPB. More concretely, the sector ministry had the authority to appoint the CEO and executive directors and the EPB was newly awarded the authority to appoint NEDs and to implement the ABPE.

Finally, a new government committee, called as the Steering Committee on the Management of GIIs, was established as the 'coordinator' of State controls on GIIs within the Korean government. The steering committee, comprising ministers of the sector ministries that shared the ownership of GIIs and a few independent experts, decided and coordinated overall policies on GIIs (see Figure 6.2). The GII scheme formed the basis of the corporate governance of Korean SOEs and remained in effect until 2007.

Figure 6.2: Controlling of GIIs within the Korean government

[Before]   [After]
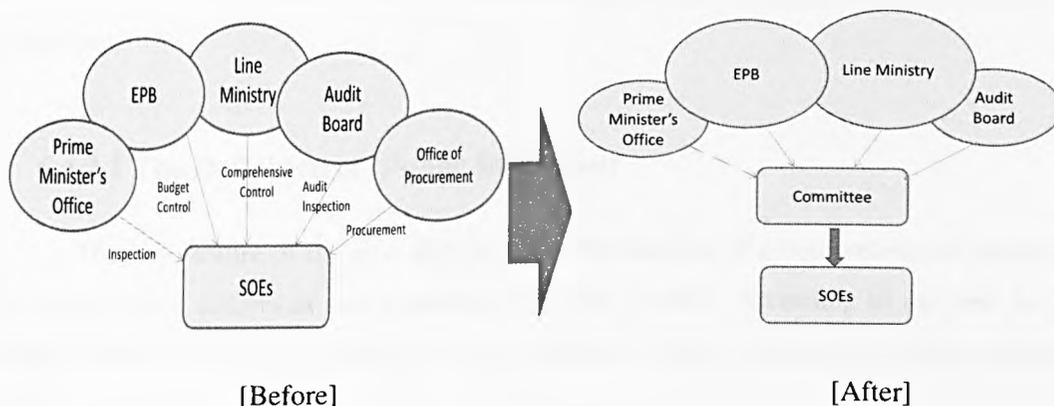
6.4.1.2 Government Affiliated Institutions since 2004

However, the GII scheme applied to only a small fraction (12~24) of Korean SOEs and the corporate governance of the other SOEs remained basically as explained before. In 2003, there was another attempt to reform the SOEs, which resulted in the introduction of the Government Affiliated Institutions (GAI) scheme [63] in 2003 (MPB, 2007). Initially, the Ministry of Planning and Budget (MPB, the successor of EPB) tried to expand the scope of GIIs to include other SOEs, but MPB faced strong resistance from the sector ministries. Therefore, the attempt ended up with the introduction of the ABPE to about 100 GAIs with the other governance mechanisms being virtually unchanged (ibid.). Although the of autonomy of GAIs was far short of that given to the GIIs, the introduction of the ABPE meant

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[63] GAIs were SOEs that met one of the following conditions; i) the State was the largest shareholder; ii) the sum of contribution and subsidy from the State was to be more than 50% of the total organisational income and exceed KRW 5 billion (equivalent to USD 4.8 million).

at least a partial separation of SOE ownership from the industrial policy function (OECD, 2005), which became a stepping stone for further reform in 2007 (MPB, 2007).

6.4.2 The New Comprehensive Governance System: Since 2007

Though about 100 SOEs were newly designated as GAIs and their performance had been annually reviewed since 2004, many fringe benefit-related issues and inefficient aspects of SOEs continued to be criticised by the press and commentators.[64] In 2005, the OECD announced the 'Guidelines on Corporate Governance of State-Owned Assets', which inspired the Korean government to re-start the reform of the SOE sector in 2006 and, as a result, a new comprehensive corporate governance system[65] was enacted in 2007. This sub-section explains the new system, with emphasis on the ownership structure within the government and board of directors.

6.4.2.1 The Definition of 'Public Institution'

The key feature of the new system is the introduction of a comprehensive definition and classification criteria of non-governmental public entities. According to the new Act, a 'Public Institution' (PI) is defined as an organisation that meets one of the following conditions:

- *founded directly by law or the government*
- *the share of subsidy from the government (including income from monopoly status given by the government) is more than 50% of total income*
- *the shares owned by the government or other Public Institutions are more than 30%*

PIs are divided into three sub-categories (see Table 6.1); 'Public Enterprise' (PE), 'Quasi Government Institutions' (QGI) and 'Other' PIs (OPI).[66] PEs are basically large firms operating in the network and infrastructure industries. QGIs are firms conducting government-entrusted tasks such as public fund management, social services and industrial promotion and consulting services, which are not provided by the market, and they are financially more dependent on government subsidy. OPIs are PIs that are not designated as PE or QGIs. Using

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[64] For example, several State-owned financial institutions were criticised as 'work places even God would envy' for the high salaries and fantastic benefits (Newspaper article in Chsun.com, 17/04/2007).

[65] The new system was based on the Act on Management of Public Institutions in 2007.

[66] Following the new system, the GIIs and GAIs were discarded.

this definition and classification criteria, the Korean government designated 297 organisations as 'PIs' in 2007.[67] As seen in Table 6.1, three different governance systems currently apply to PEs, QGIs and PIs respectively. The remaining part of this chapter elaborates on the governance systems, focusing on the ownership structure within the State and board of directors.

Table 6.1: Categories and Governance Systems of Korean Public Institutions

Category	Classification Criteria	Key feature of Governance Arrangements	Number
PE	-More than 50 employees -More than 50% of total income is earned by itself -designated by Minister of Strategy and Finance	- ABPE -Board system 1[**] -CEO and director be open competition and applicants are screened by recommendation committee -external and internal audit system, Audit committee -information disclosure -negative system supervision from government -customer satisfaction survey	24
QGI	-More than 50 employees -Non-PE -Designated by Minister of Strategy and Finance	- ABPE - Board System 2[***] - CEO and director be open competition and applicants are screened by recommendation committee -external and internal audit system -information disclosure -negative system supervision from government -customer satisfaction survey	80
OPI	-PIs not designated as PE or OPIs	-information disclosure -customer satisfaction survey	193

** Board System 1: Executives (appointed by CEO) + NEDs (appointed by MOSF) + (separated CEO and Chairman that applies to 6 largest PEs, otherwise, CEO=Chairman)

*** Board System 2: Executives(appointed by sector ministry)+NEDs (appointed by sector ministry but screened by MOSF), CEO=Chairman

Source : Ministry of Planning and Budget, Republic of Korea, 2007

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[67] Before 2007, nobody knew the exact number of Korean SOEs and how large their expenditure and asset values were. Several surveys showed very different figures. For example, the number of SOEs was 556 in a 2002 survey, 350 in a 2004 survey and 575 in a 2005 survey (MPB, 2007).

6.4.2.2 Ownership Distribution within the State

According to the 2007 Act, the ownerships of PEs and QGIs are shared by the sector ministry and the Ministry of Strategy and Finance (MOSF, the successor of the MPB). The sector ministry holds authority to appoint the CEO of the PEs but the authority to appoint the executive directors of PEs is held by the CEO of PEs. For QGIs the sector ministry still holds the authority to appoint the CEO and all directors. Meanwhile, the MOSF has the authority to appoint the NEDs of PEs and the auditors of PEs and QGIs. In addition, the MOSF is in charge of the ABPE for PEs and QGIs. The ownership of OPIs is solely exercised by the sector ministry.

To coordinate the exercise of the ownership and control of SOEs within the State, the Act created a new committee, the *Steering Committee on the Management of Public Institutions* (hereafter, 'the Steering Committee'), which is the extension of the Steering Committee on GIIs. The Steering Committee comprises vice ministers of the related sector ministries and a few independent experts, and is chaired by the Minister of the MOSF. In addition to the coordinating function, the Steering Committee has the authority to screen the appointment of NEDs of QGIs. Since the committee is chaired by the Minister of the MOSF, the MOSF in fact holds the authority to intervene in the appointment of NEDs of QGIs. In sum, it can be largely said that the sector ministry retains the authority to appoint the executives of PEs and QGIs, while the MOSF holds the authority to appoint NEDs and auditors of PEs and QGIs.

6.4.2.3 The Role of Board of Directors

The board of directors has also changed a lot, which can be represented by the introduction of two different 'uniform' board systems to PEs and QGIs, seen in Table 6.1. Table 6.2 illustrates how significant the changes were by comparing board composition, board responsibilities and authority, using the example of the board of directors of Korean Expressway Corporation (KX) in 1980 and in 2007.

First, regarding the board composition, in both groups of PEs and QGIs, the board of directors should comprise no more than 15 members and the majority should be NEDs. Since many QGIs did not have NEDs until 2007, this was a big change in board composition particularly in QGIs. As mentioned previously, in general, executives are appointed by the sector ministry, while NEDs are appointed by the MOSF. In both cases, the nomination of a

new board member should be conducted by the 'recommendation committee', comprising NEDs and a couple of outsiders. The nomination process allows PEs and QGIs to select best candidates in consideration of their internal managerial issues and environmental issues.

Second, there were also big changes in the responsibilities and authorities of the boards of PEs and QGIs. The boards of PEs and QGIs are currently holding authority to submit a proposal for the dismissal of their CEOs and to require a report from the CEO on a specific issue under consideration. However, their responsibilities also increased: the MOSF currently reviews the performance of individual NEDs. In most cases, the CEO chairs board meetings, but in the six largest PEs board meetings are chaired by the chairman, who is one of the NEDs.

However, for OPIs, there is no uniform board structure as was the case with GAIs. Partly this is because OPIs have wide a variety of organisational forms and legal foundations, but it is also partly due to the resistance from the sector ministries and SOEs that do not want MOSF interference.

Table 6.2: Changes in board of directors of Korean Expressway (KX)

Issues	1980*	2008**
Composition	- CEO and 3 executive directors	-No more than 15 , with NEDs being majority -Executives (no more than 7) -Non-Executives (no more than 8)
Responsibility	-to decide "important" managerial decision	- Business Target, budgeting and business plan - purchase and sales of important asset -long-term debt contract and issue of bond -price of products and services -appropriation of retained earning -investment in other companies -guarantee of debt for other company -changes in the article of association -internal regulations -remuneration policy -other issues proposed by CEO -other issues proposed by directors
Authority	* There was no mention about this.	-Board is able to make recommendation for dismissal of CEO to parent ministry -NEDs can request for audit of specific issue -NEDs can request for information
State Control	-Comprehensive ex-ante control	- issues specified by law

Note: * the Act of Korean Expressway (1980)

** the article number 17 of the Act of Management of Public Institution (2008)

6.5 Summary

This chapter reviewed why board of directors is the key governance mechanism for SOEs and how it contribute to the firms in the context of SOEs. From the agency theory perspective, SOE boards are expected contribute to their firms through monitoring the management. In a broader perspective, however, SOE boards are also expected to add value to their organisations by bringing in external resources and formulating strategy. In section 6.3, I discussed that 'which function will be most visible' depends on the three factors; the existence of alternative institutions, the distribution of ownership within the State and market conditions.

This study is particularly interested in the interaction between PCs as a means of State control and SOE boards, because these two mechanisms have been the most important governance mechanisms for SOEs and can be seen as having similar roles (i.e., monitoring). Therefore, the institutional complementarities between the two can be of interest. So Chapter 7 empirically investigates whether the PC substitutes or complements the board of directors' monitoring roles in the context of Korean SOEs.

To provide more specific background for this empirical study, section 6.4 introduced the corporate governance of Korean SOEs focusing State control and the board of directors. The section also independently provides empirical evidence that the scope and focus of board function have significantly changed in accordance with the changes in the institutional environment. That is, in the early days of industrialisation, the scope of State control was comprehensive and the board of directors was less important but, as the Korean economy matures, the scope of State control has shrunk and the role of SOE boards has significantly expanded, which is consistent with the empirical findings of Lioukas et al. (1993).

Chapter 7 : Do Performance Contracts Substitute or Complement Board of Directors' Monitoring role? : Evidence from South Korean SOEs

7.1 Introduction

Boards of directors have long been at the centre of corporate governance research (Daily et al., 2003) because they are seen as adding value to firms by monitoring management (Fama and Jensen, 1983), bringing external resources (Pfeffer and Salancik, 1978) and formulating corporate strategy (Judge and Zeithaml, 1992). However, 'what actually takes place in boardrooms' has rarely been the subject of empirical study (Daily et al.,2003). To a great extent, this is due to directors not wanting to reveal such information for fear of potential adverse effects on their teamwork, relationships with investors and the risk of lawsuits (Payne et al., 2009; Kesner and Johnson, 1990). Facing the constraint of an absence of data on what occurs in the boardroom, researchers have utilised demographic attributes of board composition (e.g., the ratio of independent directors) as a proxy for 'real' board functions but, so far, the empirical evidence on the relationships between board composition and firm performance is inconclusive (see Dalton and Dalton, 2011).

If researchers were able to access board minutes, such problems would be eased since board minutes have the potential to be informative as to the actions and behaviours of boards. This study seeks to re-investigate the 'board of directors/firm performance' relationships in state-owned enterprises (SOEs) by taking advantage of a unique dataset directly collected from 1,525 board minutes of 170 Korean SOEs. Using this empirical opportunity, we provide new evidence on 'how corporate boards add value to firms' and 'how such a mechanism is influenced by the presence of an alternative monitoring mechanism'; namely, the performance contract with the state (hereafter, PCs) in the context of Korean SOEs.

Given the well known inefficiencies of SOEs (e.g., Shleifer and Vishny, 1996), boards of directors and PCs have been used as two key governance mechanisms for SOEs across countries (Shirley and Xu, 2001) but to the best of our knowledge, few attention has been given to the relationship between these two mechanisms. The relationship could be either 'substitutive' or 'complementary'. If PCs effectively motivate and monitor SOE managers, the need for SOEs boards to monitor managers will be significantly reduced (Baysinger and Butler, 1985; Booth et al., 2002). Therefore, PCs may act as a substitute for monitoring by

SOE boards. Alternatively, PCs may promote internal monitoring by SOE boards. That is, since it is costly for the State to develop dedicated PCs for individual firms (Stigler and Friedland, 1962; Joskow et al., 1993), PCs are typically based on 'best practices' which put great emphasis on effective monitoring for addressing the agency problem and inefficiency of SOEs (e.g., OECD guidelines, OECD, 2005, p. 17). Accordingly, the incentive mechanism of PCs and the reputational concern of SOE directors (i.e., wanting to be recognised by the State as experts in decision control) may encourage SOE boards to engage in more monitoring. Therefore, the effect of PCs on SOE boards' monitoring roles becomes an interesting empirical issue.

To empirically investigate the issue, we use a relatively novel empirical framework grounded on 'Input-Process-Output' (IPO) approach which has rarely been used in corporate board studies (Payne et al. 2009). The framework assumes that SOE boards perform three roles (monitoring, resource provision and strategy formulation) and that the most visible role differs across firms because different firms have different institutional environments and their own internal management issues that necessitate the three board roles to different degrees. Given these, the effects of PCs on the SOE boards/firm performance relationship are analysed in three sequential stages: board composition (input), board process and performance (process), and firm performance (output).

The empirical results support that PCs act as a substitute for SOE boards' monitoring roles. More specifically, we find that in a group of firms that do not undertake PCs, monitoring issues dominate board composition, board process and board performance, which in turn significantly constrain the increase in total expenditure of SOEs. However, in the group of SOEs that mandatorily undertake PCs, such relationships are not observed and, instead, resource provision role (i.e., political role) is more visible.

This study extends the growing literature that investigates 'how corporate boards add value to firms' in following three respects. First, while the conventional empirical approach for investigating corporate boards/firm performance relationship is to directly relate a few attributes of board composition to firm performance, our analysis incorporates board process and board performance. Further, our model integrates agency, resource dependence and service role perspectives to investigate multiple board roles in a model. By doing so, we explain more about corporate board/firm performance relationships and illustrate that the transformation of human capitals individual directors possess into actual board performance is significantly interfered by board process factors such as opportunity and incentive for directors, power relations within the boardroom, board routine and so on.

Second, the current study extends the existing debate over the determinants of corporate governance structure: while some researchers argue that the existing governance structures of a firm are the result of optimal choices of the firm in response to its internal imperatives (e.g., Ward et al., 2009; Baysinger and Zardkoohi, 1986), others argue that the governance structures are the result of institutional pressure that directly coerces firm to adopt a certain structure (e.g., DiMaggio and Powell, 1983; Joskow et al., 1996). Our empirical findings support the former view by showing that SOE boards are more responsive to internal imperatives (i.e., the reduced need for board monitoring due to the presence of PCs) than the institutional pressure of PCs for effective board monitoring.

Finally, the empirical findings provide a policy implication to the regulators of SOEs. The substitutive PCs/board monitoring relationship indicates that regulators may not succeed in improving the monitoring level of SOEs by implementing PCs. It will be better if the two mechanisms are balanced because the potential benefits of board monitoring differ from those of PCs in that the former is 'preventive' and 'comprehensive', while the latter is 'limited' to the scope of performance measures (Holmstrom and Milgrom, 1991) and 'corrective'. Therefore, regulators should thoroughly understand the institutional environment in which PCs are implemented and carefully design PCs not to replace internal monitoring by boards.

The remainder of this paper is organized as follows. Section 7.2.1 reviews the relevant literature on how corporate boards add value to firms and how such mechanisms may interact with environmental factors. Section 7.2.2 briefly introduces PCs and discusses the potential impacts of PCs on the role of SOE boards. Section 7.3 introduces the empirical framework of this study and develops research hypotheses. Section 7.4 explains research methods, sample and variables used in this chapter. Section 7.5 reports the empirical results and Section 7.6 discusses the results and findings, while section 7.7 concludes.

7.2 Theories and Backgrounds

7.2.1 Board of Directors' Multiple Roles

The way in which corporate boards add value to their organisations has long been at the centre of corporate governance research (Daily et al., 2003) with the three dominant perspective being agency theory, resource dependence theory and service role perspective. As discussed in section 6.3, agency theory explains that directors monitor self-interested managers so as not to abuse their managerial power in pursuit of their own interests at the expense of principles' wealth (Jensen and Meckling, 1976; Fama and Jensen, 1983). Hence, agency theory argues that 'monitoring managers' is the role of corporate boards, through which corporate boards improve firm performance.

Resource dependence theory proposes that the corporate board is a vehicle of a firm to manage external dependencies so as to reduce the degree of uncertainty the firm faces (Pfeffer and Salancik, 1978; Hillman et al., 2000). This perspective, therefore, argues that directors are supposed to bring external resources such as encompass information, skills, knowledge, access to key stakeholders (e.g., suppliers, buyers, politicians and bureaucrats), legitimacy, reputation and credibility in order to manage uncertainty (Hillman et al., 2000; Gales and Kesner, 1994; Daily and Schwenk, 1996).

The 'service role' perspective proposes that the most visible board role is in fact to provide 'advice and counsel' to managers (Johnson et al., 1996; Mace, 1971; Lorsch and MacIver, 1989; Hermalin and Weisbach, 1988). Recently, researchers in this perspective pay greater attention to directors' contribution to formulating organisational strategy (Johnson et al., 1996). For example, from their extensive interviews and survey with corporate directors and CEOs, Demb and Neubaucer (1992), find that two-thirds of interviewees and 75% of the survey respondents identified 'setting corporate strategy, overall direction, or mission or vision' as the number one priority in their boards. Judge and Dobbins (1995), and Judge and Zeithaml (1992) find that the degree of directors' engagement in strategy formulation is positively associated with firm performance.

As discussed in Section 6.3, many researchers are recently trying to understand board role as multi-theoretical framework (Roberts et al., 2005; Hillman and Dalziel, 2003; Ward et al., 2009; Daily et al., 2003). They, therefore, understand corporate boards as performing multi-roles (Johnson et al, 1996, p.430); for example, Mace (1971, p.178) finds that directors are performing service role, monitoring the management and crisis management. Demb and Neubaucer (1992)'s extensive cross-national survey reveals that most directors are involved in

setting organisational strategy and monitoring the management. Roberts et al. (2005)'s survey on the directors of UK FTSE 350 firms find that in effective boards, non-executives are also performing multiple roles. In the light of the above and following Hillman et al. (2000), we assume that corporate boards mainly perform three roles: namely, 'monitoring', 'resource provision' and 'strategy formulation',

However, the most visible board role may be differ across firms because of different firms have different 'internal managerial issues' and 'institutional environments' which arguably influence role of the board to different degrees [68] (Johnson et al., 1996, p. 424~5; Byrd and Hickman, 1992, p. 196). Arguably, both 'internal' and 'institutional' factors and their interplay will determine 'which board role dominates' but researchers often ask a question: which factor is more important? (see Hermalin and Weisbach, 1991, p. 102). Some researchers argue that 'internal imperatives' (e.g., prior firm performance, CEO tenure) determine the governance structure of firms (Hermalin and Weisbach, 1998; Ward et al., 2009; Baysinger and Zardkoohi, 1986; Byrd and Hickman, 1992); meanwhile others argue that 'institutional pressures' directly coerce firms to adopt a certain governance structure regardless of internal imperatives (DiMaggio and Powell, 1983; Joskow et al., 1996; Davis, 2005).

A debate over the regulations/governance (in terms of monitoring) relationship can be seen as a good reflection of the two different views. Researchers in the first view argue that regulations substitute for governance because, if regulations effectively limit managers' discretion, the costs of internal monitoring significantly outweigh the potential benefits (Baysinger and Zardkoohi, 1986; Johnson et al., 1996p. 424~5). Since governance mechanisms are costly to maintain (Shleifer and Vishny, 1996; Baker and Gompers, 2003), they argue that it is rational for the boards of regulated firms to engage in other activities such as the political role (Booth et al., 2002) or the strategic role (Johnson et al., 1996). However, researchers of the institutional view claim that regulations complement governance for three reasons. First, regulators focus on the "safety and soundness" of regulated firms rather than shareholder wealth (Joskow et al., 1993) and, accordingly, the cost/benefits of firm level governance mechanisms are less important issue to them. Second, it is also costly for regulators to monitor individual firms (Stigler and Friedland, 1962) and, thereby, they tend to rely on widely accepted 'best practices' and pressure regulated firms to adopt most effective governance mechanisms, regardless of internal imperatives (Becher and Frye, 2011). Third,

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[68] For example, many researchers agree that the service role may be the most visible in firms which experience less need for active board monitoring as a result of strong alternative monitoring forces such as competitive product, managerial market or regulations (Johnson et al., 1996, p. 424~5; also see Byrd and Hickman, 1992, p. 196; Fama and Jensen, 1983).

according to Fama and Jensen (1983, p.315), since directors want to be perceived by the State as experts in decision making control, they have incentives to follow such best practices.

There is a body of empirical studies on the relationship between regulation and governance. For example, Booth et al.(2002) find a significantly negative relationship between board monitoring level (the ratio of outside directors) and insider ownership in non-regulated firms but this is significantly less negative for highly regulated firms (i.e., utility firms and banks). They interpret the less negative relationship as follows: "even as insider ownership decreases (reducing the monitoring activities of manager owners) it is less critical that affiliated and independent outside directors also monitor management activities in banks and utilities because regulators are serving this" (p. 1991). Joskow et al. (1993) and Campbell and Frye (2005) respectively find that CEOs and directors in regulated firms (e.g. banks) receive lower pay and lower incentives than their counterparts in non-regulated firms, indicating that the need of aligning their interests to those of shareholders is reduced due to regulations. In contrast, Adams and Mehran (2003) find boards of regulated firms have a higher degree of independence than non-regulated firms. Hagendorff et al.(2010) find that only in strict regulatory environments does board independence increase bidding bank's returns in European and American bank M&A transactions, which implies a complimentary relationship between board monitoring and regulations. Becher and Frye (2011) find that regulated firms are likely to have a higher ratio of monitoring directors, larger board, and similar levels of trade-off between traditional firm level monitoring mechanisms and inside ownership to those of non-regulated firms—thus supporting complementary effects. These conflicting empirical results leave the regulation/corporate governance relationship and the debate over the determinant of corporate governance structure as inconclusive (Adams and Ferreira, 2006).

Given these, this study investigates whether PCs act as a substitute or complement for the monitoring role of SOE boards in the context of South Korean SOEs. Therefore, the next sub-section briefly introduces PCs and discusses potential impacts of PCs on the multiple roles of SOE boards.

7.2.2 The Effects of Performance Contract on SOE Boards

The PC is a form of contract between SOE manager and the State on organisational goals to achieve, performance measures and incentive payments. It is a variant of the incentive contracts which have widely been used in private sector firms to deal with agency problems between managers and shareholders (Shirley and Xu, 2001; Baker, 1992). In the context of SOEs, agency problems have been argued to be more serious due to the absence of actual owners who have residual claimants over SOEs (Alchian and Demsetz, 1972), vague and multiple organisational goals (Estrin and Perotin, 1991) and unnecessary intervention from bureaucrats and politicians (Shleifer and Vishny, 1996). PCs have been widely used to reduce the agency problems in SOE sector in many countries since the 1980s (Islam, 1993; Shirley and Xu, 2001).[69] Agency theory proposes that, an appropriately designed incentive contract may align the interest of managers to those of shareholders, thereby inducing managers to act in the best interest of shareholders (Jensen and Meckling, 1976). This incentive mechanism also allows the State to do more monitoring of SOE managers because SOE managers should reveal more information on their managerial activities for a higher incentive payment. In addition to the incentive effects, the proponents of PCs (e.g., Jones, 1991; Shirley and Xu, 2001) have argued that PCs can translate the multiple and vague organizational goals into a limited number of tangible goals. Further, they argue that PCs induce SOE managers to resist unnecessary control from politicians and bureaucrats, and encourages the State to give a higher level of managerial autonomy to SOEs, which will allow SOE managers to make more efficient decisions.

Along with board of directors, PCs have been regarded as the most important governance mechanisms for SOEs since market-based governance mechanisms (e.g., takeovers, insider ownership) do not work because the shares of SOEs are typically non-tradable (Shirley and Xu, 2001). However, researchers have rarely given attention to the PC/SOE board relationship. The relationship may provide practical and theoretical implications. First, the relationship may provide important policy implications to regulators of SOEs. That is, 'whether imposing PCs on SOEs can improve the monitoring of SOEs'. If PCs substitute for board monitoring, this implies that regulators may not succeed in improving the monitoring of SOEs through implementing PCs unless PCs offer more effective monitoring than SOE boards do. Even if this is the case, it will be better for the two mechanisms to be balanced because the potential benefits of board monitoring differ from those of the PCs, in

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[69] For example, World Bank finds 565 cases in 32 developing countries (World Bank, 1995), and Shirley and Xu (2001) finds 103,000 cases in the Chinese SOE sector. OECD recently finds that at least more than 10 OECD countries employ PC to manage their SOE sectors.

that the former is *ex ante*, preventive and its scope is comprehensive, while the latter is *ex post*, corrective and the scope is limited to the performance measures of PCs (Holmstrom and Milgrom, 1991). Therefore, regulators should understand the institutional environment (Hermalin and Weisbach, 1991, p. 292) in which PCs are implemented so as not to crowd out internal monitoring by SOE boards.

From a theoretical perspective, an empirical analysis of PC/SOE board relationship can extend the debate over the determinant of governance structure (i.e., internal factors vs. institutional pressure) by providing new empirical evidence. In terms of monitoring, PCs and SOE boards are conducting similar role - albeit the potential benefits are different as discussed above - therefore, there is a possibility that the relationship between the two mechanisms is 'substitutive': that is, if the performance assessment process of PCs effectively limits managerial discretion, and the incentive mechanism of PCs effectively motivates SOE managers to perform better, the need for SOE boards to monitor managers may be significantly reduced. Along the lines of Booth et al. (2002, p. 1991), in such circumstance, it is more rational for SOE boards to engage in other roles such as resource provision (e.g., political role) because the issues significantly matter to the operation of SOEs due to their dependence on the State (Agrawal and Knoeber, 2001). Therefore, PCs may act as a substitute for SOE boards' monitoring. If this is the case, this indicates that SOEs adjust their governance mechanisms in response to their 'internal imperatives' (i.e., the reduced need for monitoring managers).

Alternatively, PCs may acts as a complement to SOE boards' monitoring. Since it is also costly for the State to develop a dedicated PC measures for individual firms (Stigler and Friedland, 1962) and PCs often compare and rate the performance of multiple SOEs in order to create a pseudo-competition between SOEs (e.g., see Propper and Wilson, 2003; Shirley, 1989a), PCs typically have 'common' performance criteria, which are necessarily grounded on widely accepted "best practices" (e.g., see Klages and Loffler, 1998; Perlin et al., 2004; Shirley, 1989a) rather than firm specific issues. Therefore, the incentive mechanism of PCs strongly pressures SOEs to adopt such 'best practices' regardless of internal imperatives. Given the general consensus on the agency problems in SOEs (e.g., Megginson and Netter, 2001; Shleifer and Vishny, 1996), 'effective monitoring' is likely to comprise 'best practice' for SOEs,[70] which in turn pressure SOE boards to engage in effective monitoring. Therefore,

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[70] For example, the OECD Guidelines on Corporate Governance of State-owned Enterprises (OECD, 2005, p. 17) states, "SOE boards should carry out their functions of the monitoring of management and strategic guidance, subject to the objectives set by the government and the ownership entity" (the guideline number VI-B). In the Korean PCs, organisational efficiency is one of the seven

PCs may act as a complement to board monitoring. If it is the case, this indicates that 'institutional pressure' of PCs for effective monitoring outweighs the 'internal imperative' (i.e., the reduced need of monitoring manager).

Given the practical and theoretical needs, we empirically investigate the PC/SOE board relationship. As aforementioned, the theoretical arguments of the regulation/governance relationship can largely be applicable to the PC/SOE board relationship but it is worth noting the differences between regulations in general and PCs. First, Joskow et al.(1993)'s argument, 'the primary concerns of regulators are soundness and safety of regulated firms', does not holds for PCs because the primary focus of PCs is clearly on reducing agency problems and improving the performance of SOEs (Shirley and Xu, 2001). Therefore, PCs may strongly replace SOE boards' monitoring since the two mechanisms are more similar than is the case for regulations-/governance. Second, SOEs are expected to be more 'sensitive' than regulated private sector firms to 'institutional pressure' from the State because of their dependence on the State. In fact, the State is the owner of SOEs and, therefore, the State can hire and fire CEOs and directors of SOEs. Further, the State also provides SOEs with public funds and other types of resources (e.g., monopolistic status in the market). Therefore, PCs may exert stronger pressure than regulations in general, which potentially leads to complementary effects.

In sum, the PC/SOE board relationship becomes an interesting practical and theoretical issue but there is presently no empirical study on this issue. Conceptually, the relationship can be either 'substitutive' or 'complementary'. Given these potentially different relationships, the remaining part of this study is dedicated to an empirical investigation of the issue.

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performance criteria and there is also a performance indicator that measures the activities and the monitoring performance of SOE boards. For more detail, see Chapter 5 of this thesis.

7.3 Framework of Analysis and Research Hypothesis

7.3.1 The Framework of Analysis

To empirically investigate the PC/SOE board relationship, this study utilises a novel empirical model based on the conceptual frameworks suggested by Nicholson and Kiel (Nicholson and Kiel, 2004) and Marks et al. (2001). In most empirical studies on the corporate board/firm performance firm performance relationship, researchers have long been using a few demographical attributes of board composition (e.g., the ratio of independent directors) as proxies of 'true' board functions. Pfeffer (1983) advocates this convention, arguing that directors' beliefs and behaviours can be successfully 'inferred' from such demographic attributes.

As Forbes and Milliken (1999) argue, however, there are two reasons why this convention is no longer convincing. The first is empirical inconsistency. Although a number of empirical studies find significant board composition / firm performance relationships, as many studies find a negative or insignificant relationship (for a detailed literature review on this issue, see Dalton and Dalton, 2011; Johnson et al., 1996). The second is the unrealistic assumption underlying the convention: namely, board members are equally motivated and empowered across the firms (e.g., Jensen and Meckling, 1976; Pfeffer and Salancik, 1978). However, the transformation of individual human capital individual directors possess into actual board activities is subject to many interfering factors: opportunities, incentives, resources, power, information, routines etc. (Forbes and Milliken, 1999; Payne et al., 2009). Therefore, a growing number of researchers agree that the 'black box' of actual board activities should be opened to enhance our understanding of 'how corporate boards add value' by incorporating board process into empirical analysis (Weisbach and Hermalin, 2003; Forbes and Milliken, 1999; Payne et al., 2009; Pettigrew, 1992; Roberts et al., 2005; Nicholson and Kiel, 2004).

In order to respond to such an imperative, several conceptual models have been suggested (e.g., Hillman and Dalziel, 2003; Nicholson and Kiel, 2004; Forbes and Milliken, 1999). However, to the best of our knowledge, there are only a few empirical studies on corporate board/firm performance firm performance that explicitly incorporate board process (e.g., Payne et al., 2009; Westphal, 1999), which is, to a great extent, due to the limited access researchers have to 'what takes place in boardroom' (Daily et al., 2003). For individual directors, revealing such information may result in aggravating social relations with investors or with other directors (Kesner and Johnson, 1990).

The empirical framework of this study is based on the conceptual model of Nicholson and Kiel (2004) but significantly modifies it to have clearer insights into the board/firm performance firm performance relationship. The framework clearly incorporates board processes, which is possible through taking advantage of a unique data set collected from board minutes of Korean SOEs. The construction of the framework begins with understanding a board of directors as a 'team', comprising individual directors, each of whom "brings unique skills and backgrounds but must work together" (Payne et al., 2009, p. 707). Second, following the literature of team effectiveness (Mathieu et al., 2008; Cohen and Bailey, 1997) and a number of authors such as Payne et al. (2009) and Nicholson and Kiel (2004) who apply the team effectiveness literature to corporate boards, board performance is assumed to be determined by team 'input', team 'process' and some contingent factors.[71] Therefore, as seen in Figure 7.1, the board/firm performance relationship is analysed in three sequential stages: board composition, board process and performance, and firm performance stages.

7.3.1.1 Board Composition

Board composition can be seen as selecting which types of human capital (knowledge, skills, expertise and background etc.) to use in a corporate board (Weisbach and Hermalin, 2003; Fama and Jensen, 1983; Hillman, 2005). For a corporate board to perform a task, the board needs 'right' members who possess an appropriate human capital for the given task (Brandon and Hollingshead, 2004; Defond et al., 2005). Therefore, board composition is necessarily related to what types of tasks boards should perform (Baysinger and Butler, 1985). Since we assume that corporate boards conduct three tasks, i) monitoring, ii) resource provision and iii) strategy formulation, board composition is conceptualised as comprising the three corresponding dimensions.

First, the 'monitoring' dimension of board composition is represented by the ratio of monitoring directors. The finance literature conventionally views that the monitoring role is conducted by independent directors and, thereby, claims that a corporate board with more independent directors is likely to perform more monitoring (Fama and Jensen, 1983; Jensen and Meckling, 1976), which will ultimately improve firm performance (Cornett et al., 2009). Conversely, Hermalin and Weisbach (1998) and Ward et al. (2009) argue that firms that recently experienced poor firm performance increase the ratio of monitoring directors because the poor performance indicates inefficient management, which require more monitoring. If we

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[71] This approach is the Input-Process-Output (IPO) approach (see Payne et al., 2009)

consider the well recognised inefficiency of SOEs due to the prevailing agency problems, the arguments also hold in the context of SOEs.

Second, the 'resource provision' dimension of board composition is represented by the ratio of political directors (i.e., former bureaucrats and politicians). The resource provision role can only be performed by directors who have a capacity to bring linkages to external resources (Pfeffer and Salancik, 1978). The resource dependence literature argue that in some industries where government regulations significantly matter (e.g., sales to the government, exports, competition etc.), firms can create linkages to the government and increase the bargaining power with the incumbent bureaucrats and politicians through 'co-opting' former bureaucrats and politicians as their directors because they have the potential to exert their social ties with the incumbents and knowledge in decision making in the government for the firms (Lester et al., 2008; Agrawal and Knoeber, 2001; Hillman, 2005). Indeed, Hillman (2005) and Agrawal and Knoeber (2001) respectively find empirical evidence that highly regulated firms have more former politicians as directors than less regulated firms, and Hillman (2005) find that firms with more political directors tend to perform better in regulated markets. The arguments and empirical evidence can be generally applicable to the context of SOEs because the State bureaucrats and politicians appoint CEOs and directors of SOEs as owner and significantly influence the operation of SOEs through the implementation of regulations and industrial policies.

Figure 7.1. : The Conceptual Framework of Analysis in This Study
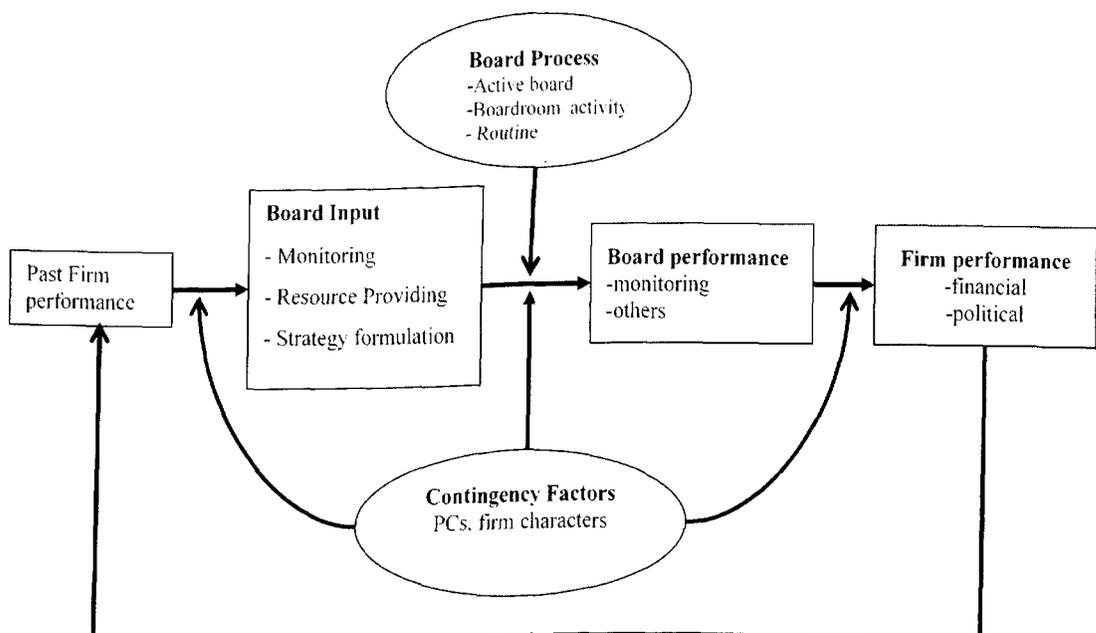
Third, the 'strategic role' dimension of board composition is represented by board diversity. Grounded on the literature of organisational studies, a body of governance literature claims that a highly diversified corporate board provides a variety of different perspectives, enhances the search for information and the quality of brainstorming, which generates more strategic alternatives and better firm performance (Kim et al., 2009; Forbes and Milliken, 1999; Forbes, 1998; Erhardt et al., 2003). Conversely, it can be reasonably argued that firms in highly uncertain markets may require a highly diversified board (Mintzberg, 1983; Goodstein et al., 1994).

Given these, we assume that corporate boards are composed in response to 'internal imperatives' and 'external factors' because the tasks SOE boards should perform may differ across firms due to these factors. Particularly, we are interested in the effects of poor prior firm performance on the three dimensions of board composition. As previously discussed, Hermalin and Weisbach (1998) and Ward et al. (2009) argue that poor prior firm performance increases shareholder concerns with their invested assets, which will pressure the firm to have more monitoring directors. However, the argument can be valid only if monitoring role is required to address the poor performance. If resource provision or strategic role is more important and demanded to address poor firm performance, SOE boards should do these tasks. Therefore, we extend the arguments to resource provision and strategic roles of SOE boards. That is, if resource provision is the most visible and required role to address poor prior firm performance, SOE boards are expected to increase the ratio of political directors. Similarly, if strategic role is most visible and required role to address poor prior firm performance, SOE boards are expected to increase board diversity.

7.3.1.2 Board Process and Performance

In this stage, board performance is assumed to be determined by the three board composition factors discussed above, board process and contingency factors. The transformation of individual human capital individual directors possess into actual board performance is subject to many 'intervening' factors: namely, opportunities, incentives, resources, power, information, routines etc. (Forbes and Milliken, 1999; Payne et al., 2009; Nicholson and Kiel, 2004). Nicholson and Kiel (2004) make a long list of such factors but to simplify the empirical model, we conceptualise 'board process' across three dimensions: i) 'active board', ii) boardroom activity, iii) quality of board meeting routines.

First, a growing number of researchers agree that an 'active board' is a precondition for an effective utilization of director's human capital (Payne et al., 2009; Ward, 1988; Millstein and MacAvoy, 1998; Van den Berghe and Levrau, 2004). For instance, if board members meet frequently, they are likely to interact more often (Payne et al., 2009; Brown, 2005) and share more updated information (Pearce et al., 1991), generating better board performance such as screening earnings management (Xie et al., 2003), which will ultimately contribute to firm performance (Vafeas, 1999; Millstein and MacAvoy, 1998). Therefore, to be an effective board, board members should meet frequently and they should attend at the meeting (Van den Berghe and Levrau, 2004). To promote board members actively attending meetings, an appropriate incentive should be given (Adams and Ferreira, 2006; Hillman and Dalziel, 2003). Accordingly, we capture the 'active board' dimension via 'frequent meetings', 'high attendance rates' and 'incentives' for board members.

Second, to be effective, corporate boards should be also 'active within the boardroom'. "Real, open and in-depth debates are essential for an effective board" because NEDs are supposed to obtain information and learn about their firm through discussion with executives and CEOs within the boardroom (Van den Berghe and Levrau, 2004, p. 465). In terms of monitoring, however, an 'active board' may not be active 'within the boardroom' because, "powerful social and psychological factors are thought to compromise their (i.e., NEDs), willingness and ability to objectively monitor managerial performance" (Westphal, 1999, p.8). For example, CEOs can utilise their influence over the director selection process to make NEDs passive by favouring the nomination of individuals who have close social ties with them (Hermalin and Weisbach, 1998). Johnson et al.(1993) and Wade (1990) argue that the board nomination itself creates a strong social tie between the management and NEDs. According to them, conferring a directorship on an individual necessarily involves awarding prestigious social status, financial rewarding and prerequisites, and, therefore, "given the

social norms of 'reciprocity, NEDs tend to feel socially obligated to support the management who favoured their appointment." Therefore, boards with close social tie between NEDs and the executives may not be effective in terms of monitoring. Such boards are more likely to engage in the political (Hillman, 2005) or service roles (Mace, 1971) rather than monitoring, which often take place 'behind the scene' or 'outside the board room' (Pettigrew and McNulty, 1995, p. 857). Hence, Van den Berghe and Levrau (2004) argue that discussions must take place 'inside the boardroom' and not 'behind the scenes'. To ensure that, they claim, it is essential that each director should have the opportunity to speak up freely. Obviously, the chairman should ensure this via his role/position. However, if the board meeting is chaired by the CEO (i.e., CEO-chairman duality), it is likely to lead to a concentration of board power that impairs effective board monitoring (Fama and Jensen, 1983). So we feature the dimension, 'boardroom activity', as 'active discussion within the boardroom' and 'powerful non-executives'.

Third, researchers generally agree that 'how board meetings are planned' and 'how agendas are structured' may significantly influence board performance (Forbes and Milliken, 1999; Nicholson and Kiel, 2004; Payne et al., 2009; O'Neal and Thomas, 1996). For instance, researchers generally agree that enough 'time' should be given to directors before a board meeting to let them understand the meaning and impacts of the managerial proposals that will be discussed in the boardroom (O'Neal and Thomas, 1996). Therefore, board meetings should be carefully planned to provide directors with enough time (Bainbridge, 2002, p.47). Further, typically, board members are very busy due to their talent, knowledge and skills (Ferris et al., 2003; Useem, 1979). Herman (1998, p. 157) finds that in non-profit organizations, directors usually have more social status. To effectively utilise human capitals individual board members possess, the managerial proposals should be well structured (Van den Berghe and Levrau, 2004) in order for board members can review related issues at the same board meeting. This is also beneficial for directors because it saves their most precious resource, time. Given these, we feature the dimension, 'quality of board routine', as 'carefully planned board meetings' and 'well structured agendas'.

7.3.1.3 Firm Performance

As a final stage, firm performance is expected to be determined by board performance, board process and board input factors. If monitoring is the most visible board role, more monitoring directors, better board process factors and more monitoring performance should have positive associations with firm performance. If political or strategic roles are more important issues in boards, more political directors, higher board diversity and better board process factors will have positive associations with firm performance.

We believe this framework and the variables of the current study overcome the two critical problems of the a few existing empirical studies that incorporate board process. To overcome the limited access to board process data, these studies obtain board process and board performance variables from survey data (e.g., see Payne et al., 2009; Cornforth, 2001; Pearce et al., 1991; Zona and Zattoni, 2007). A critical problem with using survey data for corporate boards/firm performance analysis arises when researchers try to match organisational level data (i.e., firm performance) to individual level data (e.g., survey data for board effectiveness or performance). To achieve reliable analysis, survey data should be obtained from multiple directors per firm because individual directors of the same firm may have different opinions on 'how effective their board is' (Bertrand and Mullainathan, 2001). Therefore, only when a significant level of consistency among multiple directors per firm is assured, can 'board performance' and 'firm performance' be matched. However, survey-based empirical studies typically lack such reliability. For example, Payne et al. (2009) use only one survey response per firm to measure board effectiveness of a firm and directly relate the survey results to firm performance data. Accordingly, the meaning of the empirical results is open to question.

Due to this problem, most empirical studies investigate only 'whether certain board practices improve board effectiveness', not investigating 'whether the board effectiveness improves firm performance' (e.g.,Cornforth, 2001; Zona and Zattoni, 2007) or just use firm performance as a proxy for board effectiveness, assuming that board effectiveness improves firm performance (e.g., Pearce et al., 1991). In both cases, however, it is ambiguous whether 'board effectiveness' really improves 'firm performance'. The framework of the current study is designed to utilise objective group level data to measure board performance and distinguish 'board (monitoring) performance' and 'firm performance' to test their relationship.

7.3.2 Research Hypotheses

7.3.2.1 PC Effect on Board Composition

In the group of firms that do not undertake PCs (hereafter, 'non-PC firms'), it is expected that after the period of poor performance, firms increase the ratio of monitoring directors to address the issue of poor performance because the State's concern with managerial inefficiency in the firms increases, which calls for an increased level of internal monitoring (Ward et al., 2009).

However, in the other group of firms that undertake PCs (hereafter, 'PC firms'), there may be little need for even poorly performing firms to have more monitoring directors due to the presence of PCs. Hence, along the lines of Booth et al. (2002), we expect that poorly performing PC firms increase political directors (Hillman, 2005) or board diversity (Kim et al., 2009) to deal with poor performance. These lead to the first hypothesis, which states,

> H1a: in non-PC firms prior poor performance drives the firms to have a higher ratio of monitoring directors; in PC firm prior poor performance drives the firms to have more diverse boards and/or more political directors.

Alternatively, PCs may pressure poorly performing firms to adopt 'best practices' and, as discussed previously, 'best practices' for SOEs arguably comprise a higher level of monitoring. Further, SOE managers may wish to be recognised by the State as 'sound' managers (Hagendorff et al., 2010; Baxter, 2003) and poor performance may undermine their reputation. In such circumstances, they may not run the risk of being criticized for having fewer monitoring directors regardless of internal imperatives. Hence, an alternative hypothesis states,

> H1b: in both groups of firms, prior poor performance drives SOEs to have a higher ratio of monitoring directors.

7.3.2.2 PC Effect on Board Process and Board Performance

In non-PC firms, we expect that boards with more monitoring directors produce better monitoring performance (Fama and Jensen, 1983). In addition, we expect better board process (i.e., more active boards, more boardroom activity and better board routines) contribute to generating better board monitoring performance.

If PCs substitute for board monitoring, in PC firms such relationships may not be observed. The reason is that since monitoring is not an important issue in the boardroom, directors are likely to engage in political or strategic roles and, accordingly, board activity, discussion within the boardrooms and board agendas will be focused on such issues rather than monitoring. Therefore, the ratio of monitoring directors, better board process may not have positive association with board monitoring performance. Alternatively, if PC complements board monitoring, in PC firms we may observe significantly positive relationships from the ratio of monitoring directors and board process factors to board monitoring performance. Hence, the second hypothesis states,

H2a: while in non-PC firms, the ratio of monitoring directors and three board process factors have significantly positive associations with board monitoring performance, in PC firms, such significant effects are not observed.

H2b: in both non-PC and PC firms, the ratio of monitoring directors and three board process factors have significantly positive associations with board monitoring performance.

7.3.2.3 PC Effect on Board Performance/Firm Performance Relationship

According to agency theory, more monitoring performance should contribute to generating better firm performance (Jensen and Meckling, 1976). Hence, in non-PC firms we may observe that more monitoring directors, better board process and more monitoring performance have positive associations with firm performance.

However, if PCs substitute for board monitoring, such relationship may not be observed in PC firms. Alternatively, if PCs complement board monitoring, we may find similar positive associations found in non-PC firms. Formally, the third hypothesis state,

H3a: while in non-PC firms, the ratio of monitoring directors, board process factors and board monitoring performance have significantly positive associations with firm performance, in PC firms, such associations are not observed.

H3b: in both non-PC and PC firms, the ratio of monitoring directors, board process factors and board monitoring performance have significantly positive associations with firm performance

Collectively, the above three hypotheses (and their alternatives) are used to test whether PCs act as a substitute or complement for SOE boards' monitoring roles in the context of SOEs.

7.4 Method

To test the hypotheses developed in the previous section, following Baron and Kenny (1986) and Payne et al.(2009), a hierarchical multiple regression method is used. Since PCs may systematically affect various board factors and firm characteristics, the regression equations are estimated separately for two groups, PC firms and non-PC firms. To avoid any possible impact from heteroscedasticity problems, robust standard errors are used in the hypothesis testing. The explanatory power of the regression models is assessed using R^2 values and the difference between the R^2 value of the model under consideration and the R^2 of its corresponding baseline model that incorporates only conventional board composition and control variables. To simplify the model and to avoid any perverse effects from multi-collinearity between independent variables, we extract principal factor scores from the original board process variables by conducting exploratory factor analyses and utilise the factor scores instead of correlated raw board process data in the regression equations.

7.4.1 Sample and Data Collection

The data of this study are obtained from the All-Public Information-In-One (called *ALIO*) website which officially discloses the organisational information of South Korean non-governmental public organisations, called as *Public Institutions.* According to the *Act on Management of Public Institution of* 2007, a Korean *Public Institution* (hereafter, PI) is legally defined as organisations that meet the conditions in section 6.4.2.1.

All Korean PIs should disclose 34 items of corporate information on *ALIO*. The 34 items include organizational information (13 items), financial and non-financial performance (10 items), special or periodical reports from the internal auditing unit, external auditing firms, National Audit Office and other governmental bodies (6 items), board minutes and others (5 items). Every item of information disclosed on ALIO should cover at least the five most recent years except organizational information. We collected all financial and governance data from this website.

Of the 298 PIs listed on the *ALIO website* in 2008, 170 PIs that are in corporate forms (i.e., state-owned enterprises) are included in the sample. The other 127 organizations are excluded because i) they are public research institutes or national universities for which financial performance is not an appropriate measure of organizational performance; ii) they do not have boards of directors as an internal governance mechanism; iii) they are small organizations with less than 10 employees. The descriptive statistics of the 170 sample firms are presented in Table 7.1. Sample firms can be largely grouped into three industrial groups;

utility, financial and service firms. The three groups are different in many respects. Utility companies (n=34) are biggest in terms of employees but second in asset size. About 10% of their total expenditure comes from the Korean state. Financial institutions (n=25) are biggest in terms of asset size but second in the number of employees. Financially they are the most independent (subsidy/total expenditure=6%, see column 5). Firms in the service industries (n=111) are relatively small both in asset size and the number of employees. They provide various services such as industrial consulting and social services. Largely, they are in deficit and financially more dependent on the State (subsidy/total expenditure=33%) than the other two groups. The debt/asset ratios of the three groups are similar (around 50%, see column 4). However, as seen by the standard deviations, even within each groups, there is a wide variation across firms.

Table 7.1: Descriptive Statistics of Sample firms

Industry	Asset*	Employee	Debt/Asset	Subsidy/ Total Expenditure	ROA(%)	Number of Firms		
						PC	Non PC	Total
Utilities	117	3,237	0.52	0.11	1.31	24	10	34
	(175)	(6,633)	(0.34)	(0.19)	(5.41)			
Financial	174	2,048	0.55	0.06	2.09	17	8	25
	(408)	(3,038)	(0.43)	(0.12)	(8.88)			
Service	1.9	710	0.53	0.33	-4.11	36	75	111
	(5.5)	(1,035)	(0.34)	(0.36)	(6.14)			
Total						77	93	170

Note1.: Figures are mean (standard deviation) of each variable during the calendar year of 2008.

Note2. : Figures in asset column are in 100 billion Korean won, which is equivalent of 110 million US dollars.

Of the 170 sample firms, the Korean state annually reviews the performances of 70 firms, using seven performance criteria: *leadership, strategy, organizational management, business process, customer satisfaction, key business outputs, and organisational efficiency.* This program is the Korean version of PCs, called the 'Annual Business Performance Evaluation' (ABPE). All firms that mandatorily sign on the ABPE are included in the sample referred to as "PC" firms (see column 7 of Table 7.1).

The governance variables used in this study are collected as follows. First, to analyze board composition, the occupational backgrounds of 1,801 individual board members of the sample firms in the 2008 calendar year are obtained from *ALIO* website. Second, to precisely analyze actual board activities, we analyze the minutes of 1,525 board meetings of the sample firms which took place during the year, 2008. However, since the guideline for disclosure of

board minutes was somewhat vague, 40 firms in the sample only disclosed the summaries of board minutes. Hence, for those firms, the data for boardroom activity was not obtained. The sample firms' financial and firm characteristic data cover the period of 2005~2009 to reduce any possible year-specific effects.

7.4.2 Variables of Interest

7.4.2.1 Board Composition

To represent the three dimensions of board composition (i.e., monitoring, resource providing and strategic roles), the ratio of monitoring directors, the ratio of political directors and board diversity are used. To obtain the three variables, the current study uses a taxonomy in Table 7.2 to categorize 1,801 individual board members of the sample firms into one of the five categories based on their occupational backgrounds. The taxonomy is a modified version of Hillman et al (2000) which classifies board members into four groups, based on the types of resources they are likely to provide: those are *insiders, outside business experts, support specialists*, and *community influentials*. Our taxonomy in Table 7.2 differs from Hillman et al.(2000) in following aspects.

First, as Brown (2005, p.322) argues, in the public organization context, "agency theory might be explained by adherence to the mission or purpose" initially imposed on the organizations. This leads SOE boards' responsibilities to include not only 'financial monitoring' but also various types of 'non-financial monitoring' such as ensuring that the organisation does not diverge from its original mission (Chait et al., 1991; Sasso, 2002; Brown, 2005). We accordingly categorize board members, who are likely to perform 'non-financial monitoring' as well as 'financial monitoring', as 'monitoring directors'

Second, in Hillman et al.(2000), political leaders and academics are categorised into community influentials, who are supposed to provide non-business prescriptions and legitimacy. However, in the SOE context, politicians and former bureaucrats are typically chosen by SOEs as board members in an effort to secure more governmental resources and increase the negotiation power with the incumbents. Hence, we classify former bureaucrats and politicians as 'political directors.'

Further, we distinguish two types of academics: context-specific experts (e.g., a professor in health care as a board member in a health care service organisation) who are expected to provide 'non-financial monitoring', and general experts (e.g., professor in business strategy, finance or accounting) who are supposed to support managers by providing expertise on general management issues. Hence, while the former case is included in 'monitoring directors', the latter case is grouped as 'support specialists'. The other categories, 'Support specialists', 'Business experts' and 'Insiders' are identical to those of Hillman et al.(2000).

Table 7.2: Taxonomy of Board Members Used in This Study

category	Occupational background	Expected contribution
Monitoring Directors	Leaders of NGOs	Financial and non-financial monitoring
	Journalists from Mass Media	Non-financial monitoring
	Stakeholder Representatives	Financial and non-financial monitoring, Representing interest groups
	Context Specific Experts (e.g., context specific academics)	Non-financial monitoring, Legitimacy
	Shareholder Representatives	Financial monitoring
	Current Bureaucrats	Financial and non-financial monitoring, Resource providing, legitimacy, strategic role
Support Specialists	Consulting Firms	Providing specialised expertise on law, accounting, finance etc.
	General Experts (e.g., academics in management)	Business strategy developing, Advising and counselling on managerial issue
	Banker	Securing financial resources from financial market
Business experts	Current or Former Directors of other Private Firms	Business strategy developing, Advising and counselling on market issues
	Other SOEs	Advising and counselling on governmental issue, legitimacy
Political Directors	Current or Former Politician	Securing external resources, Negotiation power against government
	Former Bureaucrats	Securing external resources, Negotiation power against government
Insiders	Current and Former Employees of the Firm	Firm-specific and context specific knowledge

Based on the taxonomy, the variable, monitoring director *(monitdirect)* is defined as the ratio of directors from the category, 'Monitoring directors' (the 2nd column of Table 7.2). Following Hargendorff et al. (2010), the variable, board diversity *(bdiversity)* is obtained by calculating a Herfindhal-type index, which increases as the level of diversity increases as [1-$(\sum p_i)^2$], where p_i is the ratio of directors in each category i (i=1,2,...5; see Table 7.2) to total board members. The variable, political director *(politidirect)*, is the ratio of directors with significant working experiences in the political area or government (i.e., the fourth category) to total board members.

As noted previously, prior firm performance is expected to be a predictor of board composition. In this study, the prior firm performance is measured by two variables: the change in the return on assets ($\Delta ROA2007\sim6$) and the total expenditure growth rate ($TEGR2007\sim6$) for the period of 2007 ($t-1$)$\sim$2006 ($t-2$). ROA is operating profit divided by average asset size for the period of 2005$\sim$2008. Researchers often use Tobin's q to measure firm financial performance but, unfortunately, this variable is not available in the Korean SOE context because only a small fraction of Korean SOEs are registered on stock markets. We use the measure, $\Delta ROA2007\sim6$, because ROA it is the accounting measure closest to the notion of 'value added' in an economic sense, and the basis of resource allocation in Korean public sector (including SOEs) has long been 'growth rate' rather than 'absolute level' due to the long run and high economic growth.

In addition, we also use the total expenditure growth rate ($TEGR$) of firm as a proxy for 'political' financial performance motivated by public choice theory (Niskanen, 2007; 1971). The theory assumes that bureaucrats try to maximize total budget size because as the budget size increases, so do their private benefits from the budget. In this study, SOE managers are assumed to seek total expenditure maximization, which has the same meaning of budget size of Korean SOEs, for the same reason. As Table 7.1 shows, the Korean SOEs are financially dependent on the State with around 10$\sim$35% of their total expenditures coming from public funds. Thus, for a SOE to increase the total expenditure, bargaining power against bureaucrats and political role are necessary. As is the case with $\Delta ROA2007\sim6$, we use the growth rate rather than the size of total expenditure because of an incremental budgeting process in the Korean government; the starting point of the budgeting process is a SOE's total expenditure growth rate in the last year and this rate is adjusted in consideration of additional needs of the SOE. From an agency theory perspective the increase in total expenditure growth rate can be an indication that agency problems are worsening, meanwhile from a resource dependence perspective, the increase can be understood as indicating that firms are successfully playing a political role.

7.4.2.2 Board Process and Board Performance

To measure 'board monitoring performance', we use the number of amended or rejected proposals by board meetings *(amended)*. Typically, some specific kinds of managerial decisions [72] should be formally ratified by a board meeting because such decisions are likely to adversely affect principals' wealth (for example, consider a disposal of important asset or long-term debt contracts). In Korean SOE context, SOE boards have a statutory duty to officially ratify a number of managerial proposals, related to such activities, through a formal board resolution (the article 17 of the Act of Management of Public Institutions). Therefore, if there is any problem in such managerial proposals, Korean SOE boards should screen it and this board performance is reflected in the variable, *amended*. In obtaining the variable, *amended*, only official managerial proposals are calculated to measure board monitoring performance.

To measure the three dimensions of board process identified in previous section (i.e., 'active board', 'boardroom activity' and 'the quality of board routine'), we use seven variables. First, in previous section, we feature the dimension, 'active board', as 'frequent meeting, 'high attendance rate' and 'incentive' for board members. In the empirical model, the 'frequency of meeting', is measured by the number of board meetings *(bdmeeting)* that held during the year, 2008. The 'attendance rate' is measured by averaging the number of NEDs who actually attend at a board meeting divided by the total number of NEDs when the meeting is held; *attend)*. The 'incentive' is measured by the variable, *assetsize*, which is the natural log of the averaged asset size of firm during the period 2005~2008. While monetary incentive (Adams and Ferreira, 2006) or the percentage of common stock owned by board members (Payne et al., 2009) have often been used in other studies, there are no such mechanisms in the Korean SOEs. In this circumstance, reputational concerns should be a plausible explanation as to 'why board members participate in board activities' (Fama and Jensen, 1983; Adams and Ferreira, 2006). As discussed in section 3.1, all of these variables are expected to have positive association with board effectiveness. [73]

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[72] Table 6.2 in subsection 6.4.2.3 of this thesis lists such activities. Other managerial issues (e.g., organisational strategy) are discussed in a form of 'report' which does not require such formal board resolution.

[73] It should be noted that since these variables are contributing to 'overall' board effectiveness, the variables will have positive associations with 'monitoring' performance only when monitoring is a major issue in boards. Alternatively, if resource provision (political role) or strategic roles are major issues in the boardrooms, they may not have such associations. Hence, positive associations between these variables and 'board monitoring performance' can be an indication that monitoring is major issue in boards.

Next, we feature the dimension, 'boardroom activity', as 'active discussion within the boardroom' and 'powerful non-executive directors'. To measure the quantity of discussions within the boardroom, we use the variable, *'speeches'*, which is the average number of speeches made by NEDs per managerial proposal discussed in the board meetings during the year, 2008. The numbers are calculated by analysing 1,525 board minutes of the sample firms. In calculating the numbers, meaningless conversations and comments (e.g., repeating already spoken ideas, or confirming simple facts) are excluded. We expect this variable has a non-linear relationship with board effectiveness. The presumption is that to a certain degree, more speeches in board meetings may lead to greater board effectiveness since directors may understand more about their firms and managerial issues (Van den Berghe and Levrau, 2004, p. 465). However, over a certain point, it may decrease board effectiveness since too extended discussions within the boardroom implies that directors are not effectively communicating with each other (Bainbridge, 2002, p. 46), which is likely to reduce the quality of decision making. Next, 'the power of NEDs' is measured by CEO-chairman duality (*duality*). It is a dummy variable that takes the value 1 if the chairman is one of NEDs, otherwise (i.e., the CEO chairs the board meeting), 0. It is expected to have a positive association with board effectiveness because if the chairman is separated from the CEO, it is more likely to lead to open and free discussion within the boardroom, which improves board monitoring performance (Fama and Jensen, 1983) as well as overall board effectiveness (Zona and Zattoni, 2007).

The third board process dimension, 'the quality of board routine' features 'carefully planned board meeting' and 'well structured agenda'. To measure the degree to which board meetings are carefully planned, the number of 'written board meetings' (*wmeeting*) held in the year, 2008, is used. The term, 'written-meeting', refers to a board meeting held in a form of absentee voting where all board members have to exercise the right to express their opinions on the proposals under consideration in writing. The written meeting is typically held if it is difficult to find an appropriate time for the majority of directors to attend at the meeting but managerial proposals under consideration should be quickly ratified. If the board meetings are planned in advance and notice is given to directors to arrange their schedules, there will be little need of written meetings (O'Neal and Thomas, 1996). Further, since a written meeting prevents directors from effectively communicating their opinions with other directors within the boardroom, it necessarily decreases the quality of decision making (Bainbridge, 2002, p. 46). Therefore, a large number of written meetings is an indication of 'bad board routine', being expected to have a negative association with board effectiveness. Next, to measure the degree to which 'agenda are well structured', the average number of managerial proposals per

board meeting (*ppmeet*) during the year, 2008, is used. If board members can review the related issues at the same time, the quality of decision making will increase.[74]

The quality management literature argues that practices that determine organisational effectiveness are typically inter-correlated (see Dijkstra, 1997; Bou-Llusar et al., 2009). For instance, in our case, if a board meets frequently (*bdmeetings*), the NEDs of the board are more likely to have better attendance record (*attend*) because they have more opportunity to engage in the board activities and to communicate with each other, which is likely to result in more speeches (*speeches*) in the boardroom. As seen in the Table 7.3, such relationships can be illustrated by relatively high correlations between the seven variables. Therefore, if these variables are directly used in regression equations, there might be some multi-collinearity problems.

Table 7.3. Correlation Matrix of the Seven Board Process Variables

	assetsize	*bdmeeting*	*attend*	*wmeeting*	*ppmeet*	*speech*
assetsize	1					
bdmeeting	0.6195**	1				
attend	0.3723**	0.3926**	1			
wmeeting	-0.0009	0.2502**	-0.0744	1		
ppmeet	0.0977	-0.126	0.1121	-0.1415	1	
speech	0.3320**	0.3950**	0.1823**	-0.0672	0.0551	1
duality	0.0082	0.0078	-0.2753**	-0.0943	0.1292	0.3982**

Note. The correlation coefficients with star (**) indicate that they are significant at 5% level.

To avoid the problems and to simplify models, we conduct an exploratory factor analysis and, accordingly, three principal factors are extracted from the seven original board process variables.[75] As seen in Table 7.4, the first factor mainly comprises the variables, *bdmeeting*, *attend* and *assetsize*. Accordingly, the factor is named as 'active board' (*activeboard*) which is conceptually identical to the 'board activity' dimension. The second factor primarily consists of the variables, *speeches* and *duality*, and, therefore, the factor is named as 'boardroom activity' (*bdroomact*), which is conceptually identical to the 'boardroom activity' dimension. Following the presumption of non-linear relationship between the variable, *speeches* and

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[74] Too many agendas for one board meeting may decrease the quality of decision making because directors may not exert due care for each agenda. Therefore, we expect that the variable, *ppmeet*, had a non-linear relationship with board effectiveness. However, an initial regression results did not show non-linear relationship.

[75] The exploratory factor analysis is a statistical method used to examine principal factors that underlie multiple observed variables that have correlations among them (Jolliffe, 2002). From the correlation matrix of the observed variables (Table 7.3), principal factors and factor loadings can be obtained. (For more detail, see Appendix). In this study, principal factors with Eigen-value greater than 1 are extracted (Suhr, 2005).

board effectiveness, we hypothesise a non-linear relationship between the 'board room activity' (*bdrooomact*) and board effectiveness. The third factor comprises the variables, '*wmeeting*' and '*ppmeet*' and, accordingly, we name this as 'the quality of board routine' (*routine*), which is also identical to the dimension, 'the quality of board routine'. Since the three factors are obtained using the rotation method that generates orthogonal factors, there is no correlation between them (Suhr, 2005) but the factors collectively explain 70% of the total variances of the seven original board process variables. Using the principal factors, factor scores for individual firms are estimated[76] and, finally, the factor scores are used in multiple regressions (DiStefano et al., 2009) as the predictors of the board performance instead of the seven raw board process variables.

Table 7.4: The Factor Loadings of Principal Factors on the Observed Variables

Raw variables	*actboard* (factor1)	*bdroomact* (factor2)	*routine* (factor3)	Uniqueness [a]
assetsize	**0.840**	0.092	0.167	0.258
attend	**0.749**	-0.321	0.225	0.286
bdmeeting	**0.845**	0.189	-0.302	0.159
speeches	0.468	**0.673**	0.001	0.328
duality	-0.069	**0.898**	0.090	0.182
wmeeting	-0.015	-0.034	**-0.782**	0.388
ppmeet	0.017	0.142	**0.692**	0.501

Note a : uniqueness means the amount of the variance of the observed variable unexplained by the three factors. This can be interpreted as measurement error (Suhr, 2005).

7.4.2.3 Firm Performance

The performance of a sample firm is measured by two variables: the change in return on asset (ΔROA) and total expenditure growth rate (*TEGR*). These are obtained in the same ways as explained above but for different periods. Since it may take time for the performance of boards to be captured by actually firm performance data (Bhagat and Black, 2001), we calculate the two firm performance variables for the *year, t*, (i.e., ΔROA *2008~7* and *TEGR2008~7*) and for the *year t+1*, (i.e., ΔROA *2009~8* and *TEGR2009~8*).

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[76] The method is 'regression method' which estimates the factor scores of individual firms, using the following equation: $\hat{F} = X\hat{B}$, where $\hat{F}$ denotes the matrix of estimated factor scores, X denotes the matrix of the observed variables, and $\hat{B}$ is the matrix of the regression coefficients used to estimate factor scores, which can be estimated from $\hat{B} = (X'X)^{-1}L$, where L denotes the matrix of the factor loadings of the observed variables (i.e., Table 7.4 is L matrix) (see DiStefano et al., 2009)

7.4.3 Control Variables

A number of additional governance and financial variables are used as controls. The financial dependence of a SOE on the State (*fdepend*) is calculated by averaging the ratio of subsidy to total expenditure of a firm for the period 2005-2007. We expect that public organizations are likely to have a higher proportion of political directors if the financial dependence of the firm is greater. The financial structure (*finst*) is the average ratio of debt to assets of a firm for the period of 2005-2007. If a SOE is heavily indebted, the firm is more likely to come under pressure from bureaucrats to have higher levels of board monitoring. The variable, *lnfirmyear* is the natural logarithm of firm age. Well established long-lasting firms are expected to have larger boards and greater diversity in board composition. The variable, *lnemploy*, (the natural log of the number of employees of a firm) is used as a proxy for the size of the firm. Large firms are likely to have large boards and greater board diversity.

Political CEO is a dummy variable that takes the value 1 if CEO has significant working experience in political or governmental areas, otherwise, 0. Since political CEOs and political directors have similar career paths, political CEOs may prefer political directors because they are likely to be more knowledgeable of the CEO's decision making style and share common views in many respects (Judge and Dobins, 1995). The variable, *boardsize*, is the number of total board members of a firm. Large boards are likely to have more diverse members, which ultimately increases the ability of the boards to bring external resources (Pfeffer and Salancik, 1978) or to successfully perform multiple roles (Payne et al., 2009, p. 718), which may improve board effectiveness and firm performance (Daily et al., 2003; Dalton et al., 1999). It is also related to power relations between directors and CEO. While some researchers (e.g.,Mintzberg, 1983) argue that in large boards, CEOs can easily gain power over directors through 'selective channelling of information' and 'coalition building', others such as Pearce et al. (1991) and Ocasio (1994) argue that in large boards, directors are also able to easily generate alternative political coalition against CEOs, which making large boards less susceptible to managerial domination than smaller boards. Therefore, we expect that a larger board has more diverse directors, more power and higher capacity in both monitoring and other roles than smaller boards, which may lead to better firm performance. We also add industry dummies for two groups—utility (*utilityind*) and financial (*financial ind*)—hence, the service industry is a control industry—to capture any possible effects from differences in the types of production functions, industrial regulations and other unobserved factors that might impact on board functions. All of these control variables are included in the three stages of estimation. Table 7.5 shows the descriptive statistics and correlation matrix of the variables used in the empirical analysis.

	Mean	Std.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
\ROA2007~6	0.064	0.817	1														
TEGR2007~6	0.200	0.430	-0.047	1													
monitdirect	0.279	0.205	-0.111	0.185*	1												
politicdirect	0.211	0.164	0.024	-0.043	-0.441*	1											
bdiversity	0.586	0.154	0.088	-0.043	-0.321*	0.233*	1										
activeboard	0.000	1.000	0.021	-0.079	-0.360*	0.282*	0.505*	1									
bdroomact	0.000	1.000	-0.115	-0.033	0.096	-0.025	0.005	0	1								
routine	0.000	1.000	0.051	0.069	0.105	-0.079	0.152	0	0	1							
lnemploy	6.095	1.486	-0.043	-0.004	-0.232*	0.144	0.278*	0.629*	-0.089	0.082	1						
political CEO	0.596	0.492	0.063	0.057	-0.026	0.346*	0.107	-0.008	-0.205*	-0.050	0.047	1					
boardsize	10.532	5.482	-0.111	-0.034	0.378*	-0.193*	-0.113	-0.053	0.439*	0.016	0.028	0.160*	1				
logfirmyear	2.574	0.988	-0.008	-0.063	-0.034	0.043	0.012	0.257*	-0.002	0.031	0.295*	0.070	0.175*	1			
finst	0.486	0.324	-0.033	-0.054	-0.168*	0.147	0.062	0.109	-0.180*	-0.075	0.133	0.125	-0.145	0.098	1		
fdepend	0.256	0.332	-0.059	0.003	0.373*	-0.259*	-0.338*	-0.415*	0.025	-0.058	-0.321*	-0.021	0.258*	-0.063	-0.061	1	
financialind	0.145	0.353	-0.023	-0.072	-0.157*	0.051	0.125	0.326*	-0.094	0.032	0.129	0.036	-0.040	0.205*	0.0309	-0.225*	1
utility ind	0.198	0.399	-0.038	-0.009	-0.153*	0.266*	0.278*	0.511*	0.274*	0.241*	0.261*	-0.068	0.034	-0.022	-0.0198	-0.214*	-0.204*

Note. Correlation coefficients with * indicates that the coefficients are significant at 5% significance level.

7.5 Empirical Results

The empirical results are summarised in Tables 7.6~7.10. Variance Inflation Factor (VIF) scores are calculated to check whether multi-collinearity between the independent variables is an issue but all the VIF scores are found to be less than 3.0 (with an average VIF score of 1.69) except the score for *activboard* (VIF= 4.10), indicating that multi-collinearity is not an issue. The empirical results consistently support the substitution hypotheses, H1a, H2a and H3a. The results are elaborated in the remainder of this section. Since we use a novel framework and variables, we first check the overall fit of the models and then move on to the PC effects.

7.5.1 PC Effects on Board Composition

In the board composition stage, our empirical framework is found to be working well. As seen in Table 7.6, the R^2 values range between 24% and 37% and all F-values are significant ($p < 1\%$) in the six models, indicating that the empirical models are acceptable.

Turing to the effects of PCs on board composition, in non-PC firms, prior firm financial performance ($\Delta ROA2007\text{~}6$) is found to be significantly and negatively associated with the ratio of monitoring directors (*monitdrect*) ($\beta = -0.064$, $p < 1\%$; see Model 1 in Table 7.6). This negative association indicates that after the periods of poor performance, non-PC firms adjust their board composition by increasing the ratio of monitoring directors to address the poor firm performance. This empirical result is consistent with the argument of Ward et al. (2009) and the existing empirical evidence (e.g., see Hermalin and Weisbach, 1988; Pearce et al., 1991). In addition, the significant and positive associations between the prior total expenditure growth rate ($TEGR2007\text{~}6$) and the ratio of monitoring director also support that the monitoring is important role in non-PC firms (Model 1); as the increase in budget size needs of more monitoring, such a positive association indicates that non-PC firms are adjusting their boards considering this increased need of monitoring. Therefore, the results imply that the monitoring role is an important issue in non-PC firms.

However, in PCs firms, a negative association between prior firm performance ($\Delta ROA2007\text{~}6$) and the ratio of monitoring directors (*monitdirect*) is not observed (see Model 1). The result indicates that prior poor firm performance does not cause an increase in the ratio of monitoring directors in this group. Although the total growth expenditure growth rate ($TEGR2007\text{~}6$) has a significant and positive association with the ratio of monitoring directors (0.273, $p < 5\%$), this effect is negated by its significant and negative association with the ratio of political directors ($\beta = -0.216$, $p < 1\%$; see Model 2 in Table 7.6). The results indicate that PC

firms increase monitoring directors in consideration of the increase in budget size but the effect is negated by the increase in the ratio of political directors because PC firms address the issue of prior poor political firm performance through increasing the ratio of political directors. However, such a negative association between *TEGR2007~6* and the ratio of political directors is not observed in non-PC firms. Therefore, it can be concluded that in PC firms, board monitoring is less important issue than in non-PC firms; instead, the political role is more visible when PC firms adjust their board composition. The above empirical results consistently support that PCs act as a substitute for board monitoring role in board composition stage (H1a).

Table 7.6: PC Effects on the Three Dimensions of Board Composition

	Model 1 (monitdirect)		Model 2 (politidirect)		Model 3 (bdiversity)	
	Non-PC firms	PC firms	Non-PC firms	PC firms	Non-PC firms	PC firms
ΔROA2007~6	−0.064***	0.110	−0.005	0.045	0.074**	0.077
TEGR2007~6	0.174**	0.273**	0.048	−0.216***	−0.005	−0.091
political CEO	−0.095	−0.075	0.371***	0.400***	0.064	0.119
boardsize	0.274**	0.391***	−0.229	−0.266*	−0.148	0.252
lnemploy	−0.190	−0.359**	−0.178	0.177	0.225**	0.132
finst	−0.180*	0.116	0.124	−0.006	0.002	0.109
fdepend	0.270**	0.102	−0.176**	−0.052	−0.256**	−0.046
lnfirmyear	0.074	−0.145	0.060	0.090	−0.241*	0.193*
financial ind	0.003	0.023	−0.009	0.070	−0.164	0.142
utility ind	0.044	−0.077	0.279**	0.343**	−0.021	0.149
_cons	0.357**	0.442***	0.266***	0.065	0.554***	0.212
No of Obs	90	74	90	74	90	74
F-value	30.030	3.300	7.270	5.600	16.900	3.560
Prob > F	0.000	0.002	0.000	0.000	0.000	0.001
R^2	0.373	0.294	0.289	0.386	0.240	0.322

Note 1. All coefficients are standardized beta and coefficients with * indicate being significant at 10% level, ** at 5% and *** at 1%.

7.5.2 PC Effects on Board Process and Performance

The empirical models for the board process and performance stage are also found to work. All R^2 values of the two empirical models are relatively high (R^2 =0.574 in Model 4 and R^2 =0.433 in Model 5 in Table 7.7) with all F-values being significant at 1% level. Further, when the models are compared with corresponding baseline models that have only traditional board composition and firm characteristic variables (see Model 4-1, 5-1 in Table 7.7), the our models have significantly higher R^2 values (p<5%, see the bottom line of the Table 7.7), indicating that our models explain more about the board monitoring performance of sample firms. More specifically, Models 4 and 5 respectively explain an additional 15.7% and 11.6% of the variance in board monitoring performance (*amend*) of non-PC firms and PC firms, compared with Models 4-1 and 5-1. The results strongly support that by adding board process factors, we are able to explain more of the board activities and board performance.

Given the overall model fit, PC effects are investigated. First, in non-PC firms, all of the three board process factor are found to have significant associations (p<5%) with board monitoring performance *(amend)* and their signs are consistent with our prior expectations (see the row 4~7 of Model 4). For instance, it is found that highly active board (*activeboard*) is more likely to produce better board monitoring performance (β =0.480, p<1%), which is compatible with the theoretical arguments of Van den Berghe and Levrau (2004) and Nicholson and Kiel (2004), and the existing empirical results (Vafeas, 1999; Payne et al., 2009). Next, as we hypothesised, the factor, 'boardroom activity' (*bdroomact*) is found to have a non-linear relationship with board monitoring performance; initially, boardroom activity increases the monitoring performance (β =0.480, p<1%) but after a certain point,[77] it decreases the monitoring performance (β = -0.736, p<1%). The results strongly support the importance of 'what take places in the board rooms' (Daily et al., 2003; Roberts et al., 2005). Further, the non-linear relationship also confirms that the ways in which discussions are made (Bainbridge, 2002, p. 46) and the role of chairman significantly influence board performance (Van den Berghe and Levrau, 2004, p.465). The quality of board routine (*routine*) is also found to have a significant and positive association with board monitoring performance (β =0.196, p<5%), confirming the arguments of Nicholson and Kiel (2004), and Bainbridge (2002) that carefully planned board meetings and effectively set agendas should increase board performance.

By contrast, in PC firms, none of the board process and board composition variables is found to have significant association with board monitoring performance (p<5%, see Model 5).

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[77] The turning point is *bdroomact*=1.25. Considering that the variable has the standard normal distribution, N (0, 1), the turning point will be about 40% higher than the average level.

Though the prior firm performance ($\Delta ROA2007\sim6$) has a significant and negative association with monitoring performance (β = -0.736, p<1%), in an overall sense, it is clear that the degree to which board process factors contribute to the monitoring performance is less significant in PC firms than in non-PC firms. The empirical results indicate that the boards of PC firms are not focused on the monitoring role, which contrasts the results from non-PC firms. Therefore, the empirical results strongly support that PCs acts as a substitute for board monitoring role in board process and performance stage (H2a), which is consistent with the results of the previous step.

It is also noteworthy that the empirical results of this stage illustrate that board process factors are 'mediating' board composition factors. For instance, in the Model 4-1, the board diversity (*bdiversity*) and the ratio of the monitoring directors (*monitdirect*) have significantly positive associations with board monitoring performance (p<5% for *bdiversity* and p<10% for *monitdirect*) but such associations disappear when board process variables are added to the model (see Model 1). A similar phenomenon is observed across the Models 5-1 and 5; the highly significant coefficient of the ratio of political directors (*politidirect*) (p<5%) in the Model 5-1 become less significant (p<10%) in the model 5. Baron and Kenny (1986) interpret the phenomenon as 'mediating effects'; that is, board input factors are indirectly contributing to the board monitoring performance via process factors. Further, since our empirical results show that board process factors explain more about board performance, our empirical results strongly support Forbes and Milliken(1999)'s argument that board process factors should be incorporated in corporate board researches.

Table 7.7: PC Effects on Board Process and Monitoring Performance

	amended (monitoring performance)			
	Non-PC firms		PC firms	
	Model 4	Model 4-1	Model5	Model 5-1
activeboard	0.480***		0.380*	
bdroomact	0.921***		0.338	
bdroomact ^{2}	-0.736***		-0.022	
routine	0.196**		0.022	
monit direct	0.223	0.250*	0.106	0.082
Politicdirect	-0.018	-0.053	0.243*	0.296**
bdiversity	0.215	0.396**	-0.080	-0.014
political CEO	0.022	0.009	0.243*	0.101
boardsize	0.017	0.127	-0.221	-0.079
$\Delta ROA2007{\sim}6$	0.029	-0.041	-0.197**	-0.169*
TEGR2007~6	-0.041	0.015	0.010	-0.007
lnemploy	0.141	0.180	0.212	0.268*
finst	0.078	0.148	-0.113	-0.129
fdepend	-0.061	-0.043	0.138	0.052
lnfirmyear	0.074	0.182	-0.100	-0.022
financial ind	0.358***	0.484***	0.258	0.311**
utility ind	-0.216*	-0.044	0.008	0.256
_cons	-0.298	-6.076**	2.118	-0.997
N of Ob	66	66	66	66
F–value	7.946	73.829	5.537	3.920
P>f	0.000	0.000	0.000	0.000
R^2	0.574	0.417	0.433	0.317
ΔR^2	0.157***		0.116*	

Note. 1: all coefficients are standardized beta and coefficients with * indicate that the coefficient is significant at 10% level, ** at 5% and *** at 1%.

Note 2. All '$\Delta R2$ ' values are obtained by comparing models in consideration with baseline models (Model 4-1, 5-1 respectively).

7.5.3 PC Effects on Board Performance–Firm Performance Relationships

In terms of the board performance/firm performance relationship, our models are also found to have an additional explanatory power although it is somewhat limited. When the three board process factor variables (*activeboard, bdroomact* and *routine*) and the board monitoring performance (*amend*), used in the previous stage of analysis, directly enter the regression as independent variables along with board input and the firm characteristic variables, none of the board-related variables explains firm performance (*ΔROA2008~9*) and firm political performance (*TEGR2007-8*) (see Table 7.8). The results are the same when the firm performance variables of the year, *t+1* (i.e., *ΔROA2009~8 and TEGR2009-8*), are used as dependent variables. However, it is found that the baseline models, which incorporate only the conventional board composition variables and firm characteristics, also fail to explain any significant amount of variance in the dependent variables in both non-PC firms and PC firms, which coincide with the empirical results of Hermalin and Weisbach (1991) and Bhagat and Black (2001).[78]

Considering that the board performance/firm performance relationship is critical to analysing 'how corporate boards add value to the firms', we conducted additional analysis, giving a few modifications to the models in Table 7.8 in order to test the hypotheses, H3a and H3b. First, since there is a possibility that the board process factors (*activeboard, bdroomact* and *routine*) and the board monitoring performance (*amend*) cause multi-collinearity in this stage, we re-extract principal factors from the original board process variables and board monitoring performance variables to have underlying and uncorrelated factors in the regressions. In doing this, the number of speeches by NEDs (*speeches*) is dropped to increase the sample size and the stability of the estimation.[79] Next, the variable, *boardsize*, which is used as a control variable in Table 7.8, is included in the pool of the raw board process variables since it have significant correlations with other board process variables (see Table 7.5). The board monitoring performance (*amend*) is also included in this pool since it is found to have significant associations with board process factors in the previous stage of regression. Therefore, an explanatory factor analysis is performed again for the eight raw board process and board performance variables and Table 7.9 reports the results.

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[78] To check the robustness of the estimation results, I have attempted to use various alternative measures of firm performance (e.g., labour productivity, sales growth and accounting profit after tax) but the results were the same. None of them, however, had a significant relationship with board performance. Since we are discussing board of directors' monitoring role and ROA is one of the most commonly used measures of firm performance in terms of efficiency (for more detail, see Murphy et al., 1996p.17), the result on ROA is reported here.

[79] The variable, *speeches*, has only 138 observations. See section 4.1

Table 7.8. PC Effects on Board Performance/Firm Financial Performance Relationship

| | ΔROA2008~7 | | | | TEGR2008~7 | | | |
| | Non-PC firms | | PC firms | | Non-PC firms | | PC firms | |
	Model 6	Model 6-1	Model 7	Model 7-1	Model 8	Model 8-1	Model 9	Model 9-1
activeboard	0.001		-0.145		-0.142		0.172	
bdroomact	0.020		-0.272		-0.390		0.192	
routine	0.007		-0.077		-0.055		-0.363*	
Bdroomact^2	-0.037		0.220		0.336		-0.143	
wamend	0.018		0.071		0.008		-0.010	
monitdirect	0.008	0.012	0.071	0.052	-0.105	-0.111	-0.059	-0.147
politicdirect	0.012	0.008	0.052	0.064	0.222	0.228	-0.162	-0.168
bdiversity	0.015	0.023	-0.161	-0.189	-0.004	-0.057	-0.001	-0.068
ΔROA2007~6	-0.992***	-0.996***	-0.253	-0.276	-0.025	0.014	0.091	0.080
TEGR2007~6	-0.004	0.000	-0.006	-0.008	0.148	0.120	-0.169	-0.203
political CEO	-0.020	-0.013	-0.019	0.024	0.065	0.064	0.155	0.139
boardsize	0.002	0.000	0.142	0.114	0.197	0.158	0.116	0.267
lnemploy	-0.003	0.001	0.322	0.291	-0.222	-0.217	0.079	0.033
finst	0.005	0.013	0.181	0.179*	0.016	-0.008	0.004	0.088
fdepend	0.008	0.010	-0.002	0.034	-0.031	-0.051	0.090	0.043
lnfirmyear	-0.008	-0.001	-0.232	-0.281**	-0.146	-0.188	0.095	0.145
financialind	-0.016	-0.005	-0.049	-0.049	0.079	0.046	0.176	0.235
utility ind	-0.025*	-0.021*	-0.031	-0.102	0.380	0.333	0.177	0.197*
_cons	-0.018	-0.139	-0.059	-0.023	0.198	0.429	-0.570	-0.691
obs	66	66			66		66	
f-value	17000.000	18000.000	1.415	1.433	0.949	1.058	0.888	
p<f	0.000	0.000	0.169	0.176	0.530	0.415	0.594	
R^2	0.994	0.993	0.331	0.312	0.268	0.241	0.400	
ΔR^2	0.001		0.019		0.027		0.169	

Note.1: All coefficients are standardized beta and coefficients with * indicate significant at 10% level, ** at 5% and *** at 1%.

Note 2: ΔR^2 values are obtained by comparing models with baseline models (the model 6-1, 7-1, 8-1 and 9-1)

The factor 1 is dominated by the four variables (*bdmeeting, attend, assetsize* and *amend*). Therefore, the factor 1 differs from the 'active board' factor (*activeboard*) of the previous stage in that the current factor 1 includes board monitoring performance (*amend*). The factor 1, therefore, is named 'board activity' (*boardactivity*) which represents 'overall board activity' in terms of both 'board process' and 'board monitoring performance'. Next, the factor 2 mainly comprises CEO-chairman duality (*duality*) and board size (*boardsize*). We name this factor 'board power' (*boardpower*) since a corporate board is more likely to have strong power when it has more board members (Ocasio, 1994; Pearce et al., 1991; Dalton et al., 1999)[80] and separated CEO-chairman positions (Fama and Jensen, 1983).[81] The factor 3 mainly comprises the two board routine variables (*wmeeting* and *ppmeet*), which is almost identical to the factor, *routine*, used in the previous stage, and therefore, it is named 'board routine' (*boardroutine*). Using these new board process factors, the factor scores for individual firms are obtained using the regression method and the factor scores are then used as predictors of firm performance in the regressions.

Table 7.9. The New Board Process Factor Loadings on the Observed Variables

	boardactivity (Factor1)	*boardpower* (Factor2)	*boardroutine* (Factor3)	uniqueness
assetsize	**0.833**	-0.014	0.030	0.292
bdmeeting	**0.970**	0.008	-0.349	0.123
attend	**0.443**	-0.685	0.209	0.2558
amend	**0.566**	0.175	0.288	0.4714
duality	0.052	**0.738**	0.102	0.4285
boardsize	0.148	**0.817**	0.020	0.3088
wmeeting	0.318	0.073	**-0.804**	0.398
ppmeet	-0.039	0.072	**0.729**	0.469

Note. The loadings are estimated using exploratory factor analysis, using rotation method.

The estimation results for firm performance are reported in Table 7.10. The results show that the modified models (Models 10 and 11) work when the firm 'political' performance (*TEGR2009-8*) of the year, t+1, is used as a dependent variable. In terms of the overall model fit, the Models 10 and 11 respectively explain an additional 9.3% (p<5%) and 5.4% of the variance in the dependent variable, compared to the conventional models (i.e., Model 10-1 and 11-1). Although the change in R^2 value from Model 11-1 to Model 1 is not significant at the 5% level, Model 11 explains about 30% of the variance in the dependent

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[80] See section 4.3

[81] The negative loading on the attendance rate of NEDs (attend) seems also reasonable when we consider that as the board size get bigger, it becomes more difficult to find a date when all board members can attend at the meeting.

variable and the adjusted R^2 increases from 4.37% (Model 11-1) to 5.10% (Model 11).[82] Therefore, we test the hypotheses, H3a and H3b, using Models 10 and 11.

First, in non-PC firms, the board activity (*boardctivity*) has a significant and negative association with the total expenditure growth rate (TEGR2009~8) (β = -0.456, p<5%; see the 4th row of Model 10). The result shows that in this group, firms with an active board are less likely to increase its total expenditure, indicating that the boards are actively constraining managers from increasing their budget size in order to increase their private benefits at the expense of public funds. Therefore, it can be concluded that the boards of non-PC firms are contributing to their organizations by performing monitoring role.

By contrast, such a significant association is not observed in PC firms (see the 4th row of Model 11 in Table 7.10). Further, the significant and positive association between political CEO (*political CEO*) and total expenditure growth rate (*TEGR2009~8*) (β = 0.308, p<5%; see model 11) is in stark contrast with an insignificant association between the same variables in non-PC firms (model 10). The results indicate that in non-PC firms, board monitoring is constraining political CEOs from increasing budget size, while in PC firms such a monitoring role is invisible, allowing (or perhaps helping) political CEOs to increase budget size. Therefore, it can be said that monitoring role is less important issue in the boards of PC firms. The empirical results of Models 10 and 11 collectively lead us to conclude that PCs act as a substitute for SOE boards monitoring role in the board performance/firm performance relationship. Therefore, we accept the substitution hypothesis (H3a), following the previous two stages.

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82. Since the adjusted R^2 considers the degree of freedom of the model, the increase in adjusted R^2 value directly indicates an additional explanatory power (Verbeek, 2008, p.61~62).

Table 7.10. PCs Effects on Board performance/Firm Political Performance.

	TEGR2009-8			
	Non-PC firms		PC firms	
	Model 10	Model 10-1	Model 11	Model 11-1
boardactivity	-0.456**		-0.106	
boardpower	-0.184		0.267	
boardroutine	0.122		-0.081	
monitdirect	-0.147	-0.135	0.124	0.138
politidirect	-0.156	-0.151	-0.030	-0.079
boarddiversity	-0.151	-0.167	-0.089	-0.063
Political CEO	0.084	0.106	0.308**	0.251*
Δ*ROA2007~6*	0.084**	0.066**	0.037	-0.038
TEGR2008~7	0.105	0.048	-0.269	-0.213
avfinst	-0.079	-0.053	-0.220*	-0.249**
avdepend	0.184	0.103	-0.012	-0.026
lnfirmyear	-0.202	-0.238*	0.101	-0.041
lnempl	0.292	0.054	0.037	0.013
i65	-0.119	-0.309	0.235	0.175
inetw	0.005	-0.079	0.352*	0.334**
_cons	0.085	0.443*	-0.071	0.191
Observation	76	76	63	63
F–value	0.601	0.563	1.102	1.281
P>f	0.000	0.000	0.381	0.259
R^2	0.321	0.227	0.296	0.242
ΔR^2	0.093**		0.054	

Note. 1: all coefficients are standardized beta and coefficients with * indicate that they are significant at 10% level, ** at 5% and *** at 1%.

Note 2. 'ΔR^2' values are obtained by comparing models under consideration with baseline models (Model 10-1 and 11-1 respectively).

7.6 Discussion

In this study, we investigate 'how boards add value to firms, and how such mechanisms are influenced by the presence of PCs in the context of Korean SOEs. The empirical results largely support that PCs act as a substitute for SOE board monitoring role. The results can be interpreted as follows. First, PCs effectively constrain the managers of SOEs from seeking private benefits at the expense of organisational efficiency and this significantly reduces the need of internal monitoring by SOE boards. Second, accordingly, the boards of the PC firms have more room to engage in other roles such as political and/or strategic roles. The results are consistent with Baysinger and Zardkoohi (1986), Becher et al. (2005b) and Booth et al. (2002)'s empirical findings that strictly regulated environment constrains managerial discretion in firms and, therefore, regulations acts as a substitute for board monitoring.

First, in the board composition stage, we find that firm performance is the driver of changes in board composition in non-PC firms: after the period of poor firm performance, the firms are found to have more monitoring directors to address the issue of poor performance. The results confirm the existing studies of Ward et al. (2009), Hermalin and Weisbach (1998) and Bebchuk and Fried (2003). In contrast, in PC firms, such an association is not observed and, instead, after experiencing poor political firm performance, the firms are found to have more political directors, indicating that in PC firms, political role is an important issue. The results are consistent with the empirical finding of Hillman (2005) and Agrawal and Knoeber (2001). Therefore, the empirical results lead us to accept the substitution hypothesis (H1a).

Second, in the board process and performance stage, we find that, in non-PC firms, all board process factors have significant and positive associations with board monitoring performance. In contrast, we find no such associations in PC firms. Therefore, the substitution hypothesis (H2a) is accepted. We interpret the empirical results as a demonstration that in SOEs without PCs, the boards are mainly focused on monitoring role, while in SOEs with PCs, the boards have more room to engage in other roles since PCs are performing a monitoring role.

Finally, from the analysis of the SOE boards/firm performance, we also find empirical evidence for a substitutive PC/board monitoring relationship. That is, when the total expenditure growth rate of year, *t+1* (*TEGR2009~8*) is used as a dependent variable, representing the political firm performances, the overall board activity (*boardactivity*) is found to have a significant and negative association with the dependent variable. The result

indicates that highly active boards (in terms of monitoring) are more likely to decrease the total expenditure growth rate of non-PC firms. Again, such a relationship is not observed in PC firms. The results lead us to consistently accept the substitution hypothesis (H3a). We interpret the empirical results as indicating that the boards of non-PC firms are contributing to their firms by constraining the managers from consuming more public funds, while in the boards of PC firms, such role is not visible since PCs are doing a similar role. The empirical results from the three stages of analysis consistently support that PCs act as a substitute for SOE boards' monitoring roles in the context of Korean SOEs.

At this juncture, some limitations should be acknowledged. First, since our approach is a cross-sectional analysis, it might be argued that there is a possibility that board composition is not driven by prior firm performance. A longitudinal analysis may reveal more clear evidence but, unfortunately, due to a structural break in the corporate governance system of Korean SOEs in 2007, panel data are currently unavailable for board composition.

Another limitation is that the political and strategic role are not clearly distinguished and measured in the board process and performance stage. Although the primary purpose of this study is to investigate the effects of PCs on SOE boards' monitoring role, if the multiple board roles are clearly distinguished in terms of board performance, it will provide more meaningful results. Initially, we tried to categorize each statement in board minutes into the three dimensions that represent monitoring, political and strategic board roles but found that most of the statements were, as Roberts (2005) describes, "challenging but supportive" and "independent but involved." Therefore, such categorization was impossible. If future studies may employ textual analysis, this issue might be dealt with more easily. For example, as Ravallion (2011) does to analyse the social interest in poverty, a researcher may identify some key words that reflect board's monitoring, political and strategic roles and measure the frequency of the key words as a percentage of the all words in a board minute.[83]

The empirical result (i.e., none of the board input, board process and board performance variables can explain the firm performance of the year, t, ($\Delta ROA2008\sim7$), and the year, $t+1$, ($\Delta ROA2009\sim8$)) needs further discussion (see Table 7.8). The results are in stark contrast to the empirical finding in the first stage of the analysis that the prior firm performance ($\Delta ROA2007\sim6$) explains board composition very well (see Table 7.6). How should we interpret the results? A number of possible explanations can be suggested.

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[83] To conduct this type of analysis for a large volume of textual data, researchers need a computerised program such as The Coding Analysis Toolkit. However, most of the available programs are developed only for English not for many other languages including Korean.

First, simply there is a possibility that our models have critical miss-specifications and/or our data may mainly comprise outliers. This conjecture may be supported by the fact that we use a novel framework and data and we don't use market-based performance measures which are perhaps closer to 'true' firm performance (Baker, 2002). However, since other empirical results (e.g., consistently substitutive PC/board monitoring relationship and the impact of prior poor firm performance on board composition) are consistent with the existing theories and empirical results (e.g., see Hermalin and Weisbach, 1991; Bhagat and Black, 2001). Further, there are many existing empirical studies that find insignificant board/firm performance relationship. For example, Bhagat and Black (2001) use longitudinal data that cover the period of 1985~1995 and market-based performance measures (Tobin's q and market-adjusted stock price) but their results align with our empirical findings. Hence, it does not seem to be this case.

The second possibility is that, if agency theory is right and our models and data are also correct, firms may, in fact, fail to follow the 'wisdom' of agency theory: for instance, 'independent' directors may not in fact be 'independent' though they can be categorised as so; incentives for directors may too weak for SOE directors to actively engage in monitoring; some directors (e.g., executives of other firms) may be too busy to spend their time on acting as non executives of other firms (Bhagat and Black, 2001, p. 266~7).

Another plausible explanation is that boards have only a 'limited influence' on firm performance. Obviously, a more fundamental determinant of firm performance is CEOs. As Fama and Jensen (1983, p. 312) note, the separation of ownership and managerial control basically takes place because professional managers with 'superior managerial skills' may have the potential to maximise firm performance. So, CEOs decide 'what to do' and boards ratify the decision. Therefore, many researchers agree that, in normal situations, the role of boards is less visible (Ward et al., 2009; Mace, 1971; Hermalin and Weisbach, 1991). In the context of SOEs, CEOs are not chosen by boards unlike private sector firms and the operation of SOEs is significantly subject to the decision of the State. Therefore, these SOE-specific factors may further limit the effects of improvement in SOE boards on firm performance.

By providing the substitutive PC/SOE board monitoring relationship, the current study contributes to the existing literature of corporate boards in three respects. First, we develop and use a novel empirical model. The model integrates agency theory, resource dependence theory and service role perspectives and this allows us to investigate multiple board roles in a model. Further, the model incorporates board process factors and new data

directly collected from board minutes into the analysis. We therefore find that our model and variables significantly increase the explanatory power as compared to the conventional board composition/firm performance approach, confirming the argument of Forbes and Milliken (1999) that board process factors should be incorporated in corporate board analysis.

Second, new empirical findings of the current study extend the debate on the determinants of corporate governance structures by showing that 'internal imperatives' are more critical issues than 'institutional pressure' when firms adjust their governance mechanisms. Some researchers assert that each firm faces its own management problems, and hence finds its own solutions, which will necessarily be different from those of other firms (Baysinger and Zardkoohi, 1986; Hermalin and Weisbach, 1991); meanwhile some others argue that the governance structures of a firm is the result of institutional pressure since the firm faces institutional constraints and to survive or to finance their operations in the capital market, the firm should respond to the pressure (Joskow et al., 1993; Davis, 2005; DiMaggio and Powell, 1983). SOEs are expected to be more responsive to institutional pressure from the State than private sector firms due to their dependence on the State. However, empirical findings of this study show that in Korean SOEs, the internal imperative (i.e., the reduced need of board monitoring) is a more important issue than institutional pressure (i.e., the pressure from PCs for effective board monitoring) when they adjust their internal governance mechanisms.

Finally, from the empirical findings, the current study draws out a policy implication: that is, regulators of SOEs may not succeed in improving the monitoring of SOEs by simply implementing PCs unless PCs offer a stronger monitoring than internal monitoring by boards. Even in this case where the monitoring effect of PCs is greater than that of boards, it will be better if the two mechanisms are balanced because the potential benefits of internal monitoring by the board differ from those of PCs. For instance, board monitoring can be 'comprehensive' and 'preventive' while the effects of PCs have only a limited scope (i.e., performance measures) and 'corrective'. Therefore, as Hermalin and Weisbach (1991, p. 292) argue, regulators should thoroughly understand institutional environment in which PCs are implemented so as not to crowd out the potential benefits of internal monitoring by SOE boards.

7.7 Conclusion

We investigate how corporate boards contribute to the firms and how such a mechanism is affected by the presence of PCs in the context of Korean SOEs. We find that PCs significantly substitute for board monitoring role. The results can be explained by the decrease in the potential benefits of board monitoring compared to the costs. The results indicate that 'internal imperatives' (i.e., the change in benefit/costs in board monitoring) are a more critical issue than 'institutional pressures' (i.e., pressure of PCs for effective board monitoring) when firms adjust their governance mechanisms. Therefore, regulators should consider this effect in designing and adjusting governance arrangements for SOEs.

In addition to these, the current study contributes to the existing literature on corporate boards by demonstrating that when board process data are incorporated in the empirical analysis, researchers are able to explain more about 'how corporate boards add value to their firms'. A growing number of researchers (e.g., Roberts et al., 2005) argue that the utilisation of the individual human capital directors possess is significantly 'enabled' or 'constrained' by many board process factors. The empirical findings of this study confirm the argument by showing that the effects of board composition are 'mediated' by board process factors, and through incorporating board process factors into the analysis of corporate boards, researchers can significantly increase explanatory power.

Chapter 8 : Conclusion

8.1 Motivation of the Thesis

Until the financial crisis of 2008, liberal free-markets had been widely viewed as the most efficient way for fostering economic growth. Developed countries had advocated strongly that developing and under-developed countries should follow the wisdom of the market (i.e., the Washington Consensus) they had found through wandering the paths of error (Wade, 2003; List, 1966: 1885). However, since 2008, the Washington Consensus seems to be unravelling at a remarkable speed, raising a significant question about free-markets as a mechanism for generating economic growth.

Given these, this thesis re-investigates whether State intervention in the market can be a catalyst for economic growth, using the South Korean experience. The South Korean economy is interesting, not only because it had the highest growth during the second half of the 20th century, but also because the government played a critical role in fostering the economic growth. Since State intervention in the market takes two forms, namely industrial policy and controlling state-owned enterprises, this thesis investigates the issue by raising and answering the following three specific research questions.

(1) Can industrial policy induce long-run economic growth?

(2) Can performance contracts improve the performance of SOEs?

(3) How do SOE boards add value, and how do performance contracts change the activities of SOE boards?

In this chapter, I summarise the main findings of the thesis with respect to the three research questions. I then summarise the contributions of this thesis, identify the limitation and make suggestions for future research.

8.2 Summary of Main Findings

The main finding of this thesis is that State intervention in the market can be a catalyst for economic growth where the overall strategy and policy measures of State intervention are well structured enough to accurately reflect the institutional environment where the policies are implemented. To generate such well structured policies, the State (or policy makers) should understand i) that policies, changes in policies and institutional environments interact in a dynamic setting; and ii) that policies and policy measures should be responsive to such changes. This subsection elaborates the main findings with respect to the three research questions this thesis attempts to answer.

Research Question 1:

Can industrial policy induce long-run economic growth?

In order to answer the first part of the question, Chapter 2 reviews the theories, history and related debate over industrial policy. The review of the literature on industrial policy provides two important implications. First, virtually no developed country has grown up from a 'laissez-faire' approach and States have played a significant role in almost all developed countries. Second, however, not all countries have succeeded in fostering economic growth using industrial policy. This means that poorly designed industrial policy may significantly impede the domestic market from growing, as has often been observed in Latin American and African countries. Therefore, the answer is that industrial policy can induce economic growth but the success of which depends on what kind of industrial policy is implemented.

Chapter 3 illustrates the inherently evolutionary aspect of industrial policy. That is, since industrial policy aims to change the social and economic conditions where it has been shaped, it becomes outdated. Therefore, it is argued that industrial policy should change dynamically over time in accordance with changes in the quantity and quality of capital stock and the technological capabilities the society possesses. It is also argued that the trajectory of such dynamic changes can be predicted if we consider that the fundamental way in which backward countries have achieved economic growth has been through importing and modifying the institutions and technologies of advanced countries. Hence, Chapter 4 proposes a sequential policy framework that explains which kind of industrial policy should be used over time; that is, i) big-push, ii) selective industrial policy, iii) managing competition, finally iv) industrial upgrading (structural adjustment). This framework is then applied to South Korean industrial policy for the period of 1960~1996 and it is found that the

dynamic changes in the South Korean industrial policy and the remarkable economic growth can be explained within the framework. From these results, I draw the conclusion that a successful industrial policy should be dynamic and evolutionary process which is responsive to the changes in the quality and quantity of the capital stock and the technological capabilities within the economy as well as the social context in which any policies will be implemented.

Research Question 2:

Can performance contracts improve the performance of SOEs?

In order to answer this question, Chapter 4 first reviews the relevant literature and identifies the sources of the agency problems in SOEs as; i) the lack of property rights on the financial asset of SOEs, ii) vague and multiple goals, iii) unnecessary intervention from the State, iv) the lack of market discipline. Therefore, it is argued that an institutional arrangement that effectively addresses these issues can decrease agency problems in SOEs. Although privatisation has been the dominant policy measure to solve the problem, privatisation necessarily involves discarding the public interest which is one of the fundamental reasons why the State owns firms. So, if such a public interest is to be pursued, privatisation cannot be a solution. Another approach is the Performance Contract (PC). However, there has been little empirical evidence whether PCs actually improve the performance of SOEs, thereby questioning the efficacy of PCs. Researchers generally agree with the reasons; namely, sensible measures, sufficient incentives and commitment from the State to PCs.

In Chapter 5, it is argued that sensible measures are the most critical issue because the State is unable to provide high-powered incentives and commitment to PCs if the measures of PCs are not sensible and accordingly the results of PC are not reliable. From the relevant theories, Chapter 5 draws out four conditions PC measures should address: namely, i) adequate performance criteria that consider the organisational context, ii) the measurability of the performance criteria identified, iii) limiting distortion problems, iv) positive causal links between the performance criteria. Chapter 5 then proposes the use of TQM principles as a basis for generating specific PC measures that meet the four conditions. These arguments are then empirically tested using data from the South Korean PC, the ABPE, which is built on TQM principles. The empirical results show that the ABPE generally meets the four conditions, indicating that the performance measures of the ABPE are sensible and the ABPE actually improves the performance of Korean SOEs. The results support the

argument that PCs can improve the performance of SOEs where PCs incorporate sensible measures, and TQM can be used as a basis for generating sensible PC measures.

Research Question 3:

How do SOE boards add value, and how do performance contracts change the activities of SOE boards?

In order to answer the first part of this question, Chapter 6 reviews the relevant literature and theories, and finds that SOE boards can be seen as adding value to their firms through monitoring management, bringing in necessary resources and formulating and reviewing organisational strategy. It is also found that researchers view that the most visible board role may differ across firms as different firms have different 'internal managerial issues' and 'institutional environments' which impact to the degree to which the three board roles mentioned above are required in different organisations. In the context of SOEs, I find that the presence of institutional arrangements that perform similar roles to SOE boards, the distribution of the ownership function within the government, and market conditions are factors that influence the role of SOE boards.

To answer the later part of the question, Chapter 7 empirically investigates the effects of PCs (as a State control mechanism) on the SOE board/firm performance relationship. The empirical results support the idea that PCs act as a substitute for SOE board monitoring. First, in board composition stage, it is found that in non-PC firms prior firm performance is negatively associated with the ratio of monitoring directors. This result shows that, following periods of poor performance, non-PC firms adjust their board composition by increasing the ratio of monitoring directors to address the poor performance. The result indicates that monitoring is an important issue when non-PC firms adjust their boards. However, in PC firms, this association is not observed, implying that monitoring is a less significant issue in their boards. Second, in the board process and board performance stage, it is found that in non-PC firms board process factors are strongly associated with board monitoring performance. The results imply that board process factors (overall board activity, discussions in the boardrooms, board routine) are contributing to board monitoring performance. In PC firms, however, such associations are not found, implying that monitoring is not an important issue in their boardrooms. Finally, in the stage where board performance is assumed to contribute to firm performance, it is found that in non-PC firms, board activities (including monitoring performance) have a significant and negative association with the total expenditure (budget size) growth rate of the firms and this indicates that the boards of non-PC firms are effectively limiting an increase in budget size. Since the

increase in budget size necessarily requires the consumption of more public funds and provides the managers with more perks (Niskanen, 2007; 1971), the result can be seen as providing empirical evidence that in non-PC firms the boards are performing a monitoring role. Again, this result is not found in PC firms, implying that the boards of PC firms do not engage in a monitoring role.

Collectively, the empirical results consistently support that PCs substitute the monitoring role of SOE boards. The reason is that PCs reduce the need of SOE boards to monitor the managers through motivating and monitoring managers via contracting and, therefore, SOE boards have more room to engage in other activities (Booth et al., 2002). Since governance mechanisms are costly to maintain (Shleifer and Vishny, 1996; Baker and Gompers, 2003), it is 'rational' for the boards of PC firms to engage in other activities (Johnson et al., 1996). The results confirm the existing empirical studies (Baysinger and Zardkoohi, 1986; Booth et al., 2002) which find that in a highly regulated environment, corporate boards engage in less monitoring because regulations effectively restrict managerial discretion.

8.3 Contributions

By answering the three research questions, the current thesis contributes to the existing literature on industrial policy, performance contracts and corporate governance. This section summarises the contributions.

Firstly, Chapters 3 extends the existing literature on industrial policy by shedding new light on its dynamic nature. First, while the previous researches on industrial policy has been focused on whether industrial policy can generate economic growth, insufficient attention has been given to the dynamic nature of industrial policy. Chapter 3 therefore proposes a dynamic framework for successful industrial policy changes over time along with the changes in the quantity and quality of capital stock, technological capabilities within the economy and social context. The framework proposes that industrial policy sequentially change over time through the following path: i) big-push, ii) selective industrial policy, iii) managing competition, iv) industrial upgrading (structural adjustment). Second, by applying the framework to the South Korean experience, Chapter 3 re-investigates the reason why the South Korean economy could grow rapidly with the highest growth record during the second half of the 20th century. While the existing explanations of the South Korean success have been somewhat fragmented, focusing on the specific institutional environment (e.g.,

Confucian culture - Richter, 2002), period (e.g., the 1970s - Eckert, 1996) or industries (e.g., textile industry – McNamara, 1999; auto industry – Catalan, 2010), this study offers an integrated view that covers overall capital stock building, productivity performance and technological improvement for a relatively long period of time. Thirdly, the results provide a policy implication that industrial policy should be a dynamic and evolutionary process which is responsive to changes in institutional environment through time.

Next, Chapters 5 extends the existing literature on PCs in three respects. First, from relevant theories, it identifies what constitutes 'sensible' measures for PCs. Researchers generally attribute the source of the insignificant PC/SOE performance relationship to the lack of sensible measures; in fact, however, existing studies only offer one or two specific issues - - e.g., distortion (Baker, 2002); clarity in goal setting (Verbeeten, 2008); positive performance effects (Shirley and Xu, 2001). Chapter 5 attempts to fill this gap by drawing out four conditions. Second, Chapter 5 proposes using TQM principles as a basis for generating a specific set of performance measures that meets the four conditions for 'sensible' PC measures. Although TQM has been widely applied to public sector organisations as a managerial initiative for organisational change (e.g., Swiss, 1992), its applicability to the context of PCs has received less attention from researchers due to the differences in underlying philosophy and method (Deming, 2000; 1986; Scholtes, 1993). Chapter 5 therefore offers an explanation on why TQM can be beneficial in the PC context with respect to the four conditions for 'sensible' PC measures. Finally, Chapter 5 provides new empirical evidence on whether PCs can actually improve the performance of SOEs where the PCs incorporate sensible measures. While researchers argue that this should be the case (Shirley and Xu, 2001; Behn, 2003), there is no empirical evidence to validate this assertion. By showing that the South Korean PC, the ABPE, which is built on TQM principles, meets the four conditions, Chapter 5 provides new empirical evidence on the efficacy of PCs and policy implications on how PCs should be constructed in order to effectively motivate SOE managers to perform better.

Finally, by empirically investigating the effects of PCs on the multiple roles of SOE boards, Chapters 7 extends the existing literature on corporate governance in three respects. First, it extends the existing debate over the determinants of corporate governance structures, i.e., internal imperative versus institutional pressure. While SOEs are expected to be more sensitive to institutional pressure due to their dependence on the State, the empirical results show that Korean SOEs are more responsive to internal imperatives (reduced need of board monitoring due to the presence of PCs) than institutional pressure from PCs for effective monitoring. Second, in terms of methodology, this study extends the existing empirical

studies on corporate boards. While the conventional approach for investigating the board/ firm performance relationship is to directly relate a few attributes of board composition to firm performance, Chapter 7 incorporates board process and board performance in the analysis. Further, it integrates agency theory, resource dependence theory and service role theory into the framework of analysis to reflect the multiple roles SOE boards are supposed to perform (Roberts et al., 2005; Daily et al., 2003). By doing so, the empirical modes used in the chapter explain more about the SOE board/firm performance firm performance relationships and the effect of PCs on these relationships. The results also confirm that the transformation of the human capital individual directors possess into actual board performance is significantly affected by board process factors such as the opportunity and incentives for directors, power relations within the boardroom, board routine and so on. Finally, by providing evidence on the substitutive PC/SOE board monitoring relationship, Chapter 7 provides a policy implication that, the regulators of SOEs may not succeed in increasing the overall monitoring of SOEs by utilising PCs. It will be better if the two mechanisms are balanced because the potential benefits of board monitoring differ from those of PCs in that the former is 'preventive' and 'comprehensive' while the latter is 'limited' to the scope of performance measures (Holmstrom and Milgrom, 1991). Therefore, regulators should consider the substitutive relationships when they design PCs so as not to crowd out internal monitoring by SOE boards.

8.4 Limitations and Suggestions for Future Research

For the industrial policy analysis in Chapter 3, there are two limitations. First, though the sequential industrial policy framework successfully explains the South Korean experience, it should be applied to other countries to prove the robustness of the framework since a single case never proves a theory. Since the framework is drawn from institutional and evolutionary economics and the history of institutional learning between developed countries, I therefore expect that the framework can be applied to other industrialised countries. Further, if the framework is used for a comparative study, this may provide more meaningful insights on systematic differences across the countries and causes of those differences. Therefore, a natural extension of Chapter 3 will be a comparative study using the framework. Another limitation is that, though the framework can explain how developing countries can formulate industrial policies, it may not provide many meaningful implications to the most advanced economies that are at the frontlines because these economies have few existing experiences to follow. To these economies, institutional change might be a process of 'self-discovery' (Rodrik, 2004). However, there seems to be interactive institutional learning among advanced countries and National Innovation System is the best example (Lundvall, 2010). Therefore, it would be an interesting research topic to examine the way in which such interactive institutional learning takes place among developed countries.

For Chapter 5, there are two related limitations. First, I conduct a cross-sectional analysis but a longitudinal analysis may provide more meaningful results. For example, the insignificant relationships of the key business results (*K-result*) criteria with other performance criteria raised an important question: whether such insignificant relation is the result of short term measurement errors, manipulation or omitting important factors that really determine the *K-result*. Unfortunately, a longitudinal analysis was impossible because the 2008 and 2009 data are only currently available. In a few years, such an analysis will be possible. Second, due to the limited number of Korean SOEs that undertake ABPE, it was necessary to pool two years data in order to meet the minimum sample size (n=100) for SEM (Lægreid et al., 2006). This pooling may cause uncertainty in estimation. This problem can also be addressed by a longitudinal study. Therefore, a natural extension of the Chapter 5 would be a longitudinal analysis.

As for the empirical analysis of the effects of PCs on SOE board/firm performance relationships in Chapter 7, two limitations should be recognised. First, in the board process and board performance stage, resource provision and the strategic role of SOE boards are not distinctively measured. The difficulty in finding appropriate measures of these board roles

seems to arise from the complex nature of actual board activities (Roberts et al., 2005). Initially, I attempted to categorise each statement by individual board members which appear in the board minutes of sample firms into three categories (monitoring, resource provision and strategic roles) in order to measure the three board roles respectively. However, I found that many statements were, as Roberts et al. (2005) say, "challenging but supportive", "independent but involved". Hence, future studies should consider how to identify and measure board performance in terms of resource provision and strategic roles. Another limitation is that in analysing the impact of board performance on firm performance, this thesis used the change in return on asset (financial performance) as the proxy for firm performance. However, as discussed in Chapter 5, it would be more sensible to measure the performance of SOEs using a multi-dimensional concept so as to incorporate not only financial performance but also stakeholder concerns and long-term capabilities (Ittner et al., 1997; Behn, 2003; Niven, 2008; Kaplan and Norton, 2005). This may be the reason why board performance does not explain firm financial performance because SOE boards may more engage in other activities other than improving financial performance of the firms. However, the lack of such various performance data for non-PC firms prohibited more advanced studies. Future study should address this issue.

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Appendix: Structural Equation Modelling Method

1. What is Structural Equation Modelling?

Structural Equation Modelling (SEM) can be referred to as "a comprehensive statistical approach to testing hypothesis about relations among observed and latent variables" (Hoyle, 1995, p.1). It is comprised of two parts: measurement model that specifies the relationship between latent variables and their observable manifest variables (or indicators); structural model that represents the relationship among the latent variables.

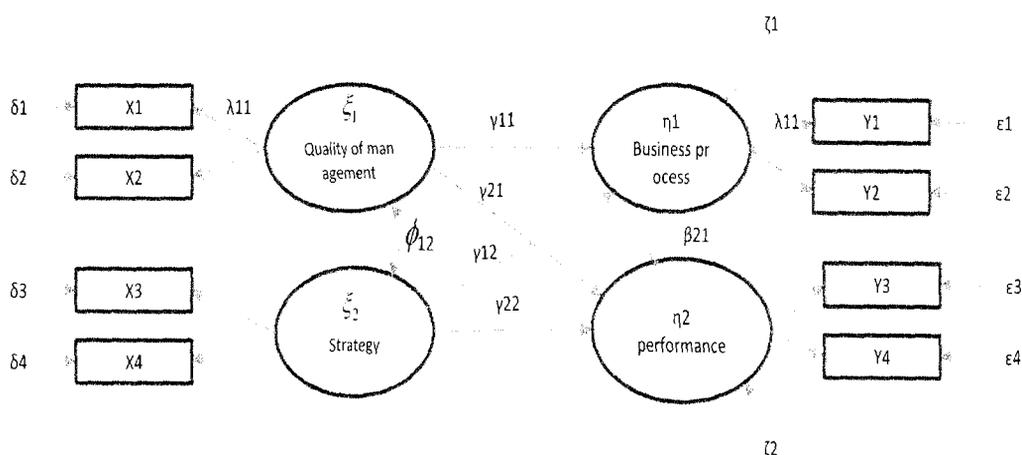### Figure Appendix 1: An Example of SEM Path Diagram

Figure Appendix 1 is an example path-diagram of a SEM model which graphically illustrates the relationships among variables. Following the conventional notations in SEM (Jöreskog and Sörbom, 1984), ξ and η represents exogenous and endogenous latent variables respectively; x and y denote manifest variables (indicators) of ξ and η respectively; λ, relationships from latent variables to their manifest variables; δ and ε are measurement errors in ξ and η respectively; ζ represents structural errors. Each one headed arrow line represents a directional relation, i.e. which impacts which, that are to be estimated and tested. Two headed arrow line represents correlation between variables. Usually, the relationships between exogenous and endogenous latent variables are denoted by γ with appropriate subscriptions[84] and those between endogenous variables are denoted by β.

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[84]. For example, β_{21} represents the degree to which strategy impacts business performance. Thus, first subscription indicates target variable, second source variable.

These relationships can be expressed by the following equations;

Structural Equation : $\eta = B\eta + \Gamma\xi + \zeta$ --(1)

$$\begin{pmatrix} \eta_1 \\ \eta_2 \end{pmatrix} = \begin{pmatrix} 0 & 0 \\ \beta_{21} & 0 \end{pmatrix} \begin{pmatrix} \eta_1 \\ \eta_2 \end{pmatrix} + \begin{pmatrix} \gamma_{11} & \gamma_{12} \\ \gamma_{21} & \gamma_{22} \end{pmatrix} \begin{pmatrix} \xi_1 \\ \xi_2 \end{pmatrix} + \begin{pmatrix} \zeta_1 \\ \zeta_2 \end{pmatrix}$$

where (I-B) is non-singular matrix, and ζ_1 and ζ_2 are assumed to be uncorrelated between themselves and with ξ_1 and ξ_2 respectively.

Measurement Equation for Exogenous variables : $x = \Lambda_x \xi + \delta$ --------------(2)

$$\begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{pmatrix} = \begin{pmatrix} \lambda_{11} & 0 \\ \lambda_{21} & 0 \\ 0 & \lambda_{32} \\ 0 & \lambda_{42} \end{pmatrix} \begin{pmatrix} \xi_1 \\ \xi_2 \end{pmatrix} + \begin{pmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \end{pmatrix}$$

where the measurement errors (δ) are assumed to be uncorrelated among themselves and with η, ξ, and ζ.

Measurement Equation for Endogenous Variables : $y = \Lambda_y \eta + \varepsilon$ -----------(3)

$$\begin{pmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \end{pmatrix} = \begin{pmatrix} \lambda_{11} & 0 \\ \lambda_{21} & 0 \\ 0 & \lambda_{32} \\ 0 & \lambda_{42} \end{pmatrix} \begin{pmatrix} \eta_1 \\ \eta_2 \end{pmatrix} + \begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \end{pmatrix}$$

where the measurement errors (ε) are assumed to be uncorrelated among themselves and with η, ξ, and ζ.

The covariance (or correlation) matrices -------------------------------------(4)

$\phi = \begin{pmatrix} \phi_{11} & \phi_{12} \\ \phi_{21} & \phi_{22} \end{pmatrix}$, the covariance matrix for independent latent variables (ξ),

$\psi = \begin{pmatrix} \psi_{11} & 0 \\ 0 & \psi_{22} \end{pmatrix}$, the covariance matrix for structural disturbances (ζ),

$\theta_\delta = \begin{pmatrix} \theta_{11} & 0 & 0 \\ 0 & \ddots & 0 \\ 0 & 0 & \theta_{44} \end{pmatrix}$, the covariance matrix for measurement errors of x (δ),

$\theta_\varepsilon = \begin{pmatrix} \theta_{11} & 0 & 0 \\ 0 & \ddots & 0 \\ 0 & 0 & \theta_{44} \end{pmatrix}$, the covariance matrix for measurement errors of y (ε)

2. Issues on Model Specification in SEM

There are several rules on how to specify SEM model. Raykov and Marcoulides (2006, p.15~17) summarises such rule as follows.

Rule1; All variances of independent variables are model parameters

Rule2: All covariance between independent variables are model parameters unless a theory or hypothesis states something differently.

Rule3: All factor loadings are model parameters

Rule4: All regression coefficients between latent variables are model parameters.

Rule5: All variance and covariance between dependent variables and the covariance between independent and dependent variables are never model parameters. They are explained in terms of other parameters.

Rule 6: For each latent variable, the metric is needed to be set. Otherwise, it will lead to under-identification problem. Typically, this is done by setting the variance of each independent variable equal to 1 or by fixing one of paths leaving from the latent variable to its multi indicator as constant (typically 1).

It should be more explained about the identification problem because it is one of the most critical issues in model specification. The identification problem is about the question of whether there is sufficient information to obtain a unique solution for the parameters to be estimated in the model. To obtain a unique solution, it is necessary that the number of independent parameters to be estimated (q) is less than or at least equal to the number of non-redundant elements in the sample covariance matrix of the indicators (p). This condition can be expressed as follows;

$$q \leq (m+l)(m+l+1)/2 = p$$

where m denotes the number of x variables; l, the number of y variables. In case where $q = p$, it is called as 'just identification'; a unique solution can be obtained but there is no information left to test the model. In order to test the proposed model, the model should necessarily be over-identified $[q < p]$. Thus, the degree of freedom of model is defined as; $df = p\text{-}q$.

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3. Estimation of SEM model

The parameter estimation is conceptually to find a set of parameter estimates that make the covariance matrix of a model as close to S as possible meeting certain criteria. Let σ and s be p-dimensional vector of elements in population and sample moments matrix of x and y, where s converges in probability to σ as sample size $n \to +\infty$. Let $\sqrt{n}s$ be asymptotically normally distributed with variance, Σ which is $(p \times p)$ matrix. Consider a model, $M_0 = \sigma = \sigma(\theta)$, where θ is a q-dimensional parameter vector and $\sigma(.)$ is twice differentiable continuous function. A Weighted Least Square (WLS) estimator $\hat{\theta}$ of θ can be defined as the minimiser of

$$F_v(\theta) = (s - \sigma)'\hat{V}(s - \sigma) \text{------------------------------------(5)}$$

where $\hat{V}(p \times p)$ converges in probability to V, a positive definite matrix. A test statistics for goodness-of-fit of a proposed model M_0 is

$$T_0 = nF_v(s, \hat{\sigma}), \text{ where } \hat{\sigma} = \sigma(\hat{\theta}) \text{ --------------------------(6)}$$

3.1 χ^2 Test Statistic and ML estimator under Asymptotic Multivariate Normality

If the model M_0 holds (i.e., true model) and, again, $\sqrt{n}s$ is asymptotically normally distributed with($p \times p$) positive definite variance matrix Σ, which ensures $V = \Sigma^{-1}$, then

$$T_0 = nF_v(\hat{\theta}) \cong n(s - \hat{\sigma})' \Sigma^{-1}(s - \hat{\sigma})$$

$$= \sqrt{n}(s - \hat{\sigma})' \Sigma^{-1/2} \Sigma^{-1/2}\sqrt{n}(s - \hat{\sigma})$$

$$= w'w \qquad \text{---(7)}$$

where $w = \Sigma^{-1/2}\sqrt{n}(s - \hat{\sigma})$.

Now, $E(w) = \sqrt{n}\Sigma^{-1/2}E(s - \hat{\sigma}) = 0$ (since model is the 'true' model), and

$$\text{Var}(w) = \Sigma^{-1/2} \Sigma \Sigma^{-1/2} = I$$

In this case, T_0 will follow χ^2 distribution with $df = (p - q)$ and it is well known that WLS estimator is equivalent to Maximum likelihood estimator. With this χ^2 distributed test statistic (T_0), the null hypothesis ($M_0 = \sigma$) can be tested.

3.2 Satorra-Bentler Scaled χ^2 Statistics with Non-normal Data

However, if $\sqrt{n}s$ is not asymptotically normally distributed, Satorra and Bentler (1994) finds that T_0 is asymptotically distributed as a mixture of χ^2 distribution of degree of freedom 1. Therefore, the use of χ^2 value with $df = (p - q)$ is not justified. To address this problem, they suggest using the following scaled test statistic,

$$\bar{T} = T_0/\hat{c} \qquad\qquad \text{where } \hat{c} \text{ is a consistent estimator of}$$

$$c = \frac{1}{r}tr[V - V\Delta(\Delta'V\Delta)^{-1}\Delta'V] \quad , \text{where } \Delta = \frac{\partial\sigma(\theta)}{\partial\theta'}$$

Many simulation studies find that Satorra-Bentler test statistic (S-B χ^2 or $\bar{T}$) performs well under a wide variety of non-normal conditions, as well as with normal data (e.g.,Nevitt and Hancock, 2004; Satorra and Bentler, 1994; Curran et al., 1996). The meaning and the use of the S-B χ^2 statistic is equivalent to those of the above χ^2 statistic. This study uses S-B χ^2 to assess goodness-of-model and all other model fit indices use this statistic.

3.3 Validity and Reliability Check for a Single Construct

To check the validity and reliability of the indicators used to represent a construct, t-test can be used and a composite reliability value can be obtained as follows (Diamantopoulos and Siguaw, 2000, p; 89);

$$\rho_c = \frac{(\sum \lambda)^2}{(\sum \lambda)^2 + \sum (\theta)}$$

where λ =indicator loadings, θ =variance of measurement errors. If ρ_c >0.6, it is regarded as desirable. This was also used to calculate construct validity test.

3.4 Overall Goodness-of-Model Fit indices

However, as seen in equation (7), $\bar{T}$ statistic is not free from sample size n. Thus, as sample size increase, so does $\bar{T}$, resulting in higher possibility of rejecting null hypothesis. For this reason, many other model fit indices have been developed and utilised in addition to χ^2. Raykov and Marcoulides (2006, p.83) asserts that when researchers use SEM, no decision should be made based on only a single goodness-of-fit index no matter how favourable an index appears to be. The indices in below Table Appendix 1 are most commonly used ones and also used in this study.

Table Appendix1: Goodness-of-fit Indices Used in This Study

Index	Statistics	Interpretation	Threshold
Root mean squared error of approximation (RMSEA)	$\dfrac{\sqrt{\bar{T}_1 - df_1}}{\sqrt{df_1(n-1)}}$	The degree to which the model fails to fit data	Less than 0.09
Comparative Fit Index (CFI)	$\dfrac{(\bar{T}_0 - df_0) - (\bar{T}_1 - df_1)}{(\bar{T}_0 - df_0)}$	the relevant amount of variances and covariance accounted for by the suggested model	larger than 0.9
Bentler-Bonnet Normed Fit Index (BBNFI)	$\dfrac{\bar{T}_0 - \bar{T}_1}{\bar{T}_0}$	The degree to which the suggested model reduces $\bar{T}$ statistic from that of null model	larger than 0.95
Bentler-Bonnet Non-normed Fit BBNNFI	$\dfrac{\bar{T}_0/df_0 - \bar{T}_1/df_1}{(\bar{T}_0/df_0) - 1}$	BBNFI with penalty for adding more parameters	larger than 0.95
Parsimony-BBNFI	$\dfrac{df_1 \times BBNFI}{df_0}$	Another type of parsimony fit index	Compared with other models

Note. $\bar{T}_0$ is null model with no relationship between latent variables, $\bar{T}_1$ is a proposed model.

df_0 is the degree of freedom of null model and df_1 is the degree of freedom of the proposed model

Source: Diamantopoulos et al. (2000), Raykov and Marcoulides (2006) and Bnetler (1995)

4. The advantages of SEM over Multiple-Regression Method (MR)

The most distinct two advantages of SEM over MR are; a) explicitly considering measurement errors; b) a wider range of relationships can be analysed (Raykov and Marcoulides, 2006). First, SEM allows researchers to explicitly consider measurement errors (δ and ε) that are typically unavoidable in measuring non-directly observable constructs. In MR analysis, such construct is typically assumed to be represented by a directly observable variable (i.e., proxy) without measurement error. Let consider that in the above path diagram, for example, a researcher is interested in the relationship from ξ_1 to η_2. Typically, he/she will use x_1 as a proxy for ξ_1 and y_3 for η_2 and will estimate the coefficient from x_1 to y_3. However, if x_1 and y_3 have significant amount of noise (measurement errors), MR will underestimate the relationship because the errors may mask up the true relationship between the two underlying constructs (Baron and Kenny, 1986). SEM uses multi-indicators and explicitly considers the measurement errors in the indicators and, therefore, it distinguish the variance of x_1 (or y_3) caused by the underlying construct ξ_1 (or η_2) and the variance of x_1 (y_3) caused by other factors, providing more efficient estimates than MR.

Second, SEM allows researchers to investigate a wider range of relationships among (latent) variables (Baron and Kenny, 1986). While in MR method, there is only one kind of directional relationship from independent variable to dependent variable, SEM is able to handle, first, a path analysis where some independent variables become dependent variables of other independent variables. Hence mediating effects can be easily revealed. Second, SEM also can deal with reciprocal relationships between the variables. In Figure 1, such relationships can be captured by the correlations between ξ_1 and ξ_2 or, as in Chapter 5, the second-order latent variables. In sum, the two advantages encouraged many researchers in marketing and other management studies to use SEM.

However, there are some limitations. First, SEM only explains the observed data and, therefore, actual relationships explained by SEM may be different from those of population. Researchers are therefore strongly encouraged to fall back on theories rather than arbitrarily specified model. Second, SEM requires relatively large sample size ($n > 100$), which often hinders researchers to use this method.