School of Accounting

Tunneling: Related Party Transactions of ASEAN Listed Firms

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DECLARATION

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

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ABSTRACT

This thesis investigates the relationship between regulation, competitiveness, ownership and tunneling by providing a longitudinal international analysis – spanning five ASEAN countries (i.e., Indonesia, Malaysia, Philippines, Singapore and Thailand). Tunneling is defined as the transfer of resources away from firms for the benefit of controlling shareholders. Weak corporate governance systems and prevailing corporate ownership structures in many nations provide great scope for related party transactions (RPTs) to be a convenient mechanism for the expropriation of firm value from minority shareholders.

The national corporate governance system and the firm-level ownership structures are considered as possible determinants of tunneling. Constructs of regulatory and competitive business environments are developed by using synthesized corporate governance theoretical framework combining agency, resource dependence, stakeholder, and institutional theories. Family, managerial and foreign ownership levels are used to measure and examine ownership structures. This study involves the collection of data from 200 listed firms from five ASEAN countries spanning the period 2006 – 2009 giving rise to 800 firm-year observations.

Overall, multiple regression results do not support the negative association between regulatory and competitive business environments with the extent of tunneling. There is strong evidence relating to a positive association between family ownership and the extent of tunneling whereas managerial ownership hypothesis cannot be statistically supported. The findings also note a negative linkage between firms' foreign ownership and tunneling. Legal origin and firms' size variables are statistically significant control variables of tunneling.

This thesis offers insights via cross country data of tunneling behavior by ASEAN listed firms over the GFC period. Unexpected findings regarding positive associations between regulatory and competitive business environment with tunneling via RPTs raise a concern about the persistence of tunneling practices. The dominance of family ownership in ASEAN listed firms suggesting the treatment of minority shareholders can be less than satisfactory sparking corporate governance issues. Hence, regulators need to evolve more effective governance mechanisms.

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In loving memory

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Thank you very much for raising me and your encouragement to achieve the best things

May Allah SWT bless and reward you with continuous goodness

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GLOSSARY OF KEY ABBREVIATIONS

AFC	Asian Financial Crisis
ASEAN	Association of Southeast Asian Nations
BRI	Business Regulation Index
CBE	Competitive Business Environment
EFWI	Economic Freedom of the World Index
FAMOWN	Family Ownership
FOROWN	Foreign Ownership
FTI	Freedom to Trade Internationally Index
GFC	Global Financial Crisis
GSI	Government Size Index
IAS	International Accounting Standards
IBD	Board Independence
IFRS	International Financial Reporting Standards
LNSIZE	The Natural Logarithm of Total Assets
LEV	Leverage
LO	Legal Origin
LSI	Legal Structure Index
MANOWN	Managerial Ownership
OECD	Organization for Economic Cooperation and Development
RBE	Regulatory Business Environment
RPTs	Related Party Transactions

RELATED THESIS PUBLICATIONS

Journal Articles

Juliarto, A., G., Tower, M., Van der Zahn and R., Rusmin. 2011. Modeling regulatory and competitive business environments' influence on tunneling behavior. *Corporate Ownership & Control, 8(4): 420-431.*

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CHAPTER ONE
INTRODUCTION

1.1 Introduction

One of the most important challenges to current corporate governance is to constraint controlling shareholders from tunneling corporate resources at a cost to non-controlling shareholders. This thesis investigates the relationship between regulation, competitiveness, ownership and tunneling behavior in key ASEAN countries. For purposes of this thesis, the term tunneling relates to efforts of controlling shareholders of parent firms to exploit minority shareholders by siphoning off economic resources via related party transactions (RPTs). The constructs for measurement of *regulatory* and *competitive* business environments are developed using a synthesized multi-theoretical perspective combining agency, resource dependence, stakeholder, and institutional theories.

This chapter is a starting point of the thesis, providing background consisting of corporate ownership structure and inherent problems, corporate governance and tunneling then highlighting ASEAN countries. Those sections are then followed by research questions and discussion on the significance of study. Assumptions and limitations of thesis are presented later. The final component of this chapter presents the thesis outline.

1.2 Corporate Ownership Structure and Problems

Managers and controlling shareholders can extract wealth from the firm for their benefit in many different ways; this is commonly referred to as the agency problem. Since Berle and Means (1932) conceptualized the modern firm within the parameters of the separation between ownership and control, the ‘agency problem’ has been a major area of interest to scholars, regulators, shareholders and corporate management. The dominant ‘agency problem’ notion is encapsulated in Jensen and Meckling’s (1976, p. 308) agency relationship characterization described as:

> ...a contract under which one or more person (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to agent. If both parties to the relationship are utility maximizer there is good reason to believe that the agent will not always act in the best interest of the principal.

The agency problem focus defined by Berle and Means (1932) and Jensen and Meckling (1976), amongst others, is the conflict between corporate management and diffused shareholders. In recent years this perception of the agency problem is increasingly viewed as an Anglo-American perspective not fully representative of agency problems within a broader international focus (Lane 2003; Deakin 2005). That is, researchers have shown diffused ownership is predominantly a phenomenon of the US and the UK capital markets. Whereas, in the majority of capital markets worldwide (i.e., Africa, Asia, Europe, Middle East, South America) research has shown firms are frequently controlled by large blockholders (La Porta, Lopez-de-Silanes, and Shleifer 1999; Claessens, Djankov, and Lang 2000; Johnson, Boone, Breach, and Friedman 2000a; Faccio and Lang 2002; Claessens, Simeon, Fan, and Lang 2002). Under the broader international perspective, the central concern of the agency problem is the conflict between majority and minority shareholders.

A growing band of corporate business theorists (e.g., La Porta et al. 1999; La Porta, Lopez-de-Silanes, Shleifer, and Vishny 2000) argue that under the international agency problem perspective, effective mechanisms need to be in place to restrict the expropriation of minority shareholders by controlling shareholders. Expropriation is achieved by the transfer of resources (via various activities ranging from outright theft to loan guarantees to the sale of assets and products) from the firm to the benefit of controlling shareholders. This process of transferring firm value to majority shareholders is commonly termed ‘tunneling’ (Johnson, La Porta, Lopez-de-Silanez, and Shleifer 2000b). Increasing empirical evidence (e.g., Claessens et al. 2000; Bertrand, Mehta, and Mullainathan 2002; Bae, Kang, and Kim 2002; Friedman, Johnson, and Mitton 2003; Bai et al. 2004; Liu and Lu 2007; Aharony, Wang, and Yuan 2010) suggests tunneling is particularly serious in emerging economies due to poor corporate governance systems that fail to protect minority

shareholders and corporate ownership structures that promote expropriation opportunistic behavior. It has been claimed by various researchers (e.g., La Porta et al. 1999; Claessens et al. 2000; Liu and Lu 2007; Gao and Kling 2008) that the Asian region's tunneling problem is assisted by weak corporate governance systems and concentrated ownership structures. Johnson et al. (2000a) argue that unrestrained tunneling was the main reason that precipitated the 1997 – 1999 Asian Financial Crisis (AFC). One important question is 'what causes the massive exit of outside investors and the extremely low market confidence?' La Porta et al. (2000) emphasize that outside investors are unwilling to finance firms if facing extensive expropriation by corporate insiders such as controlling shareholders and managers. Moreover, long-term expropriation of small investors may lead to financial vulnerability (La Porta et al. 2000) .

Though various methods of tunneling have been suggested, much of the empirical research focuses on related party transactions (RPTs) (OECD 2009; Lin 2010). This focus is, in part, due to difficulties in capturing other potential tunneling methods but primarily due to weak corporate governance systems and prevailing corporate structures in many nations worldwide providing great scope for RPTs to be a convenient mechanism for the expropriation of firm value from minority shareholders.

Tunneling via RPTs is commonly classified into asset, financial or operational tunneling. Asset tunneling refers to the sale of tangible long-term assets to related parties whilst financial tunneling (also termed equity tunneling) is associated with the provision of loans to related parties (Liu and Lu 2007). Operational tunneling (also termed cash-flow tunneling), meanwhile, involves the use of working capital accounts (e.g., accounts receivable, accounts payable) to transfer wealth to the benefit of the major shareholder (Gao and Kling 2008).

RPTs do not always have negative consequences. Studies argue group structure and RPTs among member firms help to reduce transaction costs and overcome difficulties in enforcing property rights and contracts essential for production

(Khanna and Palepu 1997; Kim 2004; Cheung et al. 2009; Chen, Chen, and Chen 2009). Indeed, firms may make strategic investments in joint ventures to obtain and secure access to supplies and markets, and to manage risk. Transactions between the firm and related parties also generally involve less information asymmetry compared with transactions between a firm and a third party (Kohlbeck and Mayhew 2010). Djankov et al. (2008) note nations around the world do not completely ban RPTs, thereby, supporting the notion RPTs can be value enhancing. In contrast to the beneficial perspective of RPTs, various commentators express concern controlling shareholders can take advantage of poor corporate governance mechanisms and group structure to use RPTs for opportunistic tunneling purposes (Jian and Wong 2003; Kohlbeck and Mayhew 2010). Prior research (e.g., Aharony et al. 2010) alleges RPTs is a prime mechanism for corporate management to manage earnings.

Prior empirical research of RPT tunneling has mostly been country specific, with many recent studies focusing on firms listed in the People's Republic of China (PRC) (e.g., Jian and Wong 2003; Cheung, Rau, and Stouraitis 2006; Liu and Lu 2007; Guo 2008; Cheung et al. 2009; Jiang, Lee, and Yue 2010; Li 2010). The PRC has been of major interest due to the unique institutional and corporate structures in that nation, and the detailed RPTs the PRC firms are required to report (Aharony et al. 2010). In the PRC, the majority of firms are carve-outs (or spin-offs) from state-owned firms (SOEs), and often continue to share personnel functions, capital, and assets with their parent entity (Liu and Lu 2007; Ge et al. 2010). Consequently, it is alleged corporate management of the PRC firms often take action benefitting the largest shareholders (i.e., government).

Empirical research using the PRC firms generally highlights the existence of tunneling (Jian and Wong 2003). Liu and Lu (2007) conclude that earnings management amongst the PRC firms is primarily induced by controlling shareholders' tunneling resources. Cheung et al. (2006) find minority shareholders of firm conducting RPTs with SOEs are left significantly worse off than minority shareholders of firm conducting RPTs with non-SOEs. Aharony et al. (2010) note PRC IPO issuers are likely to use operational tunneling to opportunistically manage

earnings upward in the pre-IPO period, and that pre-IPO period operational tunneling is motivated in part by the prospect of opportunistic tunneling in the post-IPO period.

Outside of the PRC, there is generally a paucity of international empirical research of tunneling. Nonetheless, evidence suggests tunneling transcends international boundaries. Evidence of resource expropriation to benefit majority shareholders (i.e., tunneling) has been found in nation-specific studies of firms in Bulgaria (Atanasov 2005), Hong Kong (Cheung et al. 2006), India (Bertrand et al. 2002), Japan (Weinstein and Yafeh 1998), Russia (Atanasov, Black, Ciccotello, and Gyoshev 2006), South Korea (Bae et al. 2002; Baek, Kang, and Lee 2006), Sweden (Bergstrom and Rydqvist 1990) and the United States (Atanasov et al. 2006). Whilst the dominant view is that tunneling is relatively widespread, empirical evidence of tunneling is not universal. Chang and Shin (2007), for example, found no clear evidence of tunneling amongst a sample of South Korean conglomerates (i.e., chaebols).

Drawing on a synthesized corporate governance theoretical framework, this thesis provides an important longitudinal international analysis – spanning five ASEAN countries (i.e., Indonesia, Malaysia, the Philippines, Singapore and Thailand) – of the extent and determinants of tunneling via RPTs. These countries are under researched in terms of RPTs and tunneling.

1.3 Corporate Governance and Tunneling

To date the overwhelming focus of empirical research has focused on detecting tunneling, with few studies formally examining possible determinants. Of the international tunneling studies conducted (Johnson et al. 2000b; Glaeser, Simon, and Shleifer 2001; Friedman et al. 2003), it is commonly argued legal system differences and variations in investor protection are key determinants of tunneling. Johnson et al. (2000b), for example, conclude based on the study of tunneling cases involving several firms in Europe, that potential differences between Civil and Common Law

countries in how courts approach tunneling cases affected actions to expropriate resources from minority shareholders. Meanwhile, following the analysis of La Porta et al. (1998; 1999), Friedman et al. (2003) find strong empirical evidence that entrepreneurs tunnel resources out of firms in countries with weak investor protection.

At the firm level, the overwhelming focus is on ownership structure spanning variations of a majority ownership versus minority ownership theme; that is: (a) pyramid group structures, (b) large block holder versus minority shareholders, or (c) family-owned block versus diverse non-family minority shareholders. Bertrand et al. (2002), for example, find evidence of tunneling in Indian business groups whereby cash flows from firms lower in the pyramid to higher level firms where the controlling group has greater ownership rights. Gao and Kling (2008), meanwhile, note cash flows toward the top group entity is higher where the founding family continues to maintain controlling interesting in the top group and has family representation/ownership in lower level group entities.

An overwhelming theme of prior empirical tunneling research is the influence of corporate governance, whether at the national or firm-level. In the present globalized business environment, 'corporate governance' is a frequently used catch-phrase, sometimes used as an all-encompassing concept but at other times cast in a very narrow frame of reference (Rossouw, Van der Watt, and Rossouw 2002; Gillan 2006). Though there has been much corporate governance debate in recent decades, the underlying concept is not well understood with a lack of consensus on a formal definition and conceptual boundaries (Gillan 2006). At a national-level, legal systems and investor protection are merely components of a broader system.

In previous studies on firm performance, some researchers document that corporate governance has positive effects, while others find no evidence (Dalton, Daily, Certo, and Roengpitya 2003). To reconcile the diverging evidence on the linkage between corporate governance and firm performance, Udayasankar and Das (2007) suggest that researchers ground the performance implication of firm governance in the

context of the exogenous environment that firms operate in. Two key exogenous environment categorizations are *regulation* and *competitiveness.* These concepts are derived from recent developments in the literature which identify the social and economic context of corporate governance (Aguilera and Jackson 2003; Kim and Prescott 2005).

La Porta et al. (1998;1999) note that corporate governance is strongly linked to the larger environment within which firms operate. Firm corporate governance is affected by shareholder protection laws (La Porta et al. 1998), judicial efficiency (Klapper and Love 2002) and level of support for business (Klapper and Love 2002), which in aggregate can be referred to as the *regulatory* environment (Udayasankar and Das 2007). On the other hand, competitive forces can reduce expropriation by managers (Shleifer and Vishny 1997). While firms are concerned with the competitive aspects of corporate governance, policy-makers attempt to bring about better governance practices, and consequently foster a better business climate, through regulation (Udayasankar, Das, and Krishnamurti 2008).

Ownership structure is also a facet of a broader range of firm-level corporate governance mechanisms. Further adding to the complexity of firm-level corporate governance is that within the concept of ownership structure, alternative structural combinations (e.g., levels of foreign, family or governmental ownership) can impact the ownership structure as an effective corporate governance mechanism.

As highlighted above, corporate governance is a key role to rein in tunneling problems and covers a broad concept. To evolve the determinants of tunneling, this thesis focuses on examining the influence of the national corporate governance system and the firm-level ownership structure. In respect to the national corporate governance system, this thesis concentrates on two feature systems: level of regulation and competition. As for firm-level ownership structure, the thesis considers three features: (a) family ownership; (b) managerial ownership; and (c) foreign ownership levels.

1.4 Focusing on ASEAN Countries

Tunneling issues are of particular interest and relevance to the Southeast Asia region. A multitude of studies have highlighted the poor standard of corporate governance across Southeast Asia nations (e.g., La Porta et al. 1998; La Porta et al. 1999; Ball, Kothari, and Robin 2000; Ball, Robin, and Wu 2003; Leuz, Nanda, and Wysocki 2003). Furthermore, a majority of Southeast Asia nations are defined as emerging economies which characterized by weak corporate governance (Kawai 2008; IMF 2008). *Economic Freedom of The World* (*EFW*) index data document that Indonesia and Philippines has the worst legal structure among the five sample countries (Gwartney et al. 2009; Juliarto, Tower, Van der Zahn, and Rusmin 2011). This index is based on data points covering judicial independence, impartiality of courts, intellectual property protection, military intervention in the judicial process, legal system integrity, legal enforcement of contracts, and restrictions on sale of real property (Gwartney et al. 2009). Singapore is considered to have the best legal structure whereas Malaysia and Thailand are deemed to be in the middle. Indonesia and Philippines follow the Civil Law Legal system whereas the three latter countries employ Common Law legal traditions (La Porta et al. 1999; Krishnamurti, Sĕvić, and Šević 2005). La Porta et al. (1999) study suggests that Common Law legal tradition countries have done better than Civil Law countries in terms of investor protection. In regards to business regulation, the *EFW* index indicates that except for Singapore, the four ASEAN countries have similar scenarios (Gwartney et al. 2009; Juliarto et al. 2011). Among items covered by this index are price controls, burden of regulation, time with government bureaucracy; irregular payments, and licensing restrictions (Gwartney, Lawson, and Easterly 2006; Gwartney et al. 2009).

Another important key feature is that ownership structure amongst Southeast Asia firms is renowned for being significantly concentrated with large blockholders being dominant. Unlike corporations in the US and the UK, whose shares are diffusely held, in a typical Asian corporation one or several numbers of a family tightly hold shares (Claessens and Fan 2002). Also, Asian companies are often affiliated with a business group controlled by the same family. Tunneling is more likely if a firm is a part of family group of firm (Friedman et al. 2003). Family controlling shareholders

can tunnel wealth from the firm through excessive compensation, related-party transactions as well as special dividends (Anderson and Reeb 2003). There is also not uncommon in Southeast Asia countries for families to control the listed firms using pyramid structures (Claessens et al. 2000; Welford 2007). The presence of pyramidal control structures, wherein one family can control multiple publicly listed firms, facilitate tunneling behavior (La Porta et al. 1999). The existence of weak corporate governance standards, status as emerging economies and highly concentrated ownership structures suggests firms in Southeast Asia are likely to be highly susceptible to tunneling.

Evidence of tunneling in Asia is predominantly anecdotal (Liu and Lu 2007) with most prior studies conducted in PRC, India, Korea and Japan. There is lack of research on tunneling in Southeast Asia countries. Given the growing importance of Southeast Asia to the global economy (IMF 2007), determining the presence of tunneling, and potential factors affecting tunneling, are important research objectives. In the aftermath of the Asian Financial Crisis (AFC), Southeast Asia nations paid increasing attention to corporate governance issues and standards. Some economists suggest experience drawn from the AFC placed Southeast Asia nations in a better position to deal with the spillover from the US subprime dilemma that precipitated the Global Financial Crisis (GFC) (Kawai 2008). Based on these above reasons, it is important to investigate tunneling within the context of Southeast Asia spanning the 2006-2009 GFC period.

1.5 Research Questions

The complexity of corporate governance raises key questions in relation to tunneling in ASEAN countries. Two are of prime interest to this thesis. These are:

1. Does the broader national-level corporate governance system influence the extent of tunneling?
2. Do different ownership types (that constitute a firm's general ownership structure) influence the extent of tunneling?

More specifically, research questions for this thesis can be formulated as follows:

1. What is the extent of tunneling via RPTs in five ASEAN countries?
2. Does country's *regulatory* business environment influence tunneling via RPTs?
3. Does country's *competitive* business environment influence tunneling via RPTs?
4. Does family ownership influence tunneling via RPTs?
5. Does managerial ownership influence tunneling via RPTs?
6. Does foreign ownership influence tunneling via RPTs?

1.6 Significance of Study

There are four major contributions from this thesis. First, this thesis addresses the research gap in tunneling in the ASEAN region. Recent studies in tunneling are conducted in the PRC and focus on the impact of state ownership on tunneling. Concentrated ownership, weak legal systems and weak investor protection are typical characteristics in East and Southeast Asia that contribute expropriation of minority shareholder by controlling shareholders (La Porta et al. 1999; Claessens et al. 2000; Claessens and Fan 2002). Different from the PRC environment, concentrated ownership in most ASEAN countries are not dominated by state ownership. Therefore, this research gives empirical evidence of the impact of concentrated ownership on tunneling from a different set of economic and business environments.

Second, there is lack of comparative tunneling research across countries. This thesis investigates whether the companies in ASEAN countries vary in their tunneling behavior. In doing so, this thesis explicitly examines the *regulatory* and *competitive* business environments to explain the extent to which firms in a country engage in tunneling through RPTs; key firm characteristics are also explored. A synthesized framework of the four major theoretical perspectives of corporate governance is evolved in establishing a nation's *regulatory* business environment and *competitive* business environment. The four major theories are: agency theory, resource

dependence theory, stakeholder theory and institutional theory. These four theories and business environment variables are rarely used in prior studies. Therefore, this thesis offers new insights by providing alternative perspectives for understanding tunneling issues.

Third, this project also gives empirical evidence regarding ownership factors which may provide incentives and restraints against tunneling. The incentive for tunneling includes family ownership, and a restraining mechanism includes foreign ownership. The analysis investigates the effectiveness of the regulation that restricts the expropriation of minority shareholders. The results will contribute feedback regarding the debate about more fervent regulation, such as increased disclosure requirements of RPTs. This feedback is also expected to assist regulators in ASEAN countries formulating effective investor protection policies.

Fourth, this thesis provides empirical evidence pertaining to tunneling activities over the entire 2006-2009 GFC period for selected ASEAN countries. This evidence can be used to anticipate the impact of tunneling on possible future financial crises.

1.7 Assumptions and Limitations

This thesis approach has various assumptions and limitations. It is assumed that RPTs are the main potential source of tunneling. RPTs have been the target of concern by public accountants, market regulators, investors and other corporate stakeholders. The reason is there is a clear potential conflict of interest between a firm and its related parties. Yet, in many instances RPTs actually make economic sense (Guo 2008; Djankov et al. 2008).

RPTs are usually conducted through complicated processes. Further, there are many types of related party transactions, and consequently, it becomes quite difficult for outsider to identify which RPTs damage corporate value (Chen and Chien 2007; Gao and Kling 2008). This thesis does not and cannot measure all types of RPTs to detect tunneling. Measurement of tunneling is not straightforward, as direct measures

cannot be observed from public sources (Gao and Kling 2008). Tunneling is only at times voluntary disclosed and accounting rules arguably do not require sufficient disclosure to let investor assess the full nature and extent of tunneling (Atanasov, Black, and Ciccotello 2008). In addition, the use of RPTs amount from balance sheets can be underestimated. The year-end balance amount can be manipulated (Guo 2008; Li 2010).

Measurement of ownership variables has its limitations. It is difficult to obtain a perfectly accurate ownership percentage figure for the ultimate owner. Various specific legal mechanisms may be used by large shareholders to hide the true level of control and influence (Levy 2009). This thesis assumes that ownership information provided by publicly available sources is reasonable to measure the degree of ownership.

Finally, this thesis focuses solely on non-financial listed firms in five ASEAN countries. This is limiting in that findings cannot be completely generalized to firms and countries beyond the focus of this study. However, the findings may give important insights regarding tunneling issues, especially in jurisdictions with vastly different GFC experiences. Overall, despite the above assumptions and limitations, the thesis results may provide important insights regarding tunneling issues using a large scale longitudinal regional data set in the GFC time period.

1.8 Thesis Outline

This thesis is developed over seven chapters. Chapter Two presents the literature review and hypotheses development. The first part of the chapter provides a review of the relevant literature relating to four important issues of corporate governance, ownership structure, tunneling and related party transactions. The review focuses on four major theories of corporate governance (i.e. agency theory, resource dependence theory, stakeholder theory, and institutional theory) to develop constructs of national-level corporate governance. Chapter Two also highlights corporate governance and ownership structures of firms in ASEAN region. The

discussion is followed by a review of empirical studies on tunneling. The chapter then develops the hypotheses for this study.

Chapter Three describes the research method and techniques used to test the hypotheses. Coverage of the research paradigms and methodology employed for the thesis is presented in the beginning of this chapter. Next, a description of the sample, study period, and data collection is followed by the definition of variables and respective measurements. The last section of Chapter Three explains the statistical methods adopted and sensitivity analysis.

Chapter Four contains the descriptive statistics, univariate statistics, ANOVA for the full sample. Main empirical results are then provided in Chapter Five. The first part of Chapter Five presents univariate statistics and ANOVA test after sample are grouped based on Tunneling criteria. Correlation analysis and multivariate statistics analysis for the association between tunneling and its predictors are then presented. Chapter Six offers sensitivity analysis focusing on the alternate measure of tunneling. Finally, Chapter Seven summarizes the findings of the thesis including contributions, implications and suggestions for future research.

CHAPTER TWO
LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Introduction

The previous chapter discussed the background, research questions, and significance of study. Chapter Two reviews the literature underlying the theoretical framework for the thesis and present hypotheses development. This starts with discussion of national-level corporate governance involving the four major theoretical perspectives underlying corporate governance (i.e., agency, resource dependence, stakeholder, and institutional theories). These four theories are then used to explain two important elements of business environment. The next section outlines research on firm ownership structure followed by a RPT tunneling discussion. Based on proposed framework in this section, testable hypotheses for the association between: (a) national-level corporate governance; (b) firm-level corporate governance and tunneling via RPTs are then evolved.

The national-level corporate governance system and firm-specific ownership structures are the prime explanatory variables of interest in this thesis. A nation's business environment (consisting of the *regulatory* business environment and *competitive* business environment) is considered to be fundamental in determining a country's national-level corporate governance system. As for ownership structure, this concept can be the product of various attributes. For this thesis the focus is on three key types of ownership: (a) family ownership; (b) managerial ownership; and (c) foreign ownership. This section provides background literature to support the development of testable hypotheses for the thesis.

2.2 National-Level Corporate Governance: An Integrated Perspective

The most commonly invoked paradigms in the field of corporate governance are the Anglo-Saxon and Germanic models (Shleifer and Vishny 1997; La Porta et al. 1999; La Porta et al. 2000). The Anglo-Saxon model boasts support for strong capital markets with weak institutional constraints on corporate management (Mueller 2006). Under the Anglo-Saxon model the firm is characterized as an institution exclusively concerned with maximizing shareholder value (Lane 2003; He and Ho 2009). In contrast, the Germanic model advocates strong institutional (particularly banking) control on corporate management to compensate for weak capital markets (Shleifer and Vishny 1997). Rather than focusing on shareholders, the Germanic paradigm advocates firms operate in the interests of a wider set of stakeholders (including employees, customers and the general public) (Deakin 2005). The disparity in the underlying corporate governance characteristics between the Anglo-Saxon and Germanic models, raises questions about the driving forces behind the evolution of corporate governance at the national-level.

To better understand the impact of a national-level corporate governance system on tunneling, a synthesized framework of the four major theoretical perspectives of corporate governance is evolved. The four major theories are: agency theory, resource dependence theory, stakeholder theory and institutional theory. The first two theories aid in establishing a nation's *competitive* business environment whilst the latter two underpin the *regulatory* business environment. The next section discusses each of these four major theoretical perspectives of corporate governance.

2.2.1 Agency Theory

Agency has become a popular theoretical perspective in corporate governance to explain organizational behavior (see Jensen and Meckling 1976; Baiman 1982; Eisenhardt 1989; Roe 1993). Prasad (1990) argues that although developed by financial economist, agency theory is a subset of organization theories. Agency theory (or economic principal agent theory) as employed in Jensen and Meckling (1976), is grounded in neo-classical economics from which the assumptions of

agency theory are derived. Most significant among these assumptions is the perception of the greed of the principal and agent who are actively seeking to gain at the others' expense (Deegan 2007).

Jensen (1988) argues that agency theory is derived from the nexus of contracts viewpoint of organizations. From this view, agency theory perceives the firm as a nexus contract between different parties known as the firm's stakeholders. Agency theory assumes the contract to be incomplete in nature, not fully specifying the parties' obligations for every conceivable contingency (Berglof 1990). As a result, there is a need for guidelines on how the firm should be governed and directed in order to achieve the firm's goals. Consequently, these contracts include not only the explicit legal contract in which the terms are clearly specified (e.g. employment contracts), but it is also argued that long term relationships are built on implicit contracts of shared understandings (Boatright 2002).

Agency theory approach to the organization is concerned with the role of capital markets and structure of modern corporations (Davis and Thompson 1994). The theory assumes that the efficient operation of capital markets and the value of residual claims held by shareholders are reflected in the company's share price on the stock market (Davis and Thompson 1994). The efficient capital market, therefore, serves as a selection mechanism to discipline a company's governance and structure that is reflected in a share price. For instance, the takeover processes facilitated by the capital markets better ensure that a company that is governed to maximize shareholder wealth can survive in the competition for capital (Davis and Thompson 1994).

Agency theory, as has been addressed by Jensen and Meckling (1976), is based on the proposition of the separation between ownership and control. Such a separation gives the agents (managers) incentives to pursue activities which will benefit themselves at the cost of the principal (owners). The basic premise is that "if both parties to the relationship are utility maximizer, there is good reason to believe that the agent will not always act in the best interest of principal" (Jensen and Meckling

1976, p. 308). Jensen and Meckling (1976) believe that the owner-manager's divergence of interests will cause agents to fail to maximize the welfare of the principal. This failure is the most important cost resulting from the principal agent conflict, which is known as the agency problem. Through the convergence-of-interest hypothesis, Jensen and Meckling (1976) argue that corporate governance performance will increase with the level of management or insider ownership in company.

Within a similar theoretical framework, Demsetz (1983) argues that the increased level of insider ownership will reduce corporate performance. This argument is known as the entrenchment hypothesis, which directly contrasts with the convergence-of-interest hypothesis. Studies by Morck, Shleifer and Vishny (1988) and McConnel and Servaes (1990, 1995) support Demsetz (1983) finding that increased managerial ownership adversely impacts a firm's value over certain ownership ranges. Proponents of the entrenchment hypothesis suggest that providing managers with share ownership to align their interests with the owners may not effectively solve the agency problems.

Despite the conflicting results related to convergence-of-interest and entrenchment hypotheses, both views recognize the need for control mechanisms to align the interest of principals and agents in order to better address the agency problem. However, exercising control through monitoring mechanisms are not without costs. Monitoring (or agency) costs will be borne by the principals as the capital owners in the agency relationship. The owners have incentives to ensure that managers do not diverge from the goal to maximize shareholder value. However, as rational entrepreneurs, owners have to consider the costs and benefits of monitoring mechanisms employed to oversee management. Agency theory seeks to define the nature of contracts that will minimize agency costs; that is the costs of monitoring, motivating and ensuring the commitment of the agent (Davis and Thompson 1994).

Ownership structure influences the nature of agency problem; that is, whether the dominant conflict is between manager and shareholder ('agency problem I') or

between controlling and minority shareholders ('agency problem II') (Shleifer and Vishny 1997; Qu 2004; Jaggi, Leung, and Gul 2009). Oman (2001) explains that conflict between shareholders and managers is the most frequent point of focus in US and UK companies, while in many other countries the dominant conflict is between the controlling shareholder and minority shareholders.

According to the Anglo-American perspective of agency theory, the primary agency conflict occurs between dispersed shareholders and professional managers. Accordingly, there are several governance mechanisms that may help align the interests of shareholders and managers. These include internal mechanisms such as boards of directors, concentrated ownership, executive compensation packages, and external governance mechanisms such as product market competition, the managerial labor market, and threat of takeover (Fama and Jensen 1983; Demsetz and Lehn 1985). The optimal combination of mechanisms adopted can be considered as an 'ensemble' where a particular mechanism's effectiveness depends on the effectiveness of others (Rediker and Seth 1995; Davis and Useem 2002). For instance, if a board of directors is relatively ineffective, a takeover bid may be necessary to dislodge an entrenched CEO. Thus, governance mechanisms operate interdependently with overall effectiveness depending on the particular combination (Jensen 1993). In other words, one mechanism may substitute for or complement another – if one or more mechanisms are less effective, then others will be relied on more heavily (Suhomlinova 2006; Rediker and Seth 1995).

In emerging economies, the institutional context makes the enforcement of agency contracts more costly and problematic (North 1990; Wright, Filatotchev, Hoskisson, and Peng 2005). This results in the prevalence of concentrated firm ownership (Dharwadkar, George, and Brandes 2000). Concentrated ownership, combined with an absence of effective external governance mechanisms, results in more frequent conflicts between controlling shareholders and minority shareholders (Morck, Wolfenzon, and Bernard 2005). This has led to the development of another perspective on corporate governance which focuses on the conflicts between different sets of principals in the firm. This has come to be known as the principal–

principal (PP) model of corporate governance which centers on conflicts between the controlling and minority shareholders in a firm (Dharwadkar et al. 2000). Young et al. (2008) note that a common trait among emerging economies are conflicts between these two categories of principals (i.e., the controlling shareholder and minority shareholders).

2.2.2 Resource Dependence Theory (RDT)

Organizations are dependent on their environment for survival. These dependencies typically take the form of a relationship between the organization and other organizations. Interdependence exist whenever the organization does not entirely control all of the conditions necessary for the achievement of an action or obtaining desired outcomes (Pfeffer and Salancik 1978).

Resource Dependence Theory (RDT) is a theory of how the external resources of organizations affect the behavior of the organization. This theory was not formalized until the 1970s, with the publication of *The External Control of Organizations: A Resource Dependence Perspective* (Pfeffer and Salancik 1978). Pfeffer and Salancik (1978, p.43) state that "it is the fact of the organization's dependence on the environment that makes the external constraint and control of organizational behavior both possible and almost inevitable". Groups that control vital resources that they are dependent upon (or can reduce the uncertainty of other organizations), have the most power.

RDT has implications regarding the optimal divisional structure of organizations, recruitment of board members and employees, production strategies, contract structure, external organizational links, and many other aspects of organizational strategy. RDT has been applied broadly across the research domain to explain how organizations reduce environmental interdependence and uncertainty (Hillman, Withers, and Collins 2009).

Harrison, Torres, and Kukalis (1988) observe that firms that are more dependent on the socioeconomic environment have an increased rate of executive turnover. Several others support the relationship between firm pre-succession performance and executive succession (Friedman and Singh 1989; Goodstein and Boeker 1991; Arthaud-Day, Certo, Dalton, and Dalton 2006; Zhang 2006) as well as executive tenure (Guthrie, Grimm, and Smith 1991). That is, when a firm experiences poor performance (or signals poor leadership through events such as financial restatements), the firm is more likely to replace the CEO, and the market is more likely to respond positively. In more competitive or uncertain environments, executive tenure is also shorter than in stable, predictable environments (Friedman and Singh 1989; Goodstein and Boeker 1991). Similarly, Guthrie and Olian (1991) find that environmental contingencies are linked to the executive selection process. As environmental uncertainty increases, years of business unit tenure decreases for individuals selected as general managers. In these instances, experience from a single organization is viewed to be less relevant than diverse, extra-organizational experiences in a highly uncertain environment (Guthrie and Olian 1991).

Mizruchi and Fein (1999, p.657) suggests that pressures from external resource providers results in 'coercive isomorphism' and "is thus analogous to formulations of the resource dependency model, in which organizations are viewed as constrained by those on whom they depend for resources". For instance, Mizruchi and Stearns (1994) find empirical evidence for the relationship between the firm’s need for financial resources and representation of financial providers on firm board. The types of financial institutions represented on firm board, in turn, influence the financing the firm obtain (Stearns and Mizruchi 1993).

2.2.3 Stakeholder Theory

Stakeholder theory is a managerial conception of organizational strategy and ethics (Freeman 1984, 1994; Donaldson and Preston 1995; Freeman 1996). Stakeholder theory begins with the assumption that values are necessary and explicit parts of doing business, and rejects the separation argument (Freeman 1994). The central

idea is that an organization's success is dependent on how well the organization manages the relationships with key groups such as customers, employees, suppliers, communities, financiers, and others that can affect the realization of its purpose (Freeman and Philips 2002). The manager's job is to keep the support of all of these groups, and balancing their interests. At the same time, managers make the organization a place where stakeholder interests can be maximized over time.

The identification of stakeholder groups is a major debate in the scholarly and popular literature (Mitchell, Agle, and Wood 1997; Phillips 1997). Scholars would include employees, customers, suppliers, financiers, and local communities, at a minimum (Freeman and Philips 2002). Clarkson (1995) divides stakeholders into primary and secondary shareholders. He (Clarkson 1995) defines primary stakeholder as one without whose continuing participation the corporation cannot survive as a going concern. In contrast, secondary shareholders are defined as those who influence or affect (or are influenced or affected) by the corporation but are not engaged in transactions with the corporation and are not essential for it survival.

Clarkson (1995) argues that primary stakeholder groups typically are comprised of shareholders and investors, employees, customers, suppliers, and the public stakeholder group. The public stakeholder group consists of the governments and communities that provide infrastructures and markets, whose laws and regulations must be obeyed, and to whom taxes and other obligations may be due. The survival and continuing profitability of the corporation depends upon its ability to fulfill its economic and social purpose, which is to create and distribute wealth or value sufficient to ensure that each primary stakeholder group continues as part of the corporation’s stakeholder system (Clarkson 1995).

Hilman and Keim (2001) state that building better relations with primary stakeholders like employees, customers, suppliers, and communities could lead to increased shareholder value by helping firms develop intangible, valuable assets which can be sources of competitive advantage. On the other hand, some argue using corporate resources for social issues not related to primary stakeholders may not

create value for shareholders. Both the Clarkson (1995) and Hilman and Keim (2001) definition of primary stakeholders is similar to the definition of stakeholders by researchers working within a managerial perspective of stakeholder theory (i.e., focusing on powerful stakeholders). However, this focus on primary stakeholders is challenged by proponents of the ethical branch of stakeholder theory arguing that all stakeholders have a right to be considered by management (Deegan 2007).

Stakeholder theory has received significant attention in the discourse of 'stakeholder economy', particularly in the UK (e.g., Hutton 1995; Kelly, Kelly, and Gamble 1997; Plender 1997). A stakeholder economy emphasizes a large-scale role for government in the process of value creation and trade. While the stakeholder concept is originally applied to the private sector as a theory of organizational ethics (Phillips and Margolis 1999), expanding the idea to include public institutions and the entire national or world economy is considered as a conceptual advance (Rustin 1997; Barnett 1997).

2.2.4 Institutional Theory

Institutional theory of governance can be viewed as a complement to agency theory rather than as a competing theory (Carpenter, Cheng, and Feroz 2007). This view is consistent with earlier applied economics models of accounting choice that assumes individuals maximize utility subject to certain rules and institutional settings. As the extant agency theory models from prior research do not take into account that individuals can work to avoid or change organizational and/or institutional rules, Carpenter, Cheng and Feroz's (2007) study seeks to advance understanding of accounting choice by developing a model that includes institutional governance theory variables in conjunction with established agency theory variables.

Mezias (1990) uses an institutional model to investigate the decision of Fortune 200 companies to record the investment tax credit between 1962 and 1984 on the income statement. His (Mezias 1990) findings indicate that the inclusion of variables to proxy for changes in the institutional environment adds significant explanatory

power over and above models that are based on economic consequences models. Moreover, Mezias (1990) reports that much of the variance explained by the model used is due to variables suggested by institutional theory.

Researchers have long maintained that the efficient design of a bundle of governance mechanisms varies systematically with the industry or the size of the firm ((Fama and Jensen 1983). It is also argued that the efficiency of a bundle of governance mechanisms varies systematically with the institutional structure at a country level (La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1997; La Porta et al. 1998; Guillen 2000, 2001; La Porta, Lopez-de-Silanes, Shleifer, and Vishny 2002; Suhomlinova 2006). Lubatkin, Lane, Collin, and Very (2007) explicitly address the impact of national institutions on corporate governance. Considering that traditional agency theory fails to accommodate differences in national culture, they (Lubatkin et al. 2007) build a cross-national governance model offering insights into why governance practices evolve separately in different institutional contexts. Lutbakin et al. (2007) document that institutional structure at the country level impacts the bundle of internal and external governance mechanisms at the firm level.

Recently, institutional theory has become a predominant theory for analyzing management in emerging economies (Hoskisson, Eden, Lau, and Wright 2000; Wright et al. 2005). Institutions affect organizational routines (Feldman and Rafaeli 2002) and help frame the strategic choices facing organizations (Peng, Lee, and Wang 2005). Overall institutions help to determine firm actions, which in turn determine the outcomes and effectiveness of organizations (He, Tian, and Chen 2007).

The institutions that impact such organizational actions in emerging economies are not stable (Young et al. 2008). Organizations in emerging economies are to a greater extent guided by informal institutions (Peng and Heath 1996). The theories used by researchers often implicitly assume that the institutional conditions found in developed economies are also present in emerging economies. Yet, the organizational activities can differ considerably from those found in developed

economies (Wright et al. 2005). In the case of corporate governance, emerging economies typically do not have an effective and predictable rule of law which, in turn, creates a 'weak governance' environment (Dharwadkar et al. 2000; Mitton 2002).

In most cases, emerging economies have attempted to adopt legal frameworks of developed economies, in particular those of the Anglo-American system. Such adoption is either as a result of internally driven reforms (e.g. China, Russia) or as a response to international demands (e.g. South Korea, Thailand) (Young et al. 2008). However, formal institutions such as laws and regulations regarding accounting requirements, information disclosure, securities trading, and rule enforcement are often either absent, inefficient, or do not operate as intended. Therefore, standard corporate governance mechanisms have relatively little institutional support in emerging economies (Peng 2003; Peng 2004). This results in informal institutions, such as relational ties, business groups, family connections, and government contacts, all playing a greater role in shaping corporate governance (Peng and Heath 1996; Yeung 2006).

For threshold firms[1], the transition to professional management is always difficult (Daily and Dalton 1992). Yet, it is even more difficult in emerging economies because of the weak institutional environment, and it is common for even the largest firms to still be under the control of the founding family. In essence, these firms attempt to appear as having 'crossed the threshold' from founder control to professional management. However, the founding family often retains control through other (often informal) means (Young, Ahlstrom, and Bruton 2004; Liu, Ahlstrom, and Yeh 2006). Indeed, publicly-listed firms in emerging economies have shareholders, boards of directors, and 'professional' managers, which compose the

[1] Firms that are near the point of transition from founder to professional management (Daily and Dalton 1992; Gedajlovic, Lubatkin, and Schulze 2004).

'tripod'[2] of modern corporate governance (Monks and Minow 2008). Therefore, whilst the largest publicly-traded firms in an emerging economy may have adopted the appearance of corporate governance mechanisms from developed economies, these mechanisms rarely function as counterparts in developed economies. Put simply, the corporate governance structures in emerging economies often resemble those of developed economies in form but not in substance (Backman 1999; Peng 2004). As a result, concentrated ownership and other informal mechanisms emerge to fill the corporate governance vacuum. While these *ad hoc* mechanisms may solve some issues, they create other novel problems in the process (Young et al. 2008). In summary, each emerging economy has a corporate governance system that reflects its institutional conditions.

Overall, agency theory explains problems from conflict between principal and agent that are different in interests and preferences. Majority-minority shareholders conflicts have been identified as a major concern of corporate governance in emerging economies. Internal mechanisms such as boards of directors, and external mechanisms such as competition, generate governance mechanisms to mitigate agency problem. Whereas resource dependent theory stresses on notion that organizations are dependent on their environment for their survival. Pressures from resource providers encourage additional governance mechanisms in order to reduce environmental uncertainty.

Stakeholder theory focuses on organizations capability to manage their stakeholders in order to maximize stakeholders' value. Creating and distributing value to each stakeholder group is needed for the survival of the organization. Rather than a competing theory, institutional theory of governance can be viewed as a complement to agency theory in terms of its assumption that individuals maximize their utility subject to certain rules and institutional settings. Various governance mechanisms are thought to be associated with the institutional structure at the country level.

[2] Monk and Minow (2008) analogize the role of shareholder, board of director, and professional manager of firms that resemble a camera tripod. Their roles serve as pillars for modern corporate governance.

2.2.5 Framework for Business Environments

2.2.5.1 *Regulatory* Business Environment

Stakeholder theory and institutional theory are arguably most relevant for the *regulatory* business environment. Freeman (1984) proposes the concept of stakeholder management to address the ethical and moral considerations of a business. Stakeholders are defined as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman 1984, p.30). Stakeholder theory advocates (Roberts 1992; Donaldson and Preston 1995; Hillman and Keim 2001) argue that even in the most expansive form of social responsibility, corporate management sees stakeholder management as having a positive contribution toward firm value (Owen and Scherer 1993). Stakeholder theorists, however, acknowledge the possible existence of "multiple, and not always entirely congruent purposes" (Donaldson and Preston 1995, p.70).

The inherent contrast between agency theory and stakeholder theory is that the former focuses on a single group whilst the latter is broader; that is, agency theory emphasizes maximization of investor (or shareholder) value with stakeholder theory stressing maximization of value for stakeholders (Boatright 2002). Just as agency theorists stress investor protection is important in reducing the agent – principal conflict, stakeholder theory highlights protection of stakeholder interests (Boatright 2002). Whilst the legal system is considered central to investor protection (e.g., weak legal system leads to weak investor protection) (La Porta et al. 1998), the broader legislative system and political agenda is also viewed as important for the protection of stakeholder rights (Boatright 2002; Parmar et al. 2010). It is commonly assumed that the government is responsible for, and has the necessary power, to ensure the protection of stakeholder rights (La Porta et al. 1998; Glaeser et al. 2001). If the government fails to recognize and protect the broader interests and freedoms of stakeholder groups through suitable legislation and policies, growth and influence of special interest groups will be curtailed providing firms with little incentive to act in a corporate social responsible manner (Roberts 1992). Consequently, firm value may well diminish (Wurgler 2000).

As for institutional theory, advocates suggest firm value is best derived by the firm being in consonance with its institutional environment (e.g., Oliver 1997; Arthur 2003; Hart and Milstein 2003). Institutional theory advocates such as Baron (1995, 2001), Suchman (1995), and Oliver (1997) argue economic benefits, such as organizational legitimacy, are dependent on whether or not a firm is in accord with its institutional environment. These arguments have found support with prior empirical research (e.g., Lee and Pennings 2002; Thornton 2002) that suggests institutional pressures influence a firm's value. Advocates of institutional theory (in the same vein as supporters of stakeholder theory) stress the importance of regulation within the business environment (Oliver 1997). Institutional theorists presume institutions recognize, and are empowered to reward business with (or alternatively withhold) key resources (DiMaggio and Powell 1983; Baron 2001). Researchers have identified various institutions and institutional pressures that influence the regulatory aspect of the business environment such as the legal system (e.g., La Porta et al. 1997, 1998), trade agreements (e.g., Levy and Prakash 2003), social co-operatives and state ownership (Shleifer and Vishny 1997). Gillian and Starks (2003, p.4) identify institutional investors as "an increasingly important external control mechanism affecting corporate governance worldwide". Empirical evidence of the impact of institutional factors is widespread. La Porta et al (2002), for example, state firm value is enhanced in nations with strong legal systems. Wurgler (2000), meanwhile, finds strong institutional structures prevent overinvestment in declining, unproductive industries and firms. Finally, Leuz et al. (2003) show institutional actors can prevent negative financial accounting practices such as earnings management.

2.2.5.2 *Competitive* Business Environment

The rawest, and most basic, objective of a firm is to develop a sustainable competitive advantage and remain a viable going-concern (e.g., Porter 1985). There is division in the literature on how corporate governance influences a firm's competitive actions and the capabilities in achieving a sustainable level of performance. Agency theory advocates perceive the distribution, or use of, free cash flows is a fundamental link to corporate governance and firm performance. It is

frequently argued by agency theorists that how free cash flows are distributed, or used depends largely on the motivations of corporate management. Agency theory has a number of implicit assumptions. One important assumption postulated, suggests inefficient firms (i.e., firms with high levels of agency costs) face threats from competitors in the business environment through the advent of the market for corporate control (Jensen and Ruback 1983). For this fundamental assumption to hold, it is presumed an efficient and competitive business environment prevails where asymmetrical information is minimal and competitive pressures high.

In contrast to agency theory, resource dependence theory focuses on human resource capabilities of actors within the corporate governance structure and the resulting impact on firm performance (Dalton, Daily, Johnson, and Ellstrand 1999). Resource dependence theory essentially presumes a firm can benefit strategically from board capital that ultimately implies an organization is efficient (Pfeffer and Salancik 1978). The general proposition upheld by resource dependence advocates is that firms benefit from human capital (i.e., skills and strengths of the directors); this presumes the presence of a reasonably efficient labor market (e.g., Dalton et al. 1999; Hillman and Dalziel 2003). Similarly, relational capital such as channels of communication is likely to enhance firm value in cases when the channels of communication offer a firm an advantage over competitors (Hillman and Dalziel 2003).

Overall, assumptions inherent in agency and resource dependence theories are best achieved in a business environment highlighting principles of perfect competition (Udayasankar, Das, and Krishnamurti 2005). Competitive dynamics researchers argue motivation and capability are two prime drivers of a firm's competitiveness and efficiency (e.g., Gimeno 1999; He and Mahoney 2006). Whilst agency theory and resource dependence theory target different mechanisms (i.e., motivation and capability respectively), these paradigms simultaneously co-exist within a *competitive* business environment in determining firm-performance (e.g., Hillman and Dalziel 2003). Agency theory assists to explain how corporate governance influences the motivation of corporate management to select optimal decisions in the

distribution and use of free cash flows that enhances shareholder wealth. On the other side, resource dependence theory stresses the capability of a firm's corporate governance to enhance the undertaking of key strategic competitive actions.

2.3 Ownership Structure

Ownership structure is an important component of corporate governance that also determines the nature of agency problem; that is, whether the dominant conflict is between manager and shareholder ('Agency Problem I') or between controlling and minority shareholders, ('Agency Problem II') (Shleifer and Vishny 1997; Qu 2004; Jaggi et al. 2009).

Boubakri, Cosset, and Guedhami (2005) propose two key dimensions of ownership structure (i.e. ownership concentration and the identity of owner). A shareholder can be an individual; a family; a bank; a holding company; an institution; or a non-financial corporation. Different types of owners might have different interests, thereby, having distinct incentives and abilities to control corporate management (Lehmann and Weigand 2000). For instance, significant holdings by institutional investor are more likely to lead to enhanced monitoring and control (Hoskisson, Johnson, and Moesel 1994). On the other hand, family controlling shareholder tend to expropriate firm resources and may appoint unqualified family members to key management posts (Claessens et al. 2000).

A recent stream of literature brings into question the assumption of diffuse ownership and suggests in many economies a concentration of ownership is more typical (La Porta et al. 1998; La Porta et al. 1999; Claessens et al. 2000; Anderson and Reeb 2003). A concentrated pattern of ownership potentially allows insiders to have tight control of the firm, but it also opens up opportunities to expropriate wealth from outside shareholders (Prowse 1992; Faccio, Lang, and Young 2001; Villalonga and Amit 2006). In Asia, concentrated ownership in the form of family ownership dominates other forms of ownership. For instance, Indonesia is a country that has a high percentage of family ownership of listed companies in this region (SCMP 2002

cited in Jaggi et al. 2009). There is evidence of expropriation of non-family shareholders by the families who control these firms, especially where the voting rights of the families significantly exceeds their cash flow rights (e.g., Bertrand et al. 2002). This expropriation is popularly called 'tunneling' (Johnson et al. 2000b).

2.4 Tunneling and Related Party Transactions

Directors and officers of corporations are charged with the duty of entering into contracts that maximize shareholder wealth (Jensen and Meckling 1976). These contracts can cover a broad range of transactions including acquiring production inputs, selling firm outputs, purchasing and divesting assets. Officers and directors sometimes enter into these contracts with relatives, large shareholders, other firms that the officer and directors are affiliated with, or even with themselves. Such contracts are commonly referred to as related party transactions (RPTs). Given that related parties can use their influence to procure such contracts, and influence the terms of the contracts in their favor, RPTs are often viewed as being inconsistent with shareholder wealth maximization (Ryngaert and Thomas 2007).

Johnson et al. (2000b) observe that tunneling can take various forms including advantageous transfer pricing to parties related to the controlling shareholders, loan guarantees on behalf of controlling shareholders, and expropriation of the corporation's opportunities. Regardless of the specific form, tunneling diverts economics resources out of public companies to controlling shareholders, which is detrimental to the interest of minority shareholders (Li 2010).

Some literature has examined actions of controlling shareholders that may directly impact the firm they control, typically through RPTs between publicly listed firms and their controlling shareholders (e.g.La Porta, Lopez-De-Silanes, and Zamarripa 2003; Baek et al. 2006; Cheung et al. 2006). This literature recognizes three primary motivations behind RPTs, i.e. tunneling, propping, and earnings management. The tunneling literature provides evidence that value of minority shareholdings has declined as a result of RPTs (Cheung et al. 2009).

Cheung et al. (2006) classify RPTs that are *a priori* likely to result in expropriation of the listed firm's minority shareholders; i.e. assets acquisition, assets sales, assets swaps, trading goods and services, and cash payment. Among these transactions, direct cash payments by listed company to related parties are almost certainly tunneling. Whilst the remaining four categories may be used for both tunneling and propping (Cheung et al. 2009).

Outright cash approriation and other resources transfers directly to the family's own pockets are generally considered illegal with such transactions facing severe punishments. However, inter-firm transfers of resources within a business group (i.e. RPTs) are often considered legal in most countries' jurisdiction (Riyanto and Toolsema 2008; Lei and Song 2011). According to Djankov et al. (2008), legal RPTs are actions taken by controlling shareholders which may benefit them at the expense of other investors, but nominally follow the law regarding disclosure and approval procedures.

2.5 Hypotheses Development

2.5.1 Proposed Impact of Business Environments on RPTs Tunneling

Broadly, a nation's corporate governance system may be viewed as a product of *de jure* and *de facto* practices and standards (Acre and Robles 2005). The term *de jure* corporate governance refers to the extent to which corporate governance practices and standards are formally legislated and enforced (Iskander and Chamlou 2000; Acre and Robles 2005). Given the affinity with legislation of rules and policies, *de jure* corporate governance is closely affiliated with the *regulatory* business environment; and, therein, institutional theory and stakeholder theory. As regulatory efficiency (a key assumption of institutional and stakeholder theories of corporate governance) increases, various coercive forces will pressure firms to develop corporate governance mechanisms that conform to practices and standards legislated and enforced by the nation's regulatory framework, and that benefit organizational legitimacy and effect (Udayasankar and Das 2007). In a highly efficient *regulatory*

business environment, therefore, a firm is likely to have less scope and incentive to adopt practices and conventions (such as those expropriating resources from minority shareholders) for fear it will draw unwanted regulatory and political attention. Based on this perception, the scope for tunneling via RPTs will be diminished in a strong and efficient *regulatory* business environment. To formally test this proposition the following hypothesis is formed:

> ***H_1*:** *There is a negative association between the strength of nation's regulatory business environment and extent of listed company tunneling via RPTs.*

As for *de facto* corporate governance, this phrase refers to the level of impromptu (or voluntary) corporate governance practices and standards within a nation (Palepu, Khanna, and Kogan 2002). Impromptu corporate governance mechanisms evolve out of competitive pressures between firms, and an incentive for a firm to differentiate oneself from competitors (Chakrabarti 2008). On this basis, the *competitive* business environment is closely associated with *de facto* corporate governance practices and standards; and, therefore, agency theory and resource dependence theory (Udayasankar and Das 2007). In a strong and efficient *competitive* business environment, firms will be under pressure to conform to business-derived corporate governance norms and standards. Furthermore, firms have more incentives to regularly update and develop alternative corporate governance mechanisms so they can be differentiated from competitors. A firm failing to conform with *de facto* corporate governance practices and standards in a strong and efficient *competitive* business environment is likely to be punished (e.g., loss of value) by investors and providers of key resources (e.g., labor, material suppliers). In a weak and inefficient *competitive* business environment the fear of being punished by investors and key resource providers will be diminished (La Porta et al. 1998, 1999). Consequently, firms have little incentive to conform to and develop new *de facto* corporate governance practices and standards. Overall, a strong and efficient *competitive* business environment is likely to provide firms less scope and opportunities to tunnel

resources away from minority shareholders via RPTs. To formally test this proposition the following hypothesis is formed:

> ***H_2:*** *There is a negative association between the strength of nation's competitive business environment and extent of listed company tunneling via RPTs.*

2.5.2 Ownership Structure and Tunneling

In the previous section it was posited that the national level corporate governance system represented by *regulatory* and *competitive* business environments are possible factors explaining a firm's tunneling problem. At the firm level, corporate ownership structures are often suggested as factors contributing to the severity of wealth expropriation. Based on prior research considering the influence of three key ownership structure features (i.e., family, managerial and foreign) on accounting and finance issues, then testable hypotheses addressing the association with tunneling via RPTs are formed.

2.5.2.1 Family Ownership and Tunneling

Various ownership patterns exist across economies. Dispersed shareholdings supported by a well functioning legal and regulatory framework have provided an efficient base for capital accumulation (Shleifer and Vishny 1997; La Porta et al. 1999). A recent stream of literature brings into question the assumption of diffused ownership and suggests in many economies that concentrated ownership is more typical (La Porta et al. 1998; La Porta et al. 1999; Claessens et al. 2000; Anderson and Reeb 2003). In East and Southeast Asia, concentrated ownership in the form of family ownership dominates other types of ownership (Claessens et al. 2000). Family ownership has an informal powerful influence on the way that organization are run, with positive and negative outcomes (Schulze, Lubatkin, and Dino 2003). Family control may reduce agency cost by helping to align ownership with control (Jensen and Meckling 1976; Fama and Jensen 1983). On the other hand, family control may increase the likelihood of expropriation of non-family minority

shareholders that can harm performance (Bloom and Van Reenen 2006). A concentrated pattern of ownership potentially allows insiders to have tighter control of the firm, but also opens up opportunities to expropriate wealth from other shareholders (Faccio et al. 2001; Villalonga and Amit 2006). A family controlled entity may use a variety of means to transfer a significant proportion of free cash flows from a company in which family controlling shareholders have small cash flow rights but large voting rights into a company in which they have large cash flow rights and control (Johnson et al. 2000b). Controlling shareholders could transfer wealth, or get special benefits, by self-dealing transactions between the controlling shareholders and the controlled firms (Gilson and Gordon 2003).

Guo (2008) argues that the presence of controlling shareholders, and higher control rights, leads to higher levels of tunneling via RPTs. In a similar spirit, Li (2010) investigates tunneling by controlling shareholders in China's public firms, and finds that tunneling is pervasive and severe. Given that many listed firms characterized by family controlling shareholders are common in Southeast Asia, this thesis assumes that the higher percentage of family ownership the higher the tunneling threats. Accordingly, these arguments lead to the following hypothesis:

> ***H_3**: There is a positive association between firm's family ownership and extent of listed company tunneling via RPTs.*

2.5.2.2 Managerial Ownership and Tunneling

Warfield et al. (1995) document that higher CEO stock ownership helps alleviate some agency problems that arise in corporation by aligning the interest of managers and shareholders. As long as managers are minority shareholders, their ownership role might also mitigate the danger of tunneling (Liu and Lu 2007; Gao and Kling 2008). In contrast, Klien (2002) finds a positive correlation between CEO shareholdings and earnings management, which is consistent with recent events and accounting scandals. If the CEO manages earnings to increase his/her overall compensation, then there will be a positive relation between CEO shareholdings and

earnings management (Klein 2002). This indirectly indicates the possibility of expropriation.

Morck et al. (1988) suggest that high shareholding by top managements may cause moral hazard and information asymmetry problems between the inside (management and directors) and outside investors. In a similar vein, Santiago-Castro and Brown (2011) find a positive association between CEO ownership and the potential for expropriation of minority shareholders' rights. Thus, managerial shareholdings appear to lower the level of monitoring that may negatively affect minority shareholders, without the presence of other internal corporate governance mechanisms. These findings support the agency theory argument that when managers' shareholdings grow as a fraction of personal wealth, their interest becomes more aligned with the majority shareholder (Jensen and Meckling 1976; Weisbach 1988). As managers' shareholdings increase, their objectives more closely match those of the controlling shareholder, and consequently minority shareholders may lose an important monitoring device for good corporate governance. Gibson (2003) also suggests that minority investors in emerging markets controlled by a large shareholder, i.e., family, should be aware that managers may favor the large shareholder at the expense of the minority shareholders. This discussion leads to the following hypothesis:

> ***H_4:*** *There is a positive association between firm's managerial ownership and extent of listed company tunneling via RPTs.*

2.5.2.3 Foreign Ownership and Tunneling

Foreign ownership can be seen as one effective mechanism that can complement the current governance structure in order to monitor the management from non-value maximizing activities because their role resembles that of institutional investors (Dahlquist and Robertsson 2001). Foreign investors may also have better monitoring capabilities, which can help firms to move away from an over-reliance on concentrated ownership (Khanna and Palepu 2000). Djankov and Murrell (2002)

find in an extensive survey of the research on transitional economies that when investment funds, foreigners, and other outsiders become influential owners, ten times as much restructuring takes place in former SOEs.

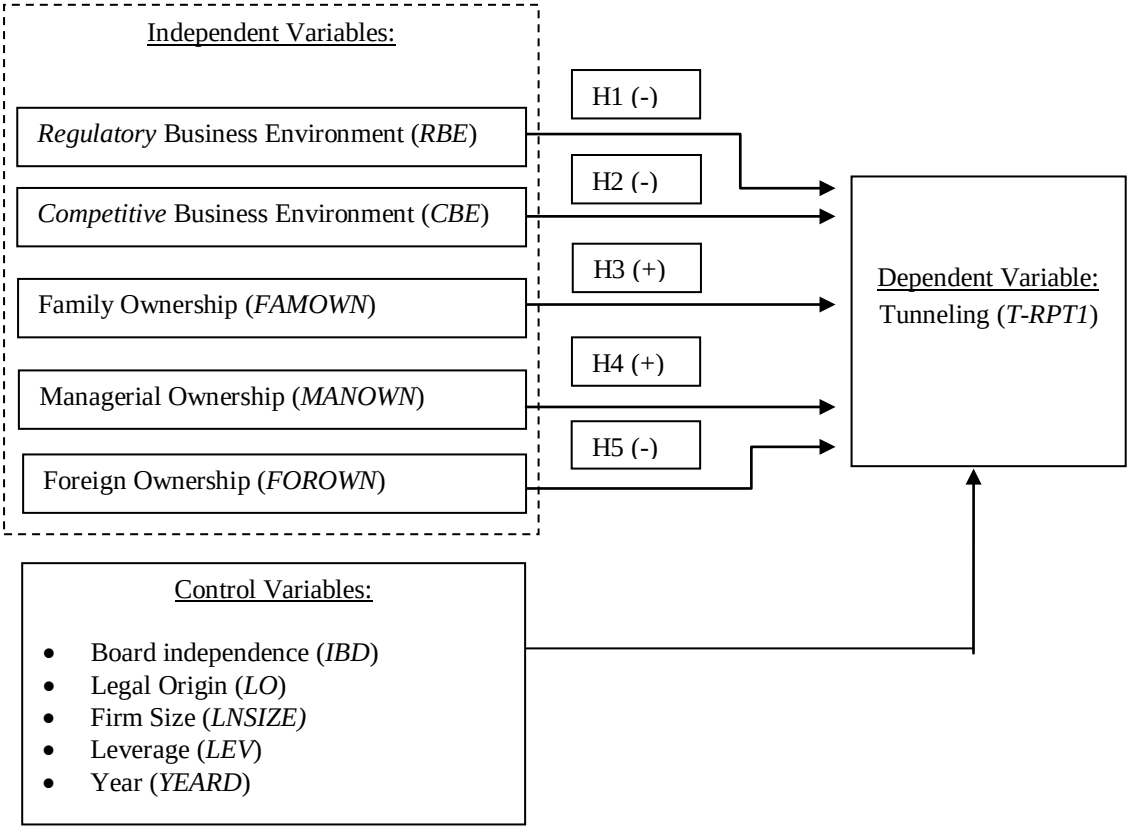
Young et al. (2008) suggest the important role of foreign institutional investors in institutional reform. They (Young et al. 2008) state that as emerging economies become more open, this exposure to outside ideas and influence will likely accelerate governance reforms. Foreign institutional investors are outside the domestic social networks from which the institutional norms of behavior are generated, and they are therefore more likely to push for transparent deals and pressure governments to improve minority shareholder protection (Peng 2003). In other words, foreign investors may be more pressure-resistant to locally-generated principal-principal problems (Kochhar and David 1996; Tihanyi, Johnson, Hoskisson, and Hitt 2003). Demands for transparency imply reducing asymmetry information and consequently, prevent opportunistic behavior. Similarly, increased protection of minority shareholders by governments creates a pressure for firms to act in ways not detrimental to minority shareholders. This thesis expects that the higher foreign ownership can improve firm monitoring function against opportunistic behavior including tunneling. Hence:

> ***H_5:*** *There is a negative association between firm's foreign ownership and extent of listed company tunneling via RPTs.*

The above sections present the testable hypotheses develop for this study. The national-level corporate governance (i.e., *regulatory* and *competitive* business environment) and firm-level ownership structure (i.e., family ownership, managerial ownership, and foreign ownership) are identified as possible key predictors of the level of tunneling. The conceptual schema that depicts the relationship among the key research variables[3] is presented in the following Figure 2.1.

[3] *Regulatory* and *competitive* business environments are important aspects in corporate governance areas (Udayasankar et al. 2005; Udayasankar et al. 2008) but these variables are rarely explored in tunneling research. Ownership variables in this thesis also still need

Figure 2.1: Conceptual schema



2.6 Summary

This chapter discusses four major theoretical perspectives underlying corporate governance in a nation, i.e. agency theory, resource dependent theory, stakeholder theory, and institutional theory. Reviews of company ownership structures, tunneling activity, and related party transaction are conducted to establish a basis for testable hypotheses. Five hypotheses regarding the determinant of tunneling are then evolved. Business environments consisting of *regulatory* and *competitive* business

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further exploration in relation to tunneling behavior, specifically family ownership and foreign ownership (see Jian and Wong 2003; Guo 2008; Gao and Kling 2008; Dow and McGuire 2009; Jiang et al. 2010; Li 2010). The selected control variables are deemed sufficient and consistent with prior studies to explain tunneling behavior (e.g., Johnson et al. 2000b; Leuz et al. 2003; Doupnik 2008; Guo 2008; Gao and Kling 2008; Cheung et al. 2009)

environments and foreign ownership are expected to have a negative association with tunneling. In contrast, family ownership and managerial ownership are posited to have a positive association with tunneling via related party transactions.

CHAPTER THREE
RESEARCH APPROACH

3.1 Introduction

This chapter details the research approach for the thesis including hypotheses testing as proposed in Chapter Two. The discussion begins with an overview of the research paradigm followed by a description of the methodology including sample selection and data collection. The next section then states the variables definition and measurement. The remainder of the chapter outlines the statistical methods used as well as additional sensitivity analysis.

3.2 Identification of Research Paradigms

A research paradigm is a philosophical framework that guides how scientific research should be conducted (Collis and Hussey 2009). Some authors (e.g., Guba 1990; Creswell 2009) use the term 'worldview' instead of research paradigm. The term worldview means "a basic set of beliefs that guide action" (Guba 1990, p.17). Peoples' idea about reality and the nature of knowledge may change over time and therefore, new research paradigms emerge in response to perceived inadequacies of earlier paradigms.

Debate has persisted over the years with labels such as quantitative versus qualitative research or inquiry from the outside versus inquiry from inside or objective versus subjective research. Paradigm differences stem from contrasting underlying assumptions of social science (Belkaoui 2004). The objective approach to social science features a realistic ontology, a positivist epistemology, a deterministic assumption of human nature, and nomothesis methodology[4]. On the other side, the subjective approach features a nominalism assumption for ontology, an

[4] The nomothesis methodology seeks only laws and employs only those procedures admitted by the exact science (Burrell and Morgan 1979).

antipositivism assumption for epistemology, a voluntarism assumption of human nature and finally, an ideographic[5] assumption for methodology (Burrell and Morgan 1979). In a similar vein, Morgan and Smiricich (1980) proposes a continuum of paradigm that describe the extremities between two main paradigms, positivism on one side and interpretivism on the other side. As research moves along the continuum, the features and assumptions of one paradigm are gradually relaxed and replaced by those of the next.

3.2.1 Two Main Paradigms: Positivism and Interpretivism

Positivism provided the framework for the way research is normally conducted in natural sciences and the scientific methods are still widely used in social science today (Collis and Hussey 2009). This paradigm is sometimes called 'scientific method', doing 'science research' and 'empirical' science (Creswell 2009). Positivism is underpinned by the belief that reality is independent of individuals and the goal is the discovery of theories based on empirical research (observation and experiment). Positivism postulates the objective existence of meaningful reality (Crotty 1998). It considers such meaningful reality to be value-neutral, a historical and cross-cultural. Knowledge is derived from 'positive' information because "every rational justifiable assertion can be scientifically verified or is capable of logical or mathematical proof " (Walliman 2001, p.15).

Researchers under the positivism paradigm emphasize explanation and/or predict social phenomena based on theories (Collis and Hussey 2009). Positivism is developed through deductive (logical) reasoning to obtain precision, objectivity with goal of a more rigorous approach, rather than subjectivity and intuitive interpretation (Collis and Hussey 2009). Positive researchers believe that reality is independent from researchers, consequently the act of investigating social phenomena do not influence the reality (Creswell 1994). According to this paradigm, theories give the basis of explanation, permit the anticipation of the phenomena, and predict the occurrence of the phenomena. Phenomena are explained by developing casual

[5] The ideographic methodology endeavors to understand some particular event in nature or in society (Braithwaite 1973).

relationships between the variables and connecting the phenomena to a deductive or integrated theory (Collis and Hussey 2009). The knowledge that developed through a positivist lens is based on careful observation and measurement of the objective reality (Creswell 2009). Positivism offers a scientific explanation of research, the use of precise quantitative data, surveys and statistics and a rigorous and objective measure for testing hypothesis as the one prominent feature (Neuman 2000).

However, critics have emerged against the assumption underlying positivism. Popper (1972) questions the objectivity assumption because disinterested observation in the context of a theory is not possible since the observation is shaped by the theory. Validity of has also been criticized by Kuhn (1977) since there will be times when the paradigm used does not adequately explain something within its context. Feyerabend (1993) criticizes science that grounds philosophically in compelling way, so that scientific findings may be no more than beliefs. Collis and Hussey (2009) also provide a useful summary of critics toward positivism:

- It is impossible to separate people from the social context in which they exist.
- People cannot be understood without examining the perceptions they have of their own activities.
- A highly structure research design imposes constraints on the results and may ignore other relevant findings.
- Researchers are not objective, but part of what they observe. They bring their own interest and values to the research.
- Capturing complex phenomena in a single measure is misleading (for example it is not possible capture a (person's intelligence by assigning numerical values).

Interpretivism is a paradigm that emerged in response to criticisms of positivism. Such a paradigm is underpinned by the belief that social reality is not objective but highly subjective because it is shaped by our perceptions (Collis and Hussey 2009). The researcher interacts with that being researched because it is impossible to separate what exists in the social world from what is in the researcher's mind (Smith 1983; Creswell 1994). In contrast with positivism, interpretivism focuses on exploring the complexity of social phenomena with a view to gaining interpretive understanding rather than measuring social phenomena. As a consequence

interpretivists tend to adopt a range of methods that seek to describe, translate and otherwise come to terms with meaning, not the frequency of certain more or less naturally occurring phenomena in the social world (Van Maanen 1983). Those differences lead to a broad conclusion that interpretive research is any type of research where the findings are not derived from the statistical analysis of quantitative data (Strauss and Corbin 1990).

A summary of the features of two main paradigms is provided by Creswell (1994, 1998) in Table 3.1.

Table 3.1: Assumptions underlying the two main paradigms

Philosophical assumption	Positivism	Interpretivism
• **Ontological assumption (the nature of reality)**	Reality is objective and singular, separate from researcher.	Reality is subjective and multiple, as seen by the participant.
• **Epistemological assumption (what constitutes valid knowledge)**	Researcher is independent of that being researched.	Researcher interacts with that being researched.
• **Axiological assumptions (the role of values)**	Research is value-free and unbiased	Researcher acknowledges that research is value-laden and biases are present
• **Rhetorical assumption (the language of research)**	Researcher writes in a formal style and uses the passive voice, accepted quantitative words and set definitions.	Researcher writes in an informal style and uses personal voice, accepted qualitative terms and limited definitions.
• **Methodological assumption (the process of research)**	Process is deductive. Study cause and effect with static design (categories are isolated beforehand). Research is context free. Generalizations lead to prediction, explanation and understanding. Results are accurate and reliable through validity and reliability.	Process is inductive. Study of mutual simultaneous shaping of factors with an emerging design (categories are identified during the process). Research is context bound. Patterns and/ or theories are developed for understanding. Findings are accurate and reliable through verification.

Source: Adapted from Creswell (1994, 1998).

3.2.2 Choice of Research Paradigm: Positivism

The particular paradigm that is adopted for a specific research project will be partly determined by the assumptions used, but it will also be influenced by the dominant paradigm in the research area and the nature of the research problem investigated (Collis and Hussey 2009). In line with this statement, Creswell (2009) states that paradigm are shaped by the discipline area of researcher, the belief of advisers and faculty in a researcher's area, and past research experience.

The widely accepted view of the role of accounting research is that functions to establish general laws covering the behavior of empirical events or objects with which the science is concerned and thereby enable people to connect together our knowledge of separately known events and to make reliable predictions of events yet unknown (Belkaoui 2004). Belkaoui (2004) added that to accomplish this function, the natural science model, including careful sampling, accurate measurement, and analysis of theory-supported hypotheses is generally adopted as the model supporting good research. Those are the main features of positivism.

Previous studies of tunneling use positivism as selected paradigm to explain and predict tunneling behavior. Many researchers (e.g., Jian and Wong 2003; Guo 2008; Gao and Kling 2008; Jiang et al. 2010; Li 2010) investigate the determinants of tunneling, such as corporate governance and corporate ownership structures, using positivism. Other researchers (Liu and Lu 2007; Chen et al. 2009; Kohlbeck and Mayhew 2010), meanwhile, employ this paradigm to explain the impact of tunneling on firm value and performance. Those studies seek empirical evidence of certain phenomena by proposing hypotheses based on theories and test statistically those hypotheses. In a similar vein this thesis aims to explain tunneling behavior by proposing hypotheses based on four major theoretical perspectives in corporate governance. Those hypotheses are then tested using statistical methods to conclude phenomena under scrutiny.

In the light of the nature of the research problem investigated, and the dominant paradigm in the research topic being investigated, this thesis clearly falls into the positivist paradigm camp. The paradigm has a strong ability to explain and predict phenomena such as tunneling behavior.

3.3 Research Methodology

A methodology is an approach to the research, encompassing a body of methods within a specific research methodology (Collis and Hussey 2009). Crotty (1998) defines research methodology as a plan of action or design behind the choice and use

of particular methods, and link them to desired outcome. Collis and Hussey (2009) provide a brief list of methodologies used in social sciences in association with main research paradigms. Methodology in positivism normally comprises experimental studies, surveys (using primary or secondary data), cross sectional, and longitudinal studies. As for interpretivism, common methodologies employed include hermeneutics, ethnography, participative enquiry, action research, case studies, grounded theory, feminist, gender and ethnicity studies. Some methods are adaptable for use under either paradigm such as longitudinal studies (Collis and Hussey 2009). However, a longitudinal study under an interpretive paradigm generally focuses on qualitative data with different research questions to be answered (Stebbins 1992).

Since positivism is selected as the most appropriate research paradigm for this thesis, the research methodology themes employed in this paradigm are used in this thesis. The methodology applicable for this thesis is a quantitative approach by analyzing a large data set of publicly available annual reports followed by statistical hypotheses testing.

3.4 Research Method

Research methods involve the forms of data collection, analysis, and interpretation that researchers propose for their study (Creswell 2009). The below sections present the specific research methods that are used for this thesis.

3.4.1 Sample Selection

This thesis focuses on listed firm annual reports in five ASEAN countries as the unit of analysis. The selected ASEAN countries chosen are Indonesia, Malaysia, Singapore, Thailand, and Philippines. There is a number of underlying reasons for the selection of listed firms from those countries:

- These five ASEAN countries are selected because they all have established stock exchanges with sufficient English language information including annual reports.

- Moreover, these ASEAN countries are the chosen focus because they traditionally have weaker corporate governance systems but higher ownership concentration resulting in higher problems with tunneling by the majority owner. Singapore is unique having a good governance system (CLSA 2010) but also with high ownership concentration characteristics (Welford 2007).
- The accounting professions in all five countries are members of the International Accounting Standard Board (IASB) in which all members have to adopt the International Financial Reporting Standard (IFRS) with or without special adjustments to conform with special characteristic of a country and based on their respective schedules. As a result, consistent IFRS usage will enhance comparability of information provided in their financial statements.

This thesis uses a sample of 200 publicly traded firms listed on the five ASEAN countries stock exchange from 2006-2009. Forty firms are randomly selected in each country and observed over the four year period. The total data set comprises 800 firm-year observations. Financial firms are excluded from sample since they are under a different regulatory regime. Details of the listed companies sample are presented in Table 3.2.

Table 3.2: Listed companies population and sample

Country	Number of Firms Listed on Stock Exchange 31/12/2009	Number of Listed Firms Selected	Number of Firm-Year Observations (2006-2009)
Indonesia	398	40	160
Malaysia	960	40	160
Philippines	248	40	160
Singapore	637	40	160
Thailand	488	40	160
Total	2731	200	800

Source: Population figures from stock exchanges of the five ASEAN countries 2010.

Due to time constraints of this research and nature of data, it is not possible to include all listed firms in the sample. The simple random sampling method is employed to select 40 firms from each country sample. Forty firms are selected from each country specifically based on ownership data availability during study period (2006-2009). The selection process uses the replacement rule. If any firm is found to fall into exclusion categories (including completeness criteria), this firm is replaced by another randomly selected firm. This process continues until the satisfactory 160 firm-year observations are collected for each country.

3.4.2 Data Type and Collection

This thesis adopts a quantitative empirical research methodology. A large data set is gathered with hypotheses testing conducted using statistical analysis. Data collection includes: (1) financial data; (2) regulatory and competitiveness indices, (3) ownership data; (4) board information, and (5) other firm and country characteristics. Financial data includes items such as RPTs, total assets, total liability, revenue and profit/loss. Several country-based indices are used for computing *regulatory* and *competitiveness* scores. Ownership data comprises stockholder data by family, key management personnel, and foreigner base. The board data includes the number of board members, and number of independent board members.

RPTs data, other financial data, and data of the boards are mainly collected from annual reports. Firm ownership data are gathered from the ORBIS database. In case firm ownership data are not available in the ORBIS database, this information is then collected from annual report (if available). The main source for the annual reports is the ORBIS database. When the annual reports are incomplete or unavailable in the ORBIS database, data are collected from stock exchange websites in each sample country or company's website.

Index scores published by Economic Freedom Network are used as the main data to highlight the *regulatory* and *competitive* business environments in the five key ASEAN countries. Four indices are used, (1) *Government Size Index (GSI)*, (2) *Legal*

Structure Index (LSI), (3) *Freedom to Trade Internationally Index (FTI),* and (4) *Business Regulation Index (BRI)*. Index scores are gathered for five key ASEAN countries for the periods 2004-2008. These scores are merged into two overarching scores, (1) *regulatory* business environment (*RBE*) and (2) *competitive* business environment (*CBE*). Other country characteristic such as classifying the legal system is done by references to seminal publications such as La Porta et al. (1999)[6].

3.4.3 Dependent Variable: Tunneling (*T-RPT1*)

A number of forms of tunneling exist. The first relates to acting on privileged information for personal gain (Welford 2007). For instance, additional purchases of shares by a controlling shareholder or members of the family or associated businesses done prior to an announcement of a deal that will send the share price higher. Activities such as asset transfers, granting of specific contracts to particular companies, and transfer pricing on overly favorable terms to other companies owned by controlling shareholders are other tunneling tactics (Welford 2007).

Johnson et al. (2000b) divide tunneling into two broad categories: (i) 'selfdealing' transactions, which include transfer pricing, excessive compensation, taking of corporate opportunities, and asset sales; and (ii) financial transactions that 'discriminate against minorities,' such as dilutive equity offerings and minority freeze-outs. The first category is commonly referred to as operational tunneling and the later is financial tunneling. Atanasov , Black, and Ciccotello (2008), meanwhile, refine those categories into three basic types: cash flow tunneling, asset tunneling, and equity tunneling.

Cash flow tunneling can be loosely defined as self-dealing transactions which divert operating cash flow from the firm to insiders (i.e. controlling shareholders, managers, or both) (Atanasov et al. 2008). Transfer pricing (sale of outputs to an

[6] La Porta et al. (1999)'s study uses a country's legal system to represent legal rules for protecting minority shareholders. That study classifies a country legal system into Common Law and Civil Law legal systems.

intermediary controlled by insiders for below-market prices; or purchase of inputs at above-market prices), excessive executive salaries or perquisites, and small-scale sales or purchases of assets are common activities of cash flow tunneling. Asset tunneling involves the transfer of major long-term (tangible or intangible) assets from or to the firm. Transfers from the firm are for less than market value whereas transfers to the firm are more than market value. Examples of asset tunneling include overpriced purchases of assets, or investments in an affiliated firm on better terms than the affiliate could obtain on its own.

Equity tunneling has three central forms comprising the offering of shares (or securities convertible into shares) to insiders for below fair value, 'going-private' transactions (freeze-outs), and loans from the firm to insiders (which will not be repaid in bad states of the world). Within business groups, equity investment in affiliates can be deemed as tunneling from the investing firm, i.e. buying affiliate's new shares at below fair value and causing equity dilution for minority shareholders (Atanasov et al. 2008).

Loans to insiders have elements of cash flow tunneling if a firm provides loans to insiders at a below market rate. Yet, it can also be considered to be a form of equity tunneling. The loan can be understood as granting to the insiders a put option, which insiders will exercise, by not repaying the loan. It thus reduces the expected value of minority shares (Atanasov et al. 2008).

Most of the abovementioned activities involve parties that can be categorized as 'related'. The dominant control structure makes it easier for related party transactions to take place on the interest of controlling shareholder (Loon and Pica 2010). Prior studies often use loan and sales transactions between companies and related parties as proxy to detect RPT tunneling. Both types of RPTs are easier to be detected since the information is usually disclosed in annual reports (Jiang et al. 2010; Chen and Wu 2010). Of the two measures, most prior studies focus on RPT lending (e.g., Jian and Wong 2003; Guo 2008; Li 2010; Jiang et al. 2010) whilst others look at RPT sales (e.g., Chen et al. 2009; Chen and Wu 2010).

Cheung et al. (2009) suggest that direct cash payments and loans by listed firms to its controlling shareholder are clear examples of tunneling. Related parties loans are a useful example of this because they are traceable through public sources, and do not require a 'fair value' test such as would be needed in other asset transfers (sales or purchases) between related parties (Jiang et al. 2010). In addition, many firms that made related-party loans have experienced the worst price declines during the AFC (Lemmon and Lins 2003).

In line with prior studies, this thesis uses RPTs as a key proxy of tunneling. There are several variants of RPTs that can be measured. Jian and Wong (2003) suggest that lending transactions to RPTs are commonly referred to financial tunneling. Jiang et al. (2005) document robust evidence that 'other receivables' largely represent corporate loans extended to other firms (mainly the controlling shareholders) by the listed firm is a good measure of tunneling. The ratio of other receivables to total assets is used as measure of tunneling by Jiang et al. (2005), Liu and Lu (2007), Li (2010), and Jiang et al. (2010). Other researchers use the difference between other receivables and other payables divided by total assets as the measure of financial tunneling (Jian and Wong 2003; Guo 2008). Meanwhile Gao and Kling (2008) measure the extent of tunneling using the difference between accounts receivable and accounts payable divided by total assets.

This thesis measures the extent of tunneling *(T-RPT1)* by using the difference between other receivables from related parties and other payables to related parties divided by total assets. This measure is different with Li (2010) and Jiang at al. (2010) which do not separate non-related party items from related party items in other receivables account. Studies such as Li (2010) and Jiang at al. (2010) use total other receivable balance regardless involved parties in the transactions. This thesis only uses items associated with related party, since company data of ASEAN's firms enables separating between these two items. For purpose of this thesis, 'other receivables' is defined as all receivables from related parties except for trade receivable from related parties. Whereas 'other payables' is referred to as all payables to related parties except for trade payables to related parties (Guo 2008;

Qian, Pan, and Yeung 2011). Furthermore, a dummy variable is used in the binary logistic regression instead of the continuous variable of *T-RPT1*. A positive value of *T-RPT1* takes a value of one (1) and zero (0) otherwise.

3.4.4 Independent Variables

In regard to the predictors of tunneling, this thesis focuses on investigating the influence of the national corporate governance system and the firm-level ownership structure. The national corporate governance system is represented by the level of regulation and competition. As for firm-level ownership structure, the thesis emphasizes three main features consisting of family ownership, managerial ownership and foreign ownership levels. The below sections discuss these respective independent variables.

3.4.4.1 National Level Corporate Governance Proxy Measures

Presently, no universally-accepted formal comprehensive national-level corporate governance system proxy measure has been developed. For this thesis the *Economic Freedom of the World Index* (*EFWI*) published by the Economic Freedom Network (EFN) is the primary source data for developing respective measures for the *competitive* business environment and *regulatory* business environment. The *EFWI* measures the degree to which national policies and institutional influences within a nation are supportive of economic freedom and interaction (thereby defining the *competitive* and *regulatory* environments). The *EFWI* ranking of 130 nations is the result of a joint venture involving 71 national research institutions and foundations. Members of the EFN subscribe to the perception the cornerstones of economic environmental freedom are "personal choice, voluntary exchange, freedom to compete, and the security of privately owned property" (Gwartney et al. 2006, p.3). The *EFWI* summary index is constructed from 42 data points that measure the degree of economic freedom in five major areas: (1) government size; (2) legal structure and security of property rights; (3) access to sound money; (4) freedom to trade internationally; and (5) regulation of credit, labor and business. Four aspects of the *EFWI* (i.e., *LSI*, *GSI*, *BRI* and *FTI*) are utilized to represent the four major

theoretical threads underlying corporate governance. The four components selected reflect specific aspects of regulation and competitiveness. Each component is normalized as a score ranging from zero to ten. This thesis combines *LSI* and *GSI* scores to represent an individual nation's *regulatory* business environment (*RBE*) whereas an individual nation's *competitive* business environment is an aggregation of the *BRI* and *FTI* scores.

Following prior work (e.g., La Porta et al. 1997, 1998, 2000) emphasizing the importance of legal structure as a relevant barometer of the strength and influence of a nation's institutional framework, this thesis uses the *Legal Structure Index* (*LSI*) score component of the *EFWI* as a proxy representing the influence a nation's institutional structure on the nation's regulatory business environment. The *LSI* is based on five prime data points covering judicial independence, impartiality of courts, intellectual property protection, military intervention in the judicial process and legal system integrity. For interpretative purposes, a nation scoring higher on the *LSI* is viewed to have a stronger institutional structure that will contribute positively to a more efficient regulatory business environment.

To gauge stakeholder strength that may precipitate a greater need to employ stakeholder management strategies, the *Government Size Index* (*GSI*) score from the *EFWI* is used as the relevant proxy. The *GSI* covers four major data points (government consumption, government transfers, government enterprise and investment, tax rates) reflecting both the involvement of the government in the business environment and efficiency of the regulatory environment. Governments, depending on size and strength, can assist in fostering growth of special interest groups whilst pursuing broader social agendas. The efficiency of the *regulatory* business environment is likely to be enhanced via more effective government involvement. A higher *GSI* score indicates greater government involvement in the business environment suggesting heightened stakeholder strength and regulatory efficiency. The aggregation of *LSI* and *GSI* constitutes a measure for a nation *regulatory* business environment (*RBE*). This concept can be formulated as follows:

$$RBE\_Score = LSI + GSI \quad [1]$$

Where:

RBE_Score = *Regulatory* business environment score
LSI = Legal Structure Index
GSI = Government Size index

In regard to the agency theory construct the *Business Regulation Index* (*BRI*) score is used. The *BRI* measures the extent of regulations targeting businesses. Agency theory advocates feel business regulations hamper the efficiency of the market, reduces competition between firms, and the ability of the market to solve principal-agent problems. Higher *BRI* scores imply business regulations are developed to encourage greater market freedom, efficiency and interaction between market participants. A nation with a high *BRI*, therefore, is more likely to have a more efficient market via which agency issues can be effectively resolved. Overall, *BRI* is a composite of five data points covering: (i) price controls; (ii) burden of regulation; (iii) time with government bureaucracy; (iv) freedom to establish a businesses; and (v) irregular payments.

Finally, in respect to presumptions underlying resource dependence theory where a firm's ability to draw on resources will affect competition, and in recognition of the globalized economy, this thesis uses the *Freedom to Trade Internationally* (*FTI*) score component of the *EFWI* as the proxy for the influence of resource dependence on the *competitive* business environment. The *FTI* covers nine data points including taxes on international trade, trade barriers and international capital market controls. For interpretive purposes a nation with a higher *FTI* score will enable firms operating in that nation to have a more efficient market to access key resources, thereby, prompting a stronger competitive business environment. Since both *BRI* and *FTI* indicate a country's competitive environment, this thesis then integrates these scores to derive a measure of a nation's *competitive* business environment (*CBE*):

$$CBE\_Score = BRI + FTI \quad [2]$$

Where:

CBE_Score = *Competitive* business environment score

BRI = Business Regulation Index
FTI = Freedom to Trade Internationally Index

As mentioned above, an individual nation's *regulatory* business environment is defined as the product of *LSI* and *GSI* scores whereas a *competitive* business environment is a product of the *BRI* and *FTI* scores. For calculation purposes *BRI*, *FTI*, *LSI* and *GSI* score are assumed to be equally weighted. Keeping with the underlying range of each respective component score, the *regulatory* business environment and *competitive* business environment scores are scaled to range between zero and ten. To avoid any single year anomaly, *BRI*, *FTI*, *LSI* and *GSI* scores for a five year period (2004 – 2008) are averaged. Mathematically, the *regulatory* business environment (*RBE*) and *competitive* business environment (*CBE*) scores for nation *l* are defined in Equations *3* and *4* respectively:

$$RBE\_Score_l = [(\sum LSI_{l,2004\text{-}2008})/(\#\ \text{Years})*0.5 + (\sum GSI_{l,2004\text{-}2008})/(\#\ \text{Years})*0.5)] \quad [3]$$

$$CBE\_Score_l = [(\sum BRI_{l,2004\text{-}2008})/(\#\ \text{Years})*0.5 + (\sum FTI_{l,2004\text{-}2008})/(\#\ \text{Years})*0.5)] \quad [4]$$

Where:

RBE_Score_l = *Regulatory* business environment score for nation *l*.
CBE_Score_l = *Competitive* business environment score for nation *l*.
$\sum LSI_{l,2004\text{-}2008}$ = Sum of Legal Structure Index for nation *l* over the period 2004-2008.
$\sum GSI_{l,2004\text{-}2008}$ = Sum of Government Size Index for nation *l* over the period 2004-2008.
$\sum BRI_{l,2004\text{-}2008}$ = Sum of Business Regulation Index for nation *l* over the period 2004-2008.
$\sum FTI_{l,2004\text{-}2008}$ = Sum of Freedom to Trade Internationally Index for nation *l* over the period 2004 -2008.
Years = Number of years.

3.4.4.2 Ownership Structure Proxy Measurements

There are a number of different definitions for family firms in the literature. A broad definition of family firms used in the US is where the founder, or a member of his or her family by either blood or marriage, is an officer, director, or blockholder in the company (Anderson and Reeb 2003; Villalonga and Amit 2006). This definition recognizes that the family is still somehow involved in the company. In Asia, family firms are generally defined as companies that are part of a family business group, or companies where the founding family is the largest shareholder (Claessens et al. 2000). Companies are identified as family-owned if the largest ultimate shareholder

is the family group that founded the company (Chen and Nowland 2010). Meanwhile, Mroczkowski and Tanewski (2007) require the family should be a dominant shareholder, and in conjunction with other related parties, they hold more than 30 per cent of the voting shares in the company directly or indirectly.

Other researchers define family ownership as an individual, or group of family member holds more than 20% of firm's voting rights and is the largest controlling block in the firm (Achmad, Rusmin, Neilson, and Tower 2009). A firm has a family controlling shareholder if the sum of a shareholder's direct and indirect voting right is more than 20 %. The use of an arbitrary 20% value of voting rights is that this is usually enough to have effective control of a firm (La Porta et al. 1999). Different with Chen and Nowland (2010), this concept focuses on the owner of the firm regardless whether or not they are founder of the firm.

This thesis defines family ownership consistent with Achmad et al. (2009) approach but uses a modification cut off point of greater than 25%. This is consistent with cut off point in the ORBIS database for ultimate owner criterion (see also Chernykh 2008). The consolidated ownership portion may for example convey effective control through a blocking minority (often 25% to 33%) or absolute control (more than 50% and above) (OECD 2009). Family ownership (*FAMOWN*) is measured by using a dummy variable, one (1) if a firm ultimate owner is family as defined above, and zero (0) otherwise (e.g., La Porta et al. 1999; Claessens et al. 2000; Anderson and Reeb 2003; Villalonga and Amit 2006; Ali, Chen, and Radhakrishnan 2007; Chernykh 2008; Setia-Atmaja, Tanewski, and Skully 2009; Achmad et al. 2009).

To identify the ultimate owner, this thesis first identifies the largest immediate majority shareholders for each firm sample. In most instances, the immediate majority shareholders of these corporations are individuals, corporate entities or financial institutions (Bany-Ariffin, Mat Nor, and McGowan Jr 2010). After the largest immediate shareholders for each of this company has been identified, this thesis then traces the largest owner of this immediate company and the subsequent owners until the ultimate shareholder is determined. For example, if the largest

blockholder owns more than 25% equity of Firm A is a publicly listed firm (i.e. Firm B), the ownership structure of Firm B is then analyzed before it is classified. If Firm B has a family, or individual controlling more than 25% equity, Firm A is classified as a family-controlled firm. If Firm B is widely-held, however, then Firm A will be categorized as a non-family-controlled firm.

The second ownership variable of tunneling determinant for this thesis is managerial ownership. Prior studies suggest that shareholding percentage by management is associated with expropriation problems (e.g., Morck et al. 1988; Klein 2002; Santiago-Castro and Brown 2011; Kim, Eppler-Kim, Kim, and Byun 2010). For this thesis, managerial ownership (*MANOWN*) is measured as the percentage of shares held by insiders, i.e. CEO, directors and senior managers (Gao and Kling 2008).

Foreign investors are usually perceived to be more sophisticated than domestic investors in terms of investment experience and the ability to collect, process, and analyze value-relevant information (Gul, Kim, and Qiu 2010). Given the distinctive characteristics of foreign investors, their ownership level is deemed as one effective governance mechanism to prevent expropriation of minority shareholder by insiders (Dahlquist and Robertsson 2001; Young et al. 2008; Kim et al. 2010). Consistent with prior studies involving foreign ownership variable, this thesis measures foreign ownership (*FOROWN*) as percentage of shares held by foreign investors both individual and institutional (Dahlquist and Robertsson 2001; Bae, Yamada, and Ito 2006; Young et al. 2008; Dow and McGuire 2009; Balasubramanian, Black, and Khanna 2010)

3.4.5 Control Variables

Five control variables are used in the regression model. Based on past studies (e.g., Johnson et al. 2000b; Leuz et al. 2003; Doupnik 2008; Guo 2008; Gao and Kling 2008; Cheung et al. 2009), the control variables included are board independence, legal origin, size, the debt ratio, and year dummy variables.

The empirical evidence on the effectiveness of the monitoring that outsiders provided appears to depend on the setting in which it is examined (Xie, Davidson, and DaDalt 2003). There has been considerable evidence supporting the position that independent outside directors protect shareholders in specific instances when there is an agency problem (Byrd and Hickman 1992; Lee, Rosenstein, Rangan, and Davidson III 1992). Consistent with such evidence Gao and Kling (2008) and Li (2010) use board independence as a factor preventing tunneling. Based on prior studies, this thesis employs board independence (*IBD*), measured by using the percentage of independent directors, as a control variable.

Johnson et al. (2000b) identified potential differences between Civil Law (French origin) and Common Law (British origin) countries in how courts approach tunneling cases. Tunneling cases in French, Italy, and Belgium are broadly consistent with a growing body of research suggesting that Civil Law countries are less protective of minority shareholders than are Common Law countries (e.g., La Porta et al. 1998; Johnson et al. 2000b). The different legal treatments of self-dealings transactions across countries reflect differences in their legal system and court interpretation (Riyanto and Toolsema 2008; Djankov et al. 2008). Consistent with prior studies, this thesis employs dummy variable 'legal origin' (*LO*) to control different legal system (Johnson et al. 2000a; Leuz et al. 2003; Doupnik 2008). A country with Civil Law legal system takes a value of one (1), whereas a country following the Common Law legal system is coded zero (0).

Firm size (*LNSIZE*), measured by using the natural logarithm of total assets, is also used as a control variable (Gao and Kling 2008; Jiang et al. 2010). Larger firms tend to have better visibility and coverage by financial analysts, yet they may also have more assets available to be diverted (Guo 2008). On the other hand, small firms are more likely to have an owner who is also the CEO or the board chairman (Claessens et al. 2000). Thus, more expropriation could be associated with small firms. Overall, firm size may have a mixed effect on the level of RPTs (Jiang et al. 2010).

The debt ratio (*LEV*) is calculated as the total liabilities divide by total assets. According to Friedman, Johnson, and Mitton (2003), the association between leverage and tunneling/propping activities depends on a firm's financial condition. If the firm is in poor financial condition, controlling shareholders have incentives to support the firm by issuing more debt to the listed firm with little or no interest in return. In contrast, if a firm is in sound financial condition, controlling shareholders may have incentives to tunnel by issuing more debt to the listed firm at substantially higher interest rates (Peng, Wei, and Yang 2011). This thesis examines this concept as another control variable.

This thesis also includes year dummy variables (*YEARD*) to accommodate year effect since this study spans more than one year (2006-2009). This approach is used in prior studies, e.g. Gao and Kling (2008), Cheung et al. (2009), Li (2010), Jiang et al. (2010).

The summary of the measurement of the dependent variable, independent variables, and control variables are presented in Table 3.3.

Table 3.3: Summary of variable measurement

Variables	Measurement	Type
Dependent Variable		
Tunneling (*T-RPT1*)	(a) The difference between other receivables and other payables divided by total assets. (b) Take value one (1) if the difference between other receivables and other payables divided by total assets is positive and zero (0) otherwise.	Continuous Categorical
Independent Variables		
H_1: *Regulatory* Business Environment (*RBE*)	RBE_Score_I= [($\sum LSI_{I,2004-2008}$)/(# Years)*0.5 + ($\sum GSI_{I,2004-2008}$)/(# Years)*0.5)] Where: *LSI*: Legal Structure Index. *GSI*: Government Size index.	Continuous
H_2: *Competitive* Business Environment (*CBE*)	CBE_Score_I= [($\sum BRI_{I,2004-2008}$)/(# Years)*0.5 + ($\sum FTI_{I,2004-2008}$)/(# Years)*0.5)] Where: *BRI*: Business Regulation Index. *FTI*: Freedom to Trade Internationally Index.	Continuous
H_3: Family Ownership (*FAMOWN*)	Family ownership (*FAM*) is an individual, or group of family member holds more than 25% of firm's voting rights and is the largest controlling block in the company. This variable is measured by using a dummy variable, "1" if a firm ultimate owner is family (based on the above definition) and "0" otherwise (La Porta et al. 1999; Achmad et al. 2009).	Categorical
H_4: Managerial Ownership (*MANOWN*)	Percentage of shares held by senior managers (board members and top management).	Continuous
H_5:Foreign Ownership (*FOROWN*)	Percentage of shares held by foreign investors (individual and institutional).	Continuous
Control Variables		
Board independence (*IBD*)	The number of independent directors divided by total number of board of directors.	Continuous
Legal Origin (*LO*)	Equals "1" if a country follows Civil Law legal system, and "0" if a country follows Common Law legal system.	Categorical
Size (*LNSIZE)*	The natural logarithm of total assets.	Continuous
Leverage (*LEV*)	Total debts divided by total assets.	Continuous
Year (*YEARD*)	Year dummy variables: *YEARD1* : "1" if year 2006 and "0" otherwise. *YEARD2* : "1" if year 2007 and "0" otherwise. *YEARD3* : "1" if year 2008 and "0" otherwise. *YEARD4* : "1" if year 2009 and "0" otherwise.	Categorical

3.4.6 Statistical Analysis

This thesis uses several statistical techniques for the data analysis and hypothesis testing. Descriptive statistics and univariate statistics including T-test, Chi-square and ANOVA are employed to enhance the main analysis. Correlation and variance inflation factor (VIF) analyses are evolved to check multicollinearity between independent variables. Regression analysis is used as the main statistical test of predictors (hypotheses) of tunneling. The regression method is deemed powerful to make predictions for answering this thesis' research questions as to the influence of independent variables on tunneling behavior. This method is widely used in tunneling research areas (e.g., Jian and Wong 2003; Guo 2008; Gao and Kling 2008; Jiang et al. 2010; Li 2010). This thesis employs two regression types to test hypotheses, i.e. binary logistic regression and ordinary least square (OLS) multiple regression. The main regression model is presented below:

$$T\text{-}RPT1_{i,t} = \alpha_o + \beta_1 RBE\_Score_{i,l,t} + \beta_2 CBE\_Score_{i,l,t} + \beta_3 FAMOWN_{i,t} + \beta_4 MANOWN_{i,t} + \beta_5 FOROWN_{i,t} + [Control\ Variables] + \varepsilon_{i,t} \quad [5]$$

Where:

$T\text{-}RPT1_{i,t}$	=	The difference between other receivables and other payables divided by total assets of firm *i* at the end of time period *t* (for OLS regression)[7];
$RBE\_Score_{i,l,t}$	=	The *regulatory* business environment score for firm *i* domiciled in nation *l* for time period *t;*
$CBE\_Score_{i,l,t}$	=	The *competitive* business environment score for firm *i* domiciled in nation *l* for time period *t;*
$FAMOWN_{i,t}$	=	If an individual (or group of) family member holds more than 25% of the voting rights of firm *i*, and is the largest controlling block in firm *i*, for time period *t* then a score of one (1) is assigned; otherwise a score of zero (0) is given;
$MANOWN_{i,t}$	=	Percentage outstanding stock held by senior management of firm *i* at the end of time period *t;*
$FOROWN_{i,t}$	=	Percentage outstanding stock held by foreign interest in firm *i* at the end of

[7]For binary logistic regression, a dummy variable takes value of one (1) if the difference is positive and zero (0) otherwise.

		time period *t;*
Control Variables	=	Board independence (*IBD*), Legal Origin (*LO*), Firm Size (*LNSIZE*), Leverage (*LEV*), and year dummy variables (*YEARD*); and
$\varepsilon_{i,t}$	=	Error term.

3.4.7 Sensitivity Tests

This thesis conducts additional sensitivity tests in Chapter Six to check the robustness of the model. Other receivables from related parties (*T-RPT2*) is used as an alternate measure of tunneling instead of net other receivables from related parties (*T-RPT1*). This measure refers to measurement used by Li (2010) and Jiang et al. (2010). Unlike the primary *T-RPT1* proxy measure, the *TRPT-2* does not incorporate other payables in measuring tunneling activities. According to Li (2010), 'other receivable' is a common approach through which controlling shareholders extract funds from public firms. Surveys in the PRC's public firm reveal 'other receivables' constitute a large portion of total assets in the balance sheet, and surprisingly, almost all other receivables amount are funds tunneled out by controlling shareholders (Li 2010). In addition to the alternate measure of tunneling, regression analysis is also run for partitioned samples. Results from partitioned samples regression offer comparisons to full sample main results and also further insights on tunneling behavior for a particular firm group.

3.5 Summary

This thesis uses a large sample of 800 firm-years observation of listed companies in five key ASEAN countries for the period 2006-2009. This thesis uses related party transactions (RPTs) as the proxy of tunneling behavior. Predictive variables comprise *regulatory* and *competitive* business environments, as representatives of country-level corporate governance and ownership structures, as representatives of firm-level corporate governance. Data are analyzed by using univariate and multivariate statistical techniques. Certain sensitivity tests are conducted to better

confirm the robustness of the main approach. The next chapter provides descriptive statistics, T-test, ANOVA test and their statistical findings.

CHAPTER FOUR
DESCRIPTIVE STATISTICS

4.1 Introduction

Chapter Three of this thesis discusses the choice of research paradigm and engaged methodology for this thesis. Before entering the main analysis, descriptive statistics and certain statistics test are conducted to offer deeper insights about the RPTs phenomenon in the sample ASEAN listed companies (2006-2009).

This chapter begins with descriptive statistics for the total sample comprising 800 firm-year observations of ASEAN listed firms. Statistical analyses (i.e. ANOVA and T-test) are then performed to supplement the analysis. The next section provides descriptive statistics after dividing the sample into two groups (i.e., firms with tunneling and those without tunneling). Presentation is then followed by cross tabulation for categorical variables. Further analysis is then conducted by dividing the sample into three categories: (1) grouped into net tunneling firms, (2) zero tunneling/propping firms, and (3) net propping firms. These analytical steps provide an important overview of firm characteristics under scrutiny.

4.2 Descriptive Statistics of Full Sample

This section presents descriptive statistics of all research variables including selected firm characteristics of the total sample. Independent variables consist of *regulatory* business environment (*RBE*), *competitive* business environment (*CBE*), family ownership (*FAMOWN*), managerial ownership (*MANOWN*), and foreign ownership (*FOROWN*) whereas the dependent variable is tunneling (*T-RPT1*). Descriptive statistics of the total 800 ASEAN listed firms are displayed in Table 4.1. ANOVA and T-test are reported in Table 4.2.

Table 4.1: Descriptive statistics and frequencies of full sample (n=800)

Panel A: Descriptives of full sample					
	Mean	Median	Std. Deviation	Minimum	Maximum
OR ($)	10,953,376	244,684	43,932,818	0	508,654,830
OP ($)	13,962,781	134,935	99,955,412	0	1,830,083,468
RPTs ($)	-3,009,405	0	98,954,910	-1,620,655,757	508,468,626
TR ($)	7,552,228	44,484	23,691,873	0	283,090,522
TP ($)	6,266,690	0	24,485,971	0	279,578,703
RBE (IV)	6.628	6.650	0.845	5.510	8.080
CBE (IV)	6.806	6.660	0.967	5.970	8.650
MANOWN (IV)	0.256	0.111	0.281	0.000	0.973
FOROWN (IV)	0.215	0.111	0.253	0.000	0.984
IBD Number	2.981	3.000	1.402	1.000	9.000
IBD (CV)	0.383	0.369	0.142	0.111	1.000
Total Assets ($)	893,681,426	203,264,518	1,825,221,743	824,236	13,372,433,397
LNSIZE (CV)	19.268	19.130	1.696	13.622	23.316
LEV (CV)	0.477	0.488	0.277	0.020	4.040
T-RPT1(DV)	-0.001	0.000	0.092	-0.505	0.771

Panel B: Frequencies of categorical variables						
	FAMOWN (IV)			*LO (CV)*		
	Family	Non-Family	Total	Civil Law	Common Law	Total
Number of Firms	451	349	800	320	480	800
%	56.4	43.6	100.0	40.0	60.0	100.0

Notes: This table reports descriptive statistics and frequencies of research variables and key firms' characteristics. The independent variables (*IV*) comprise *RBE*, *CBE*, *FAMOWN*, *MANOWN* and *FOROWN* whereas the dependent variable (*DV*) is *T-RPT1*. Control variables (CV) include *IBD*, *LO*, *LNSIZE*, and *LEV*. OR=other receivables from related parties; OP= other payables to related parties; RPTs= difference between OR and OP; TR= total receivable from related parties; TP=total payable to related parties.*RBE=Regulatory* business environment; *CBE=Competitive* business environment; *FAMOWN*= dummy variable of family ownership; *MANOWN*= managerial ownership; *FOROWN*=foreign ownership; *IBD*= board independence; *LO*=dummy variable of legal origin; *LNSIZE*= the natural logarithm of total assets; *LEV*= leverage;*T-RPT1*= tunneling via RPTs scaled by total assets.

Panel A of Table 4.1 provides descriptive statistics of the full 800 firm-year sample. As shown in the table, the other receivables (*OR*) measure refers to receivables from related parties excluding trade receivables, whereas the other payable (*OP*) is payables to related parties excluding trade payables. RPTs are calculated as other receivables (*OR*) minus other payables (*OP*). This measure is used as the key proxy of tunneling activities. The average amount of other receivables is US$ 11 million with a maximum of US$ 509 million and a minimum of zero. The average other

payables figure is US$ 14 million with a maximum of US$ 1,830 million and a minimum of zero. Table 4.1 also documents that average RPTs is US$ -3 million with a maximum of US$ 509 million and a minimum of US$ -1,621 million. The positive RPT values indicate net tunneling behavior. Negative RPT values denote the scenario where other payables (*OP*) exceed other receivables (*OR*); i.e., those firms experience net propping behavior.

Total receivables (*TR*) represent total receivables from related parties consisting of trade receivables and other receivables. ASEAN listed firms have average *TR* amounting to US$ 7.6 million with a maximum of US$ 283 million. As for total payables (*TP*), the average amount is US$ 6.3 million and a maximum of US$ 280 million. Total payables are the sum of trade payables and other payables thought to be related parties.

In regard to country level independent variables, this thesis uses *regulatory* business environment (*RBE*) and *competitive* business environment (*CBE*). As shown in Table 4.1, the *regulatory* business environment (*RBE*) score for the five countries is 6.63 on average. The highest *RBE* score for the five countries is 8.08 (Singapore) with minimum score of 5.51 (Indonesia). The average score for *competitive* business environment (*CBE*) is 6.81 spanning from a minimum of 5.97 (Indonesia) and a maximum of 8.65 (Singapore). Both *RBE* and *CBE* scores are at moderate level since scores range from 0 to 10.

Average managerial ownership (*MANOWN*) of the five countries is 25.6%, with a maximum value of 97.3% and a minimum of zero. The high percentage of *MANOWN* for certain firms reveals that top management is at times also the owner of firms. These conditions are not uncommon in Southeast Asia countries. Foreign ownership (*FOROWN*) has a mean value of 21.5% and a maximum percentage of 98.4%. Results indicate that firm majority ownership by foreigner is permitted in some Southeast Asian countries.

Sample firms reported the percentage of board independence (*IBD*) range from 11.11% to 100% with an average of 38.3%. The number of *IBD* ranges from 1 to 9 persons, with 3 on average. This implies that most firms in the five Southeast Asia countries have moderate levels of corporate governance practice in terms of percentage of board independence. Except for the Philippines, the other four countries require a minimum number of independent directors at one third of the total number of directors.

Total assets means the 800 firms-years observations range from US$ 0.82 million to US$ 13,372 million with US$ 894 million on average. Numbers show a high standard deviation among the sample firms (US$ 1,825 million). To overcome skewness, total assets are transformed into the natural logarithm to represent firm size (*LNSIZE*). Table 4.1 also shows that the sample has leverage figures (*LEV*) ranging from 2.0% to 404.0%, with 47.7% on average. The highest leverage level (with debt exceeding assets by a 4:1 ratio) indicates that some firms may be on the verge of bankruptcy.

The measure of the dependent variable (*T-RPT1*) is obtained by dividing RPTs by total assets. As shown in Panel A of Table 4.1, the average *T-RPT1* is -0.1% with a maximum of 77.1% and a minimum of -50.5%. Since *T-RPT1* is a net value, a positive value means tunneling and a negative value indicates propping.

Panel B of Table 4.1 reports the frequency of firms with regard to family ownership (*FAMOWN*) and legal origin (*LO*). Of the 800 firms-year observations, 451 cases (56.4%) are categorized as Family firms and 349 cases (43.6%) are grouped as Non-Family firms. Results suggest that there are a high number of Family firms in listed ASEAN firms. As for legal origin (*LO*), 480 cases (60.0%) come from Common Law countries, and the remaining 320 cases (40.0%) are from Civil Law countries. The composition is a result of the five countries sample, three countries have Common Law legal systems and two countries adhere to a Civil Law legal system. Countries that inherited the Common Law legal system include Malaysia, Singapore

and Thailand, whereas Civil Law legal systems are practiced by Indonesia and the Philippines.

Table 4.2 highlights ANOVA and T-test results for the full sample. Panel A presents ANOVA test of *regulatory* business environment (*RBE*) and *competitive* business environment (*CBE*) among the five countries, i.e. Indonesia, Malaysia, Philippines, Singapore, and Thailand. Findings show that F statistics for *RBE* and *CBE* have p-values less than 0.01. Therefore, it can be inferred that there are significant differences in the *regulatory* business environment (*RBE*) and *competitive* business environment (*CBE*) across the five ASEAN countries. Further analysis for investigating differences between country pairs is provided by using Tukey HSD Post Hoc test in Panel B and C. Panel B of Table 4.2 results show that all country pairs have significant differences for the *regulatory* business environment at the level of 0.01. Similar results are found for *competitive* business environments as appeared in Panel C. Each country demonstrates statistically significant difference of *CBE*. Overall, the results indicate significant differences of business environments among five ASEAN countries.

Table 4.2 also documents T-tests of *T-RPT1* between Family and Non-Family firms (see Panel D). As shown in Table 4.2, family firms have a *T-RPT1* mean of 0.5% whereas Non-Family firms are -1.0%. Statistical findings reveal a significant different in *T-RPT1* averages between Family and Non-Family firm. Since the difference is clearly positive and significant at 0.05, it means that Family firms are more likely to perform tunneling. Comparison of *T-RPT1* values based on legal origin shows that both categories have similar negative scores with Common Law countries demonstrating a lower mean than Civil Law countries (i.e. -0.2% compared to -0.1%). However, there is no statistically significant difference in *T-RPT1* between firms in Civil Law countries and Common Law countries as noted in Table 4.2.

Table 4.2: ANOVA, Tukey Post Hoc and T-test of full sample (n=800)[a]

PANEL A: ANOVA of *RBE* and *CBE* among five countries (n=800)					
	RBE			*CBE*	
F	1.520			2.273	
p-value	0.000***			0.000***	
PANEL B: Tukey HSD Post Hoc for *RBE* among five countries*T-RPT1* (n=800)					
	Indonesia	Malaysia	Philippines	Singapore	Thailand
Indonesia		0.000***	0.000***	0.000***	0.000***
Malaysia	0.000***		0.000***	0.000***	0.000***
Philippines	0.000***	0.000***		0.000***	0.000***
Singapore	0.000***	0.000***	0.000***		0.000***
Thailand	0.000***	0.000***	0.000***	0.000***	
PANEL C: Tukey HSD Post Hoc for *CBE* among five countries (N total=800)					
	Indonesia	Malaysia	Philippines	Singapore	Thailand
Indonesia		0.000***	0.000***	0.000***	0.000***
Malaysia	0.000***		0.000***	0.000***	0.000***
Philippines	0.000***	0.000***		0.000***	0.000***
Singapore	0.000***	0.000***	0.000***		0.000***
Thailand	0.000***	0.000***	0.000***	0.000***	
PANEL D: T-test *T-RPT1* family ownership and legal origin (n=800)					
	Family	Non-Family	Civil Law	Common Law	
T-RPT1 $\bar{x}$	0.005	-0.010	-0.001	-0.002	
n	451	349	320	480	
t- Statistics	2.354		0.279		
p- value	0.019**		0.780		

Notes: [a] Panel A, B and C of Table 4.2 present ANOVA and Tukey Post Hoc test of *RBE* and *CBE* whereas Panel D provides T-test of *TRPT-1* based on Family/Non-Family and Civil Law/Common Law categorizations.
* moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

4.3 Descriptive Statistics and Univariate Analysis: Tunneling and Non-Tunneling

This section provides descriptive statistics and univariate analysis using a two group category form of analysis of the full 800 firm-year sample. Categorization of firms into the two groups is based on the sign of the *T-RPT1* variable. *T-RPT1* is obtained by subtracting other receivables by other payables and scaled by total assets. For tunneling measurement purposes, other receivables and other payables are assumed to originate from related party transactions (RPTs). Firms with positive *T-RPT1*

values are categorized into the first group (named Tunneling Firms). The second group accommodates firms having zero or negative *T-RPT1* values. The latter group is labeled as Non-Tunneling Firms. Firms included in the Tunneling Firms group may have some propping activities since *T-RPT1* is a net value of other receivables after considering other payables. Conversely, firms with a negative value for *T-RPT1* may have other receivables but the amounts are less than other payables. Firms with a zero *T-RPT1* value do not report either RPTs' other receivables or RPTs' other payables. There are many possibilities for this scenario (unreported RPTs) such as an immaterial amount of RPTs to be reported in a separated account or intentionally undisclosed RPTs considering its sensitive nature. Overall, the *T-RPT1* value demonstrates net firm economic resources that are extracted by controlling shareholders in expense of minority shareholders.

Table 4.3 reports descriptive statistics after categorization of Tunneling Firms and Non-Tunneling firm. Details of Tunneling Firms are presented in Panel A whereas the Non-Tunneling group is displayed in Panel B of Table 4.3. As shown in Table 4.3, of the 800 observations, 390 firms (48.8%) are placed into the Tunneling Firms group while 410 firms (51.2%) are included in the Non-Tunneling group. This finding is consistent with prior studies that document the percentage of tunneling firm between 50.0-65.0% (Guo 2008; Jiang et al. 2010). The average value of *T-RPT1* is 3.2% for the Tunneling group with a maximum value of 77.1% and minimum value near zero. The Non-Tunneling group has a *T-RPT1* average -3.3% with a minimum value of -50.5%. The Tunneling group firms have an average mean managerial ownership (*MANOWN*) of 27.4% with a minimum value of 0% and a maximum of 97.3%. The percentage is higher than the Non-Tunneling group average of 23.9%. Firms with a higher percentage of managerial ownership tend to commit tunneling.

In contrast, the foreign ownership level of the Tunneling group is lower than the Non-Tunneling group. The average foreign ownership for the Tunneling group is 18.6% while for the Non-Tunneling group it is 24.3%. Both groups have similar maximum percentages of foreign ownership (these are 98.3% and 98.4%

respectively). Findings suggest that lower foreign ownership firms experience a higher risk of tunneling.

Table 4.3: Descriptive statistics of Tunneling and Non-Tunneling firms

PANEL A: Tunneling Firms[a]							
	T-RPT1	*MANOWN*	*FOROWN*	*IBD*	Total Assets ($)	*LNSIZE*	*LEV*
n	390	390	390	390	390	390	390
Mean	0.032	0.274	0.186	0.397	1,134,521,000	19.412	0.468
Median	0.004	0.162	0.107	0.375	247,270,000	19.326	0.495
Std. Deviation	0.098	0.285	0.225	0.138	2,199,418,800	1.809	0.256
Minimum	0.000	0.000	0.000	0.111	824,240	13.622	0.020
Maximum	0.771	0.973	0.983	0.900	13,372,000,000	23.317	2.329
PANEL B: Non-Tunneling Firms[b]							
n	410	410	410	410	410	410	410
Mean	-0.033	0.239	0.243	0.369	664,590,027	19.131	0.486
Median	-0.001	0.102	0.121	0.333	169,775,294	18.950	0.487
Std. Deviation	0.074	0.276	0.275	0.146	1,341,377,718	1.572	0.296
Minimum	-0.505	0.000	0.000	0.111	1,338,660	14.107	0.037
Maximum	0.000	0.936	0.984	1.000	11,645,648,818	23.178	4.040

Note: [a] firms with *T-RPT1*>0; [b] firms with *T-RPT1*≤0

The average percentage of board independence (*IBD*) for Tunneling group firms is 39.7% while for Non-Tunneling firms it is 36.9%. Both percentages satisfy the normal 33.3% minimum percentage requirement of independent board of directors. Surprisingly, the percentage for Tunneling group firms is higher than the Non-Tunneling group firms. Findings indicate that tunneling exists even if firms have a high percentage of *IBD*.

The Tunneling group has US$ 1,135 million of total assets on average compared to an average US$ 665 million of total assets for the Non-Tunneling group. The huge difference in average total assets between the two groups suggests an association

between firm size and tunneling. Firms with a large amount of total assets are vulnerable to tunneling[8].

In comparison with the Non-Tunneling group, a lower average level of leverage (*LEV*) is noted by the Tunneling group firms at 46.8% with a maximum of 232.9% and a minimum of 2.0%. In contrast, the average *LEV* for Non-Tunneling group firms is relatively similar at 48.6% with a maximum of 404.0% and a minimum of 3.7%. These figures raise the question whether tunneling may be associated with a lower level of leverage.

Panel A of Table 4.4 provides frequencies for Tunneling and Non-Tunneling groups relating to categorical variables. In this table, groups are broken down into two categorical variables, (i.e. Family and Non-Family, and Civil Law and Common Law of the legal origin). As shown in Table 4.4, the composition of Family and Non-Family firms for the Non-Tunneling group is almost equal, i.e. 207 firms (50.5%) and 203 firms (49.5%) respectively. Number of Family firms including in the Tunneling group is larger than Non-Family firms, i.e. 244 Family firms (62.6%) compared to 146 Non-Family firms (37.4%). In other words, Family firms may be more likely to perform tunneling.

In regard to legal origin categorization, Table 4.4 reports the figures between the Tunneling and Non-Tunneling groups. The Tunneling group comprises 232 cases (59.5%) from Common Law countries and 158 cases (40.5%) originating from Civil Law countries. As for Non-Tunneling firm, 248 cases (60.5%) come from Common Law countries and the remaining 162 cases (39.5%) from Civil Law countries. The results lead to the speculation that a number of firms do not conduct tunneling from Common Law countries at a higher rate than their counterpart Civil Law firms performing tunneling, i.e. 248 cases compared to 232 cases.

[8] Large firms tend to have better visibility by analysts, yet they may also have more assets available to be diverted (Guo 2008). In contrast, small firms are more likely to have an owner who is also the CEO or the board chairman leading to be more expropriation associated with small firms (Claessens et al. 2000). Accordingly, firm size may have a mixed effect on tunneling via RPTs.

Table 4.4: Categorical variables frequencies: Chi-square tests of Two Groups

Panel A: Frequencies						
Group	Family	Non-Family	Total	Civil Law	Common Law	Total
Tunneling Firms	244	146	390	158	232	390
% within group	62.56	37.44	100.00	40.51	59.49	100.00
Non-Tunneling Firms	207	203	410	162	248	410
% within group	50.49	49.51	100.00	39.51	60.49	100.00
Total	451	349	800	320	480	800
% of total	56.40	43.60	100.00	40.00	60.00	100.00
Panel B: Chi-square tests						
	Significance			Significance		
Pearson Chi-square	0.001***			0.773		
n	800			800		

Note: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

Panel B of Table 4.4 highlights the Chi-square test for the association between group categories and firm characteristics. The three left columns in Panel A report crosstabs between the Tunneling/Non-Tunneling groups and Family/Non-Family categories. Pearson Chi-square test indicates a highly significant statistical association (p-value < 0.01). Findings also suggest an association between the two groups and ownership status. Chi-square test, however, does not show significant association between two groups and Civil Law /Common Law category (p-value>0.05).

4.4 Descriptive Statistics and Univariate Analysis: Three Groups

Additional analysis is conducted by categorizing the total sample (n=800) into three groups, namely Pure Tunneling firms, Zero Tunneling/Propping firms, and Pure Propping firms. Propping is referred to as the transfer of private funds from controlling shareholder to provide temporary support to a firm that is in trouble, so that a default or delisting can be avoided (Friedman et al. 2003; Peng et al. 2011). Whether propping is beneficial for minority shareholders of a distressed firm or

simply to facilitate controlling shareholder to tunnel more in the future is still argued (Cheung et al. 2009; Dow and McGuire 2009). Unlike the previous section, this section splits the Non-Tunneling groups into two groups while keeping the Tunneling firms group as is in the analysis. The following criteria are used to group the categories; firms included in the first group are characterized by a positive value of the net value of other receivables after subtracting other payables (*T-RPT1*). The second group has a zero (0) value of *T-RPT1* whereas the third group possesses negative *T-RPT1* values.

Descriptive statistics for the Zero Tunneling/Propping and Propping groups are presented in Panel B and Panel C of Table 4.5[9]. As shown in Table 4.5, composition consists of 390 firms (48.8%) in the Tunneling group, 112 firms (14%) in the Zero Tunneling/Propping, and 298 firms (37.2%) for the Propping group. In line with this definition, the Tunneling group shows a positive *T-RPT1* of 3.2% with a zero value for Zero Tunneling/Propping group whilst the Propping group has a negative mean value of -4.6%.

As presented in Table 4.5, Zero Tunneling/Propping group has a higher managerial ownership (*MANOWN*) average at 34.1% than the two other groups. The second highest is the Tunneling group at 27.4%, followed by the Propping group at 20.1%. These figures suggest that instead of tunneling, propping is prevalent in firms with low managerial ownership.

Table 4.5 also shows that the Propping group has the highest foreign ownership (*FOROWN*) at 26.9%. Lower figures are observed for the Tunneling group at 18.6% with the Zero Tunneling/Propping group at 17.1%. Results indicate that tunneling is more likely to exist in firms with lower foreign ownership.

Descriptive statistics for the board independence (*IBD*) reveals the Tunneling group has an average *IBD* slightly higher than the Zero Tunneling/Propping group (39.7%

[9] For convenience purpose, descriptive statistics for the Tunneling firms has also been provided in Panel A of Table 4.5 despite this being the same data from Table 4.3.

versus 39.5% respectively). Both figures are higher than that of Propping group at 35.9%. Results suggest that tunneling activities occur in firms with a higher level of *IBD*. A possible reason of this finding is that *IBD* has an association with firm size. The larger firm size, the larger board size. Previous findings in Section 4.3 document that the larger firms tend to tunnel more. Meanwhile the role of board independence may be considered by some to just be a formality (Klein 2002).

Table 4.5: Descriptive statistics based on Three Groups

PANEL A: Pure Tunneling Firms[a]							
	T-RPT1	*MANOWN*	*FOROWN*	*IBD*	*Total Assets ($)*	*LNSIZE*	*LEV*
n	390	390	390	390	390	390	390
Mean	0.032	0.274	0.186	0.397	1,134,521,000	19.412	0.468
Median	0.004	0.162	0.107	0.375	247,270,000	19.326	0.495
Std. Deviation	0.098	0.285	0.225	0.138	2,199,418,800	1.809	0.256
Minimum	0.000	0.000	0.000	0.111	824,240	13.622	0.020
Maximum	0.771	0.973	0.983	0.900	13,372,000,000	23.317	2.329
PANEL B: Zero Tunneling/Propping Firms[b]							
n	112	112	112	112	112	112	112
Mean	0.000	0.341	0.171	0.395	369,819,000	18.758	0.368
Median	0.000	0.346	0.078	0.375	97,394,830	18.394	0.369
Std. Deviation	0.000	0.257	0.214	0.140	591,772,960	1.348	0.224
Minimum	0.000	0.000	0.000	0.182	13,458,000	16.415	0.037
Maximum	0.000	0.785	0.845	1.000	2,497,900,000	21.639	0.937
PANEL C: Pure Propping Firms[c]							
n	298	298	298	298	298	298	298
Mean	-0.046	0.201	0.269	0.359	775,376,400	19.272	0.530
Median	-0.006	0.025	0.154	0.333	199,707,300	19.112	0.511
Std. Deviation	0.084	0.274	0.290	0.147	1,517,186,000	1.628	0.308
Minimum	-0.505	0.000	0.000	0.111	1,338,700	14.107	0.072
Maximum	0.000	0.936	0.984	0.900	11,646,000,000	23.178	4.040

Note: [a] firms with *T-RPT1*>1; [b] firms with *T-RPT1*=0; [c] firms with *T-RPT1*<0

A comparison of total assets among the three groups indicates that the Tunneling group has the largest average total assets of US$ 1,135 million with a maximum of US$ 13,372 million. The Propping group and Zero Tunneling/Propping group have

average total assets of US$ 775 million and US$ 370 million respectively. These findings imply that larger firm size is associated with more tunneling behavior.

A high level of average leverage (*LEV*) is shown for the Propping group at 53.0%. The Tunneling and Zero Tunneling/Propping groups have lower average levels of leverage of 46.8% and 36.8% respectively. The leverage (*LEV*) values higher than 100% as can be seen in maximum *LEV* values for Tunneling (232.9%) and Propping (404.0%) groups, indicate firms with total debts exceeding total assets (i.e., firms in financial distress).

Table 4.6: Categorical variables frequencies: Chi-square tests of Three Groups

Panel A: Frequencies						
Group	Family	Non-Family	Total	Civil Law	Common Law	Total
Pure Tunneling Firms	244	146	390	158	232	390
% within group	62.60	37.40	100.00	40.50	59.50	100.00
Zero Tunneling/Propping Firms	70	42	112	29	83	112
% within group	62.50	37.50	100.00	25.90	74.10	100.00
Pure Propping Firms	137	161	298	133	165	298
% within group	46.00	54.00	100.00	44.60	55.40	100.00
Total	451	349	800	320	480	800
% of total	56.40	43.60	100.00	40.00	60.00	100.00
Panel B: Chi-square test						
	Significance			Significance		
Pearson Chi-square	0.000***			0.002***		
n	800			800		

Note: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

Table 4.6 lists the frequency of firms making up each group with regard to the categorical variables, i.e. family ownership and legal origin. As for the Pure Tunneling group, the number of Family firms is far higher than Non-Family firms,

i.e. 244 firms (62.6%) compared to 146 firms (37.4%). A similar pattern is noted by the Zero Tunneling/Propping group having 70 Family firms (62.5%) and 42 Non-Family firms (37.5%). In contrast, the Pure Propping group reveals a higher number of Non-Family firm than Family firms, i.e., 161 firms (54.0%) and 137 firms (46.0%) respectively.

As shown in Panel A of Table 4.6 the three groups reveal a slightly different pattern for the Civil Law and Common Law compositions. The percentage of Tunneling and Propping groups are virtually the same as the sample proportion..

Panel B of Table 4.6 summarizes Chi-square tests for the association between the three groups and two categorical variables. The second left columns reports tests for the association between the three groups and ownership category (Family and Non-Family). Pearson Chi-square test indicates a statistically highly significant association at the 0.01 level. Therefore, the three groups categorization is associated with Family/Non-Family firm status. A similar highly significant statistical test result is also reported for the association between the three categories and legal origin. Panel B of Table 4.6 suggests an association between three groups categorization and Civil Law/Common Law legal origin.

4.5 Key Statistical Findings

Findings indicate that there are significant differences in the *regulatory* business environment (*RBE*) and *competitive* business environment (*CBE*) across the five ASEAN countries. More than 50% of the total sample are categorized as Family firms suggesting a high percentage of such firm ownership in ASEAN listed capital markets. Family firms tend to do more tunneling via RPTs than Non-Family firms. Findings also note a moderate level of managerial and foreign ownerships in the region (i.e., 25.6% and 21.5% respectively).

Partitioning the full sample into Tunneling and Non-Tunneling groups results in an almost equal composition between the groups. Descriptive statistics reveal that

Tunneling group firms have higher managerial ownership (*MANOWN*) but lower foreign ownership than Non-Tunneling group firms. Tunneling firms also show the highest mean value of total assets. Cross tabulations also report an association between Tunneling/Non-Tunneling and Family/Non-Family categorization.

When the full sample is divided into three groups (i.e., Pure Tunneling, Zero Tunneling/Propping, and Pure Propping), the highest percentage of firm numbers is for the Pure Tunneling group, followed by the Pure Propping group and Zero Tunneling/Propping group. The highest mean value of managerial ownership is found for the Zero Tunneling/Propping group whereas the Propping group has the highest foreign ownership percentage on average. The Tunneling group consistently has the highest mean value of total assets among the groups. There is an association between the three groups categorization with Family/Non-Family firm categories. An association is also documented between those triple categories and the legal origin (Civil Law/Common Law).

Although most results of these grouping methods (two groups and three groups) are consistent, the categorization into three groups provides a clear insight on characteristics of Non-Tunneling group constituents, i.e. Zero Tunneling/Propping and Pure Propping firms, which the two groups categorization method does less so. The three group categorization finds the highest foreign ownership mean values of the full sample originating from the Propping firms. Moreover, an association between tunneling and legal origin is found in the three group categorization that is not detected in the earlier two group categorization. On the other hand, both categorizations suggest an association between tunneling and ownership status.

4.6 Summary

Chapter Four provides descriptive statistics and initial statistical analysis of the 800 ASEAN listed firm sample. Three main types of analysis are covered in this chapter. First, analysis is conducted for the 800 firm-year full sample, followed by analysis after partitioning into the Tunneling and Non-Tunneling groups. Further analysis is

then performed by dividing the same full sample into three groups, i.e. Tunneling, Zero Tunneling/Propping, and Propping groups.

After discussing the descriptive statistics for the research variables in this Chapter, the main analysis for the full 800 firm-year sample is then provided in the following chapter. Chapter Five begins with univariate tests for the two groups (Tunneling and Non-Tunneling groups) and ANOVA test for the three groups Tunneling, Zero Tunneling/Propping, and Propping groups. This is followed by correlation analyses. Finally, multivariate analysis, i.e., binary logistic regression and OLS multiple regression, are conducted to test proposed hypotheses regarding the possible determinants of tunneling via RPTs.

CHAPTER FIVE
EMPIRICAL RESULTS

5.1 Introduction

Chapter Four reports descriptive statistics for the research variables and specific firm, characteristics as well as non-parametric tests for the full 800 firm-years sample. This chapter documents the main analysis of this thesis which emphasizes potential predictors of tunneling. As per Chapter Four, the main analysis remains on net other receivables from related parties (*T-RPT1*) as the proxy measure to represent tunneling behavior.[10]

Chapter Five is structured as follows. The next section provides an overview of the dependent variable *T-RPT1* tunneling. Univariate T-test is first provided for the two group classification (Tunneling versus Non-Tunneling). Then ANOVA/Tukey Post Hoc analysis is conducted for the three group classification (Tunneling, Zero Tunneling/Propping, and Propping). Multivariate analysis is then presented using correlation matrices and OLS multiple regression techniques. Two regression methods are engaged to test all research hypotheses involving the full sample (n=800).

5.2 Net Other Receivables of RPTs (*T-RPT1*) as the Tunneling Proxy

This section reports the analysis results of predictor variables of tunneling. The focus of this part is on net other receivables of RPTs (*T-RPT1*) as one of the two proxies of tunneling. This measure takes into account the offsetting role of RPTs' other payables as means to prop up firm by related parties. Thus, this measure reveals the net effect of related party transactions in terms of other receivables and other payables. As all five country sample have converged to IFRS including IAS 24 (regarding related party transaction disclosure) during the study period (2006-2009),

[10] A completely different proxy measure for tunneling (*T-RPT2*) is explored in Chapter Six.

related party transaction data among the five countries are relatively comparable. For this thesis sample, firms showing positive *T-RPT1* values comprise 48.8% of the 800 firm-year observations.

Based on the *T-RPT1* measurement, there are three possible values of *T-RPT1*, i.e. a positive, zero, and negative values. Of the 800 firm-year observations, 390 cases (48.8%) demonstrate positive *T-RPT1* value, 112 cases (14%) with a zero value of *T-RPT1* with the remaining 298 cases (37.2%) showing negative *T-RPT1* values. Comprehensive discussion of firm categorization into certain groups has been provided in Chapter Four. Those criteria are again used for the analysis by dividing the full sample into two groups, (i.e. Tunneling and Non-Tunneling firms) and three groups (i.e. Tunneling firm, Zero Tunneling/Propping firms, and Propping firms). Since the main thesis analysis is on tunneling behavior, no further analysis is conducted for the two situations of Zero Tunneling/Propping firms and Propping firms. This thesis focuses on tunneling because it tends to have the most devastating effect on firm value, and in turn, minority shareholders' wealth (Welford 2007; OECD 2009; Jiang et al. 2010).

For purposes of the main multivariate analysis, two kinds of regression equations are presented. The first model uses binary logistic regression while the second model utilizes OLS regression. Each model is presented into two separate regression equations to deal with multicollinearity problems between variables of the *regulatory* business environment (*RBE*) and *competitive* business environment (*CBE*) at 0.961. In doing so, the first regression uses *RBE* as proxy of business environment whereas the second equation includes *CBE* as one of the predictor variable instead of *RBE*. As in prior studies (e.g., Jian and Wong 2003; Jiang et al. 2010), outliers are probable causes of skewed data distributions on several variables including *T-RPT1*. To lessen the impact of outliers, winsorization of data is applied for the OLS multiple regression analysis (e.g., Lins 2003; Jian and Wong 2003; Jiang et al. 2010).

5.3 Tunneling and Non-Tunneling Firms: T-test of Firms' Characteristics

Table 5.1 displays univariate statistics after partitioning the full sample into two groups, namely Tunneling firms and Non-Tunneling firms. As per Chapter Four discussion, firms included in the Tunneling group by definition must have positive values of *T-RPT1* whereas a firm having a zero or negative *T-RPT1* values is in the Non-Tunneling group.

The first T-test investigates whether the Tunneling group has a statistically distinctive positive value of *T-RPT1*. To accomplish this analysis, the *T-RPT1* score for the Tunneling group is tested against zero (0) in a one sample T-test. As presented in Panel A of Table 5.1, this group has an average *T-RPT1* of 3.2%[11]. The T-statistics shows a p-value less than 0.01 indicating that *T-RPT1* is statistically highly significant more than zero (0). These findings suggest that there is tunneling behavior in ASEAN listed firms.

Table 5.1: T-test for *T-RPT1*: Two Groups

PANEL A: T test if *T-RPT1*>0 of Tunneling Group (one sample T-test)							
n	390						
Mean	0.032						
t- Statistics	5.501						
p- value	0.000***						
PANEL B: T-test firms characteristics between two groups							
	T-RPT1	*MANOWN*	*FOROWN*	*IBD*	*Total Assets ($)*	*LNSIZE*	*LEV*
Tunneling x̄ (n=390)	0.032	0.274	0.186	0.397	1,134,521,000	19.412	0.468
Non-Tunneling x̄ (n=410)	-0.033	0.239	0.243	0.369	664,590,027	19.131	0.486
Mean Difference	0.065	0.035	-0.057	0.028	469,931,070	0.280	-0.018
t- statistics	10.661	1.740	-3.215	2.820	3.626	2.342	-0.914
p- value	0.000***	0.082*	0.001***	0.005***	0.000***	0.019**	0.361

Notes: Panel A of Table 5.1 provides a one sample T-test for *T-RPT1* of Tunneling group whereas Panel B of Table 5.1 reports T-test for firms characteristics between Tunneling and Non-Tunneling groups.* moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

[11] The mean of the group is similar with average PRC's firms at 3.5% (Guo 2008).

Panel B of Table 5.1 reports the results of T-test of firm characteristics between the Tunneling and Non-Tunneling groups. As shown in the second column, T-test documents a highly significant difference in *T-RPT1* averages between the Tunneling and Non-Tunneling group at p-value<0.01. The mean difference for managerial ownership (*MANOWN*) between the Tunneling and Non-Tunneling groups is 3.5%. The p-value of 0.082 indicates that the difference in managerial ownership percentage means between the two groups is moderately significant at the 0.10 level. Thus, Tunneling firms have on average a moderately significantly higher managerial ownership than Non-Tunneling firms.

There is a mean difference in terms of foreign ownership of -5.7% between the Tunneling and Non-Tunneling groups. The difference is highly statistically significant at the 0.01 level. This finding shows that Non-Tunneling firms have higher foreign ownership than Tunneling firms. Results also indicate that average board independence (*IBD*) is highly statistically significant difference (p-value<0.01) between the two groups. Interestingly the Tunneling group has a higher percentage of *IBD* than the Non-Tunneling group.

The mean difference in total assets between the two groups is highly statistically significant at the 0.01 level. A similar result is shown for *LNSIZE* although statistically significant at the 0.05 level. Larger firms, therefore, are more likely to conduct tunneling. As for leverage (*LEV*), the mean difference between the two groups is only -1.8% with a p-value 0.361. In other words, there is no statistically significant difference between Tunneling and Non-Tunneling group in terms of their leverage figure.

5.4 Three Groups Analysis: ANOVA

Panel A Table 5.2 summarizes ANOVA results of firm specific characteristics for the three groups (i.e. Pure Tunneling, Zero Tunneling/Propping and Pure Propping). As presented in Table 5.2, all firm characteristics' variables demonstrate highly statistically significant differences among three groups. There are fundamentally

different characteristics among Tunneling group, Zero Tunneling/Propping group, and Propping group. Firm mean values of firm characteristics across the three groups are provided in Panel B. Additional Tukey HSD Post Hoc tests are then performed to better highlight the differences between each pair of the groups (Panel C).

The ANOVA tests for *T-RPT1* show significant differences among the three groups with a p-value<0.01 (see Panel A of Table 5.2). Average *T-RPT1* values for each group (Pure Tunneling, Zero Tunneling/Propping and Pure Propping) are 3.2%; 0% and -4.9% respectively (see Panel B of Table 5.2). As presented in Panel C of Table 5.2, Tukey Post Hoc tests confirm the fundamental statistical differences of these results. Comparison of *T-RPT1* values between the Tunneling group and Zero Tunneling/Propping groups reveals a highly significant different in mean values as well as the between the Tunneling and Propping groups (see Cell 1 and Cell 2). A highly statistical difference is also found between the Zero Tunneling/Propping and Propping groups in terms of *T-RPT1* values (Cell 3). Overall, the *T-RPT1* classification criterion is robust in terms of the categorization of firms into the Tunneling, the Zero and the Propping groups.

Panel A of Table 5.2 also reports that there are statistically highly significant differences in managerial ownership (*MANOWN*) among the three groups (p-value<0.01). The highest managerial ownership level is for the Zero Tunneling/Propping group (34.1%). This is followed by Tunneling and Propping groups (27.4% and 20.1%, respectively). However, the difference in *MANOWN* level between the Tunneling and Zero Tunneling/Propping groups is only moderately significant (p-value<0.1) as noted in Cell 1 of Panel C for Tukey Post Hoc tests. Highly significant differences in *MANOWN* (p-values<0.01) mean values are found between the Tunneling and the Propping groups as well as between the Zero Tunneling/Propping group and the Propping group. The findings suggest that a lower level of managerial ownership is noted in by Propping firms.

Table 5.2: ANOVA test of firms characteristics for Three Groups

PANEL A: One way ANOVA							
Statistics	*T-RPT1*	*MANOWN*	*FOROWN*	*IBD*	*Total Assets*	*LNSIZE*	*LEV*
F	70.073	11.955	11.535	6.667	8.803	6.549	14.915
p-value	0.000***	0.000***	0.000***	0.001***	0.000***	0.002***	0.000***
PANEL B: Mean values of firm's characteristics for three groups							
Pure Tunneling $\bar{x}$ (n=390)	0.032	0.274	0.186	0.397	1,134,521,000	19.412	0.468
Zero Tunneling/Propping $\bar{x}$ (n=112)	0.000	0.341	0.171	0.395	369,819,000	18.758	0.368
Pure Propping $\bar{x}$ (n=298)	-0.049	0.201	0.269	0.359	775,376,400	19.272	0.530
PANEL C: Tukey HSD Post Hoc Test							
Cell1: Pure Tunneling and Zero Tunneling/Propping							
Mean Difference	0.032	-0.067	0.015	0.002	764,702,060	0.654	0.100
p- value	0.001***	0.062*	0.846	0.991	0.000***	0.001***	0.002***
Cell2: Pure Tunneling and PurePropping							
Mean Difference	0.081	0.073	-0.084	0.038	359,144,660	0.140	-0.062
p- value	0.000***	0.002***	0.000***	0.001***	0.027**	0.528	0.009***
Cell 3: Zero Tunneling/Propping and Pure Propping							
Mean Difference	0.049	0.140	-0.099	0.036	-405,557,400	-0.514	-0.163
p- value	0.000***	0.000***	0.001***	0.055*	0.107	0.017**	0.000***

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

The ANOVA test for foreign ownership (*FOROWN*) also documents statistically highly significant differences among the three groups (p-value<0.01). As indicated in Panel B of Table 5.2, the Propping group has the highest level average of *FOROWN* at 26.9%. The Tunneling group shows a similar level with the Zero Tunneling/Propping group at 18.6% and 17.1% respectively. Tukey Post Hoc test results, however, do not find a significant difference for *FOROWN* levels between the Tunneling and the Zero Tunneling/Propping groups. Comparison of mean *FOROWN* between the Tunneling and Propping groups demonstrates a highly significant different with a p-value<0.01 (Cell 2 of Panel C). A similar result is observed for *FOROWN* differences between the Zero Tunneling/Propping group and Propping group. In other words, findings note that the Propping firms tend to have higher foreign ownership levels then the two other groups, whereas the Tunneling and Zero Tunneling/Propping groups have similar levels of foreign ownership.

In regard to the board independence (*IBD*), Panel A of Table 5.2 notes a significant difference among the Tunneling, Zero Tunneling/Propping, and Propping groups. Similar high percentages of board independence are observed for Tunneling group at 39.7% and Zero Tunneling/Propping group at 39.5%, whereas the Propping group is slightly lower at 35.9%. The *IBD* differences between the Tunneling and Zero Tunneling/Propping groups are not statistically significant as reported in Cell 1 of Panel C. A highly significant difference in *IBD* means is noted for comparison between the Tunneling and Propping groups (Cell 2 of Panel C), whereas a moderately significant difference is found in comparing the Zero Tunneling/Propping and Propping groups (Cell 3 of Panel C). Results suggest that a lower number of independent directors is more likely to be observed in Propping firms.

The three groups also show statistically significant differences in terms of total assets. As shown in Panel A of Table 5.2, total assets and the natural logarithm of total assets (*LNSIZE*) for the three groups report p-values<0.01 suggesting statistically highly significant differences in terms of average total assets across the

three groups. With the average value of total assets amounting to US$ 1,135 million, the Tunneling firms are larger than the Propping group (US$ 775 million) and Zero Tunneling/Propping group (US$ 370 million). Tukey Post Hoc tests clearly indicate a statistically highly significant difference in average total assets between the Tunneling and the Zero Tunneling/Propping group (p-value<0.01). A statistically significant difference is also confirmed for average total assets between the Tunneling and Propping group (p-value<0.05), whereas there is a statistically moderately significant difference between the Zero Tunneling/Propping and Propping groups. Findings indicate tunneling behavior is more prevalent to firms with larger total assets.

Debt to total assets ratios (*LEV*) among the three groups clearly highlights statistically highly significant differences at the p-value<0.01 level (Panel A Table 5.2). The average leverage values for the three groups from the highest to the lowest are the Propping group (53%), Tunneling group (46.8%), and Zero Tunneling/Propping group (36.8%). Cell 1 of Panel C reports a statistically highly significant difference in leverage values between the Tunneling and Zero Tunneling/Propping groups at the p-value<0.01. Similarly, the Tunneling group shows a statistically highly significant difference in leverage mean values compared to the Propping group (p-value<0.01). A statistically highly significant difference in mean leverage is also noted between the Zero Tunneling/Propping group and Propping group (see Cell 3 of Panel C). Overall, the Propping group is characterized by firms with higher leverage levels than the Tunneling and Zero Tunneling/ Propping group firms.

In summary, ANOVA tests of firm characteristics across the three groups document significant differences among firms constituting each group. Further investigation using Tukey HSD Post Hoc tests indicate Tunneling firms seem to have largest total assets, whereas the Zero Tunneling/Propping firms appear to have the highest managerial ownership. Firms with a higher level of foreign ownership and leverage are more likely to lie in the Propping group.

5.5 Correlation Analysis

The correlation matrix for the full sample (n=800) is tabulated in Table 5.3. It documents Pearson correlations between the dependent, independent and control variable for the full sample. Based on the literature review and hypothesis development, this study predicts a negative correlation between *T-RPT1* and *regulatory* business environment (*RBE*). *Competitive* business environment (*CBE*) is also predicted to have a negative correlation with *T-RPT1*. This thesis proposes a positive relationship between *T-RPT1* and family ownership (*FAMOWN*), and managerial ownership (*MANOWN*). *T-RPT1* is predicted to have a negative correlation with foreign ownership (*FOROWN*).

As presented in Table 5.3, the dependent variable *T-RPT1* has an insignificant positive correlation with the independent variable *regulatory* business environment (*RBE*). This finding does not support the prediction of negative association between *T-RPT1* and *RBE*. Similarly, an insignificant positive correlation is also found between *T-RPT1* and *competitive* business environment (*CBE*). A positive correlation is reported for the correlation between the dependent variable and family ownership. Although the coefficient is not significant, its directionality is as predicted. The dependent variable has a statistically positive significant relationship with managerial ownership (*MANOWN*) at the p-value< 0.01 indicates support for the H3 expectation. Yet, a negative insignificant correlation is observed for the correlations between *T-RPT1* and independent variable of foreign ownership (*FOROWN*). The dependent variable is significantly correlated with two control variables: (a) firm size (*LNSIZE*): negative: p-value<0.01; and (b) leverage (*LEV*): negative: p-value<0.01. Whereas *T-RPT1* does not show any significant correlations with the three other control variables, i.e. board independence (*IBD*), legal origin (*LO*) and year.

Table 5.3: Pearson correlations of full sample (n=800)

	T-RPT1	*RBE*	*CBE*	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LO*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT1	1	0.020	0.026	0.067	0.097***	-0.052	0.051	0.008	-0.113***	-0.287***	-0.027	-0.006	0.003	0.030
RBE	0.020	1	0.961***	0.022	0.193***	-0.170***	0.337***	-0.757***	0.070**	-0.059	0.000	0.000	0.000	0.000
CBE	0.026	0.961***	1	0.041	0.172***	-0.150***	0.404***	-0.660***	0.103***	-0.021	0.000	0.000	0.000	0.000
FAMOWN	0.067	0.022	0.041	1	0.573***	-0.250***	-0.003	-0.079**	-0.212***	-0.015	-0.016	-0.004	0.007	0.013
MANOWN	0.097***	0.193***	0.172***	0.573***	1	-0.342***	-0.021	-0.171***	-0.321***	-0.154***	0.010	-0.008	-0.005	0.003
FOROWN	-0.052	-0.170***	-0.150***	-0.250***	-0.342***	1	0.034	0.120***	0.168***	0.046	-0.039	0.027	0.014	-0.003
IBD	0.051	0.337***	0.404***	-0.003	-0.021	0.034	1	-0.350***	0.213***	-0.004	-0.048	-0.007	0.020	0.036
LO	0.008	-0.757***	-0.660***	-0.079**	-0.171***	0.120***	-0.350***	1	-0.155***	0.103***	0.000	0.000	0.000	0.000
LNSIZE	-0.113***	0.070**	0.103***	-0.212***	-0.321***	0.168***	0.213***	-0.155***	1	0.116***	-0.070**	0.011	0.015	0.044
LEV	-0.287***	-0.059	-0.021	-0.015	-0.154***	0.046	-0.004	0.103***	0.116***	1	0.035	-0.017	0.008	-0.026
YEARD1	-0.027	0.000	0.000	-0.016	0.010	-0.039	-0.048	0.000	-0.070**	0.035	1	-0.333***	-0.333***	-0.333***
YEARD2	-0.006	0.000	0.000	-0.004	-0.008	0.027	-0.007	0.000	0.011	-0.017	-0.333***	1	-0.333***	-0.333***
YEARD3	0.003	0.000	0.000	0.007	-0.005	0.014	0.020	0.000	0.015	0.008	-0.333***	-0.333***	1	-0.333***
YEARD4	0.030	0.000	0.000	0.013	0.003	-0.003	0.036	0.000	0.044	-0.026	-0.333***	-0.333***	-0.333***	1

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

As for correlations between the independent variables, findings show a very strong positive correlation between *RBE* and *CBE* (0.961; p-value<0.01). Other significant correlations are also found between *RBE* and several independent and control variables: (a) managerial ownership: positive; p-value<0.01; (b) foreign ownership: negative; p-value<0.01; (c) board independence: positive; p-value<0.01; (d) legal origin: negative; p-value<0.01; and (e) firm size: negative; p-value<0.05. *CBE* has significant relationships with managerial ownership (positive; p-value<0.01), foreign ownership (negative; p-value<0.01), board independence (positive; p-value<0.01), legal origin (negative; p-value<0.01) and firm size (negative; p-value<0.01). Family ownership has significant correlations with managerial ownership (positive; p-value<0.01), foreign ownership (negative; p-value<0.01), legal origin (negative; p-value<0.05) and firm size (negative; p-value<0.01). Significant negative correlations are observed between managerial ownership and: (a) foreign ownership, (b) legal origin, (c) firm size and (d) leverage with p-values<0.01. Foreign ownership is significantly positively correlated with legal origin and firm size. In regard to correlations between control variables, board independence has a significant negative correlation with legal origin and a positive significant correlation with firm size. The other control variable (legal origin) appears to have a significant negative correlation with firm size and a positive significant correlation with leverage. Firm size reveals a positive significant correlation with leverage and a significant negative correlation with year.

The very high correlation between *RBE* and *CBE* (0.961) indicates a possible multicollinearity problem when conducting regression analysis. To overcome multicollinearity concerns, regression analysis uses *RBE* and *CBE* alternately as a predictors of tunneling via RPTs (i.e. *CBE* is removed from the first thesis regression model, then in a later regression model it replaces *RBE*). This thesis retains these two highly correlated independent variables in the analysis because simply eliminating an independent variable with high correlation leads to a model that is not theoretically well motivated (O'Brien 2007). High correlations are also noted between *RBE* and legal origin (-0.757), and the correlation between *CBE* and legal origin (-0.660).

Similarly, a high correlation is noted between family ownership and managerial ownership (0.573). However, these values are below the critical limit of 0.9 for raising severe multicollinearity problems (Hair, Black, Babin, and Anderson 2010).

In summary except for the correlations between *T-RPT1* and two independent variables (*RBE* and *CBE*), all correlation results between the dependent and independent variables for the 800 firm-years sample show directionalities as predicted. The very high correlation between *RBE* and *CBE* leads to separate treatment of those independent variables in regression analysis.

Tables 5.4, 5.5 and 5.6 present group classification-based correlation matrices for the sample component for each of the three groups (Tunneling, n=390; Zero Tunneling/Propping, n=112; Propping, n=298).

Table 5.4 highlights the additional correlations for firms that solely lie in the Tunneling group (n=390). As shown in Table 5.4, *T-RPT1* tunneling has a statistically significant negative correlation with *regulatory* business environment (*RBE*) at the level of 0.05. There is a similar negative correlation between *T-RPT1* and *competitive* business environment (*CBE*). Although correlations are weak (-0.127 and -0.114 respectively), both results support H1 and H2 predicting a negative association between those independent variables and tunneling via RPTs. Family ownership, managerial ownership and foreign ownership have weak insignificant positive correlations with TRPT-1. Except for foreign ownership, both types of ownership (family and managerial ownership) have positive directionalities as posited. The dependent variable also has a significant association with several control variables: (a) board independence (negative; p-value<0.05), (b) legal origin (positive; p-value<0.01), (c) firm size (negative; p-value<0.01), and (d) leverage (negative; p-value<0.05).

Similar to the full sample Table 5.3 findings, Table 5.4 results reveal a significant strong positive correlation between *regulatory* and *competitive* business environments (0.970; p-value<0.01). In addition, *RBE* is also significantly correlated

with several independent and control variables: (a) foreign ownership (negative; p-value<0.05); (b) board independence (positive; p-value<0.01); and (c) legal origin (negative; p-value<0.01). *CBE* has a significant positive correlation with managerial ownership (p-value<0.01) and is also significantly associated with several control variables: (a) managerial ownership (positive; p-value<0.01); (b) board independence (positive; p-value<0.01); legal origin (negative; p-value<0.01); and (d) firm size (positive; p-value<0.05). Family ownership has a significant positive correlation with managerial ownership (p-value<0.01), and a significant negative correlation with firm size (p-value<0.01). As for managerial ownership, this independent variable has a significant negative correlation with: (a) foreign ownership (p-value<0.01), (b) firm size (p-value<0.01), and (c) leverage (p-value<0.01). Foreign ownership is significantly positive correlated with legal origin (p-value<0.01) and firm size (p-value<0.01). Correlations among control variables indicate board independence has a negative correlation with legal origin, and a positive correlation with firm size. Legal origin is significantly negative correlated with firm size whereas firm size is significantly positive associated with leverage.

On the basis of the Table 5.4 correlation matrix, a significant very high correlation is observed between *CBE* and *RBE* again suggesting a multicollinearity concern when performing regression analysis[12]. The other high correlations are also noted for the following: (a) *RBE* and legal origin (-0.785); and (b) *CBE* and legal origin (-0.710). Despite these high correlations, both these latter comparative figures fall below the critical limit of 0.90 to cause severe multicollinearity problems (Hair et al. 2010).

[12] OLS multiple regressions involving the 390 firm-years sample are provided in Appendix A. The use of the 390 Tunneling firms sample provides broader insights whether the partitioned sample model produces similar results to the full sample main model (n=800).

Table 5.4: Pearson correlations of Pure Tunneling firms (n=390)

	T-RPT1	*RBE*	*CBE*	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LO*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT1	1	-0.127**	-0.114**	0.098	0.084	0.007	-0.109**	0.199***	-0.347***	-0.122**	-0.007	-0.015	0.023	0.000
RBE	-0.127**	1	0.970***	-0.010	0.136***	-0.122**	0.412***	-0.785***	0.089	-0.063	-0.015	0.008	-0.037	0.043
CBE	-0.114**	0.970***	1	-0.001	0.148***	-0.094	0.460***	-0.710***	0.112**	-0.012	-0.015	0.007	-0.038	0.045
FAMOWN	0.098	-0.010	-0.001	1	0.526***	-0.075	-0.050	-0.009	-0.250***	0.000	-0.033	-0.030	0.036	0.026
MANOWN	0.084	0.136***	0.148***	0.526***	1	-0.207***	-0.045	-0.032	-0.352***	-0.126**	-0.018	-0.017	0.009	0.026
FOROWN	0.007	-0.122**	-0.094	-0.075	-0.207***	1	0.056	0.127**	0.141***	0.031	-0.027	0.028	0.032	-0.031
IBD	-0.109**	0.412***	0.460***	-0.050	-0.045	0.056	1	-0.384***	0.219***	0.081	-0.039	0.002	-0.013	0.049
LO	0.199***	-0.785***	-0.710***	-0.009	-0.032	0.127**	-0.384***	1	-0.171***	0.005	0.008	-0.006	0.026	-.0028
LNSIZE	-0.347***	0.089	0.112**	-0.250***	-0.352***	0.141***	0.219***	-0.171***	1	0.258***	-0.069	0.042	-0.025	0.052
LEV	-0.122**	-0.063	-0.012	0.000	-0.126**	0.031	0.081	0.005	0.258***	1	-0.011	-0.032	0.041	0.002
YEARD1	-0.007	-0.015	-0.015	-0.033	-0.018	-0.027	-0.039	0.008	-0.069	-0.011	1	-0.327***	-0.329***	-.342***
YEARD2	-0.015	0.008	0.007	-0.030	-0.017	0.028	0.002	-0.006	0.042	-0.032	-0.327***	1	-0.324***	-.338***
YEARD3	0.023	-0.037	-0.038	0.036	0.009	0.032	-0.013	0.026	-0.025	0.041	-0.329***	-0.324***	1	-.340***
YEARD4	0.000	0.043	0.045	0.026	0.026	-0.031	0.049	-0.028	0.052	0.002	-0.342***	-0.338***	-0.340***	1

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

Table 5.5: Pearson correlations of Zero Tunneling/Propping firms (n=112)

	T-RPT1	*RBE*	*CBE*	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LO*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT1	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]
RBE	.[a]	1	0.960***	-0.034	0.129	-0.260***	0.028	-0.701***	-0.063	0.136	-0.075	0.000	0.098	-0.026
CBE	.[a]	0.960***	1	-0.044	0.067	-0.219**	0.142	-0.561***	0.004	0.259***	-0.062	0.017	0.093	-0.051
FAMOWN	.[a]	-0.034	-0.044	1	0.703***	-0.365***	-0.010	-0.300***	0.058	0.003	0.076	-0.005	-0.047	-0.021
MANOWN	.[a]	0.129	0.067	0.703***	1	-0.454***	-0.007	-0.441***	-0.218**	-0.119	0.024	-0.013	0.006	-0.016
FOROWN	.[a]	-0.260***	-0.219**	-0.365***	-0.454***	1	0.224**	0.208**	0.321***	0.036	-0.071	0.076	-0.028	0.021
IBD	.[a]	0.028	0.142	-0.010	-0.007	0.224**	1	-0.052	0.133	0.319***	-0.025	-0.016	0.045	-0.005
LO	.[a]	-0.701***	-0.561***	-0.300***	-0.441***	0.208**	-0.052	1	-0.070	0.006	0.061	0.023	-0.070	-0.012
LNSIZE	.[a]	-0.063	0.004	0.058	-0.218**	0.321***	0.133	-0.070	1	0.490***	-0.108	0.040	-0.021	0.086
LEV	.[a]	0.136	0.259***	0.003	-0.119	0.036	0.319***	0.006	0.490***	1	-0.035	0.019	0.003	0.012
YEARD1	.[a]	-0.075	-0.062	0.076	0.024	-0.071	-0.025	0.061	-0.108	-0.035	1	-0.325***	-0.325***	-.317***
YEARD2	.[a]	0.000	0.017	-0.005	-0.013	0.076	-0.016	0.023	0.040	0.019	-0.325***	1	-0.349***	-.341***
YEARD3	.[a]	0.098	0.093	-0.047	0.006	-0.028	0.045	-0.070	-0.021	0.003	-0.325***	-0.349***	1	-.341***
YEARD4	.[a]	-0.026	-0.051	-0.021	-0.016	0.021	-0.005	-0.012	0.086	0.012	-0.317***	-0.341***	-0.341***	1

Notes : a. Cannot be computed because at least one of the variables is constant.
* moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

Table 5.6: Pearson correlations of Pure Propping firms (n=298)

	T-RPT1	*RBE*	*CBE*	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LO*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT1	1	0.144**	0.105	-0.077	-0.026	-0.017	0.166***	-0.222***	0.219***	-0.180***	0.020	0.014	-0.020	-0.014
RBE	0.144**	1	0.941***	0.022	0.266***	-0.163***	0.308***	-0.760***	0.085	-0.056	0.063	-0.009	0.024	-0.080
CBE	0.105	0.941***	1	0.061	0.201***	-0.150***	0.396***	-0.656***	0.120**	-0.060	0.062	-0.013	0.032	-0.083
FAMOWN	-0.077	0.022	0.061	1	0.568***	-0.348***	0.001	-0.070	-0.255***	0.019	-0.022	0.032	-0.007	-0.003
MANOWN	-0.026	0.266***	0.201***	0.568***	1	-0.424***	-0.048	-0.235***	-0.297***	-0.130**	0.052	0.007	-0.029	-0.031
FOROWN	-0.017	-0.163***	-0.150***	-0.348***	-0.424***	1	0.014	0.066	0.172***	0.007	-0.050	0.012	0.008	0.031
IBD	0.166***	0.308***	0.396***	0.001	-0.048	0.014	1	-0.394***	0.240***	-0.132**	-0.064	-0.012	0.052	0.026
LO	-0.222***	-0.760***	-0.656***	-0.070	-0.235***	0.066	-0.394***	1	-0.197***	0.186***	-0.036	0.001	-0.007	0.044
LNSIZE	0.219***	0.085	0.120**	-0.255***	-0.297***	0.172***	0.240***	-0.197***	1	-0.168***	-0.066	-0.037	0.089	0.016
LEV	-0.180***	-0.056	-0.060	0.019	-0.130**	0.007	-0.132**	0.186***	-0.168***	1	0.095	-0.011	-0.023	-0.063
YEARD1	0.020	0.063	0.062	-0.022	0.052	-0.050	-0.064	-0.036	-0.066	0.095	1	-.345***	-0.342***	-0.327***
YEARD2	0.014	-0.009	-0.013	0.032	0.007	0.012	-0.012	0.001	-0.037	-0.011	-0.345***	1	-0.339***	-0.324***
YEARD3	-0.020	0.024	0.032	-0.007	-0.029	0.008	0.052	-0.007	0.089	-0.023	-0.342***	-.339***	1	-0.321***
YEARD4	-0.014	-0.080	-0.083	-0.003	-0.031	0.031	0.026	0.044	0.016	-0.063	-0.327***	-.324***	-0.321***	1

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

The Zero Tunneling/Propping group's additional correlation matrix is presented in Table 5.5 with correlations based on 112 firm-year observations. By definition, the *T-RPT1* values for the 112 sample firms are the same (zero). Therefore, Table 5.5 reports correlations for independent and control variables only. *RBE* reveals significantly high positive correlation with *CBE* (p-value<0.01) and significantly negative correlations with foreign ownership and legal origin (both p-values<0.01). Similarly, *CBE* has a significantly negative correlation with foreign ownership and legal origin, and significantly positively associated with leverage. Family ownership has a significant positive correlation with managerial ownership, and a negative significant relationship with foreign ownership and legal origin. Significant negative correlations are shown between managerial ownership and: (a) foreign ownership, (b) legal origin and (c) firm size. Foreign ownership has a significant positive correlation with the three control variables: (a) board independence, (b) legal origin, and (c) firm size. In respect to the control variables, positive significant correlations are found between board independence and leverage as well as between firm size and leverage. Consistent with previous correlation tables, a very high positive correlation (0.960) between *regulatory* and *competitive* business environments indicates a potential multicollinearity problem. There are other high correlations between family ownership and managerial ownership (0.703) and between *RBE* and legal origin (-0.701). These values, however, are below the critical limit of 0.90 (Hair et al. 2010).

Table 5.6 provides the final additional correlations matrix for the Propping group (n=298). As illustrated in the table, a significant positive correlation is reported between *T-RPT1* and *RBE* (p-value<0.05). *T-RPT1* is statistically insignificantly correlated with *CBE* and the three other independent variables (i.e. family, managerial and foreign ownership). The dependent variable also shows statistical significant associations with the four control variables. Board independence (*IBD*) and firm size (*LNSIZE*) show significant positive correlations with *T-RPT1* (at the 0.01 levels), whereas two others control variables, legal origin (*LO*) and leverage (*LEV*), have significantly negative correlations with *T-RPT1*.

Moreover, Table 5.6 reports the correlations between independent variables and control variables. Again, *RBE* shows a significantly high positive correlation with *CBE* (0.941). *RBE* also has a significant positive correlation with managerial ownership, and a significant negative association with foreign ownership. Yet, *RBE* is significantly associated with independent of board director (positive) and legal origin (negative). As for *CBE*, this independent variable has significant correlations with the two other independent variables and several control variables: (a) managerial ownership (positive; p-value<0.01); (b) foreign ownership (negative; p-value<0.01); (c) board independence (positive; p-value<0.01); (d) legal origin (negative; p-value<0.01); and (e) firm size (positive; p-value<0.05). Family ownership reveals a positive significant correlation with managerial ownership, and significant negative relationships with foreign ownership and leverage. Managerial ownership is significantly negatively associated with foreign ownership and the three control variables (i.e. legal origin, firm size and leverage). Except for the before mentioned associations, foreign ownership is also significantly negatively correlated with firm size. In regard to correlations among control variables, Table 5.6 reports board independence (*IBD*) is significantly associated with the three control variables: (a) legal origin (negative; p-value<0.01); (b) firm size (positive; p-value<0.01); and leverage (negative; p-value<0.05). Legal origin reveals a significant negative association with firm size and a significant positive correlation with leverage. Meanwhile firm size shows a negative significant correlation with leverage.

Similarly, a strong positive correlation is noted by correlations between *RBE* and *CBE* (at 0.941) for the 298 partitioned sample once again suggesting a potential multicollinearity problem. High correlations are also found between *RBE* and legal origin (-0.760), and correlation between *CBE* and legal origin (-0.656). However, those high correlations are below the critical limit of 0.9 (Hair et al. 2010).

In summary, Tables 5.3-5.6 correlations partly support thesis hypotheses. For example, *T-RPT1* has a significant positive association with managerial ownership as predicted for the full 800 firm-years sample. The expected significant negative

correlations between tunneling (*T-RPT1*) with *RBE* and *CBE* are found only when partitioning the sample into 390 tunneling firms. Meanwhile, two other independent variables (i.e., family ownership and foreign ownership) do not show any statistically significant association with *T-RPT1*. All correlations matrices indicate a very strong positive correlation (above 0.9) between *RBE* and *CBE* raising multicollinearity concerns. Other correlations between independent and control variables are below the critical limit of 0.9 (Hair et al. 2010). To deal with multicollinearity concerns between *RBE* and *CBE*, regressions are run separately using each of these variables.

5.6 Logistic Regression Analysis (n=800)

This analysis is intended to investigate predictors that distinguish between firms with net tunneling behavior compared to firms with other tunneling status. To begin, binary logistic regression is selected for analyzing the 800 firm-years sample. Hypothesis testing is conducted by converting the continuous dependent variable of *T-RPT1* into a dummy variable. In doing so, firms with a positive *T-RPT1* value are coded one (1) whereas firms with a negative or zero *T-RPT1* value are coded zero (0). Of the 800 cases, 48.8% have a positive *T-RPT1* value. The logistic regression is divided into two separate equations due to multicollinearity between *RBE* and *CBE* as mentioned in Section 5.5. Regression with *RBE* is presented in Table 5.7 whereas the regression with *CBE* as a predictor variable is provided in Table 5.8.

Table 5.7: Logistic regression: *T-RPT1* (exclusion of *CBE*; n=800)

DV: Dummy *T-RPT1*			
Variables	Sign Prediction	Coefficients	p-value
Constant		-9.497	0.000***
RBE (H1)[¶]	-	0.763	0.000***
FAMOWN (H3)	+	0.722	0.000***
MANOWN (H4)	+	-0.248	0.479
FOROWN (H5)	-	-0.803	0.013**
IBD	-	1.241	0.031**
LO	+	1.369	0.000***
LNSIZE	-	0.180	0.000***
LEV	-	-0.486	0.084*
YEARD1		-0.004	0.985
YEARD2		-0.100	0.635
YEARD3		-0.094	0.653
YEARD4		excluded	excluded
Chi-square	73.657		
Significant	0.000***		
Percentage correct	62.2		
Nagelkerke R square	0.117		

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.
[¶]Because of severe multicollinearity (see Table 5.3), *CBE* (H2) is not tested in the above regression table.

Regression result reported in Table 5.7 has a pseudo Chi-square of 73.657 with a p-value of 0.000. The regression model explains 11.7 % of firm's tunneling status. The logistic model has an accuracy rate of 62.2%. Table 5.7 shows that coefficient on *regulatory* business environment (*RBE*) is significant (p-value < 0.01) but in the wrong direction to that predicted. This finding does not support H1. In other words, there is no evidence that there is a negative association between *regulatory* business environment and tunneling. Family ownership (*FAMOWN*) shows a consistently positive highly significant coefficient. The result supports H3 stating a positive association between family ownership and tunneling via RPTs. The model does not show a statistically significant coefficient for managerial ownership (p-value 0.479). Therefore, the result cannot support H4 regarding a positive association between managerial ownership and tunneling via RPTs. The model notes a negative significant coefficient at p-value<0.05 for the foreign ownership (*FOROWN*)

variable. Hence, this model supports H5 positing that there is a negative association between firm's foreign ownership and the extent of tunneling.

Except for year, the other four control variables are statistically significant in explaining the extent of tunneling at various levels. The coefficient for board independence (*IBD*) is significant and positive at the 0.05 level. Meanwhile, legal origin (*LO*) and firm size (*LNSIZE*) have highly significant positive coefficients at the 0.01 level. The coefficient on Leverage (*LEV*) is moderately negatively significant at the 0.10 level.

Table 5.8: Logistic regression: *T-RPT1* (exclusion of *RBE*; n=800)

DV: Dummy*T-RPT1*			
Variables	Sign Prediction	Coefficients	p-value
Constant		-7.957	0.000***
CBE (H2)[§]	-	0.604	0.000***
FAMOWN (H3)	+	0.659	0.000***
MANOWN (H4)	+	-0.219	0.530
FOROWN (H5)	-	-0.832	0.010**
IBD	-	0.828	0.158
LO	+	1.107	0.000***
LNSIZE	-	0.167	0.001***
LEV	-	-0.531	0.065*
YEARD1		-0.019	0.929
YEARD2		-0.106	0.613
YEARD3		-0.097	0.645
YEARD4		excluded	excluded
Chi-square	75.201		
Significant	0.000***		
Percentage correct	64.0		
Nagelkerke R square	0.120		

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.
[§] Because of severe multicollinearity (see Table 5.3), *RBE* (H1) is not tested in the above regression table.

A second logistic equation testing *competitive* business environment (*CBE*) on tunneling is presented in Table 5.8. This alternate regression notes very similar results to Table 5.7. The reported pseudo Negelkerke R square indicates that regression model explains 12% of a firm's tunneling status. The explanatory percentage is slightly better than the *RBE* model shown in Table 5.7. The model

reported in Table 5.8 has an accuracy rate higher than previous model in Table 5.7 at 64%. The *competitive* business environment (*CBE*) coefficient is positive and highly significant (see Table 5.8). Since the coefficient directionality is again different to predicted, the finding does not support H2 stating that there is a negative association between *competitive* business environment and tunneling. Consistent with the first logistic regression equation shown in Table 5.7, family ownership (*FAMOWN*) and foreign ownership (*FOROWN*) demonstrate significant coefficients (p-value< 0.05) with directionalities as expected. These findings support H3 and H5. In regard to managerial ownership (*MANOWN*), the model reported in Table 5.8 also finds no empirical evidence of the association between a firm's managerial ownership and tunneling as posited in H4. Similar with the first logistical model, two control variables, i.e. legal origin (*LO*) and firm size (*LNSIZE*) consistently have statistical significant coefficients. The coefficient on leverage (*LEV*) is a moderately significant coefficient at the 0.10 level. Board independence (*IBD*) and year dummy variables are not statistically significant.

In summary, the *RBE* and *CBE* models involving logistic regression document very similar results. Both equations do not find evidence of negative linkages between the *regulatory* and *competitive* business environment and tunneling behavior (H1 and H2). The logistic regressions report a positive association between family ownership and tunneling (H3). The models (see Tables 5.7 and 5.8) also support the H5 prediction of a negative association between foreign ownership and tunneling. However, the managerial ownership hypothesis (H4) cannot be supported by statistical evidence.

5.7 OLS Regression Analysis (n=800)

This section reports the full hypothesis testing based on OLS multiple regression techniques for the full 800 firm-years sample[13]. Table 5.9 presents the OLS regression result of *T-RPT1* (with exclusion of *CBE*). The result shows the model is

[13] OLS regression results solely involving the firms with positive values of *T-RPT1* (n=390) are provided in Appendix A.

highly significant at the 0.01 level and has an adjusted R-square accounts for 6.8% of the extent of tunneling.

Table 5.9: OLS regression: *T-RPT1* (exclusion of *CBE*; n=800)

DV: *T-RPT1*				
Variables	Sign Prediction	Coefficients	t- statistics	p-value
Constant		-0.022	-4.997	0.000***
RBE (H1)¶	-	0.002	3.857	0.000***
FAMOWN (H3)	+	0.002	3.962	0.000***
MANOWN (H4)	+	0.000	0.113	0.910
FOROWN (H5)	-	-0.001	-1.106	0.269
IBD	-	0.003	1.609	0.108
LO	+	0.002	2.747	0.006***
LNSIZE	-	0.001	3.632	0.000***
LEV	-	-0.004	-3.852	0.000***
YEARD1		excluded	excluded	excluded
YEARD2		0.000	-0.612	0.541
YEARD3		0.000	0.059	0.953
YEARD4		-0.000	-0.109	0.913
F	6.323			
Significant	0.000***			
R^2	0.081			
Adjusted R^2	0.068			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.
¶Because of severe multicollinearity (see Table 5.3), *CBE* (H2) is not tested in the above regression table.

As shown in Table 5.9, the coefficient on *RBE* is positive and significant. This finding does not support H1 that posits a negative association between *regulatory* business environment and the extent of tunneling. The multiple regression results shown in Table 5.9 also provide evidence that family ownership (*FAMOWN*) has a positive and highly significant coefficient. The finding does support H3 that predicted a positive association between family ownership and tunneling.

H4 posits a positive association between managerial ownership (*MANOWN*) and the extent of tunneling. This hypothesis is not supported by empirical evidence since the multiple regression result shown in Table 5.9 does not show a statistically significant coefficient on the *MANOWN* variable although it has the same directionality as

predicted. Similarly, foreign ownership (*FOROWN*) demonstrates a negative coefficient as expected but is not statistically significant. Table 5.9 results, therefore, cannot support H5 predicting a negative association between foreign ownership and tunneling.

As for the control variables, board independence (*IBD*) has a positive coefficient yet is not statistically significant. Legal origin (*LO*), *LNSIZE*, and leverage are statistically highly significant at the 0.01 level. The positive direction of *LO* indicate that Civil Law countries experience higher level of tunneling. Firm size (*LNSIZE*) has a clear highly significant positive association with tunneling. This implies that the larger firms the higher risk of tunneling. There is also evidence that leverage (*LEV*) has a negative significant influence on tunneling. Thus, firms that are more highly leveraged tend to have lower tunneling. None of the year dummy variables (*YEARD*) are statistical predictors.

Table 5.10 reveals the alternate OLS regression results of *T-RPT1* with *RBE* excluded. Results of OLS test with the inclusion of *CBE* instead of *RBE* show similar results to Table 5.9. The overall model is significant at the 0.05 level indicating that the equation is useful for predicting the extent of tunneling. The explanatory power of predictor variables is 8% similar to the previous regression equation in Table 5.9.

As shown in Table 5.10, *CBE* has a positive significant association with tunneling although the directionality does not meet expectation. Therefore, H2 stating there is a negative association between *competitive* business environment and the extent of tunneling is again not supported by empirical evidence. Family ownership (*FAMOWN*) also has a positive and significant coefficient. The result confirms the prediction of a positive association between family ownership and tunneling. Again, this result supports H3. Consistent with the Table 5.9 model, the coefficient for predictor variables of *MANOWN* is insignificant although it has directionality as expected. The finding cannot support H4 in regard to a positive association between managerial ownership and tunneling. Based on Table 5.10, foreign ownership

(*FOROWN*) indicates a negative coefficient as predicted. The coefficient, however, is not statistically significant. Hence, H5 that posits a negative association between firm's foreign ownership and tunneling is rejected.

Table 5.10: OLS regression: *T-RPT1* (exclusion of *RBE*; n=800)

DV: *T-RPT1*				
Variables	Sign Prediction	Coefficients	t- statistics	p-value
Constant		-0.018	-4.792	0.000***
CBE (H2)[§]	-	0.001	3.734	0.000***
FAMOWN (H3)	+	0.002	3.748	0.000***
MANOWN (H4)	+	0.000	0.198	0.843
FOROWN (H5)	-	-0.001	-1.178	0.239
IBD	-	0.002	1.137	0.256
LO	+	0.001	2.169	0.030**
LNSIZE	-	0.001	3.453	0.001***
LEV	-	-0.005	-3.949	0.000***
YEARD1		excluded	excluded	excluded
YEARD2		0.000	-0.585	0.558
YEARD3		0.000	0.100	0.920
YEARD4		-0.000	-0.061	0.951
F	6.233			
Significant	0.000**			
R^2	0.080			
Adjusted R^2	0.067			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.
[§]Because of severe multicollinearity (see Table 5.3), *RBE* (H1) is not tested in the above regression table.

Similar to the first multiple regression equation (Table 5.9), board independence (*IBD*) as a control variable has an insignificant coefficient. Whereas legal origin (*LO*), firm size (*LNSIZE*), and leverage (*LEV*) show statistically significant coefficients. As in first OLS equation, year dummy variables (*YEARD*) do not show significant coefficients.

Taken together the findings from first equation (Table 5.9) and the second multiple regression equation (Table 5.10) have no evidence about negative association between tunneling and (a) *regulatory* business environment and (b) *competitive* business environment (H1 and H2). There is empirical evidence of a positive association between family ownership and tunneling (H3). Results do not support

any linkages between: (a) managerial ownership and (b) foreign ownership with tunneling (H4 and H5). Board independence shows insignificant coefficients in both equations. As for legal origin, firm size and leverage, all these control variables are consistently statistically significant.

In addition to the main regression using the full sample, regression analysis (logistic and OLS model) for each country is provided in Appendices F-J. Unlike the full sample model, specific country model excludes country-level variables (i.e., *RBE*, *CBE*, and, *LO*). The logistic and OLS models reveal similar results. These additional appendices findings support H3 and H5 for Malaysia, Philippines and Thailand whereas H3 is supported for Indonesia subsample. Firm size and leverage are significant control variables of tunneling in some countries in these regressions.

5.8 Summary

This chapter reports the analysis for the main dependent variable (*T-RPT1*) as the primary proxy of tunneling. Four main analyses are provided in this chapter. The analyses consist of univariate analysis for two groups, ANOVA test for three groups, Pearson correlations, and regression analysis to test proposed hypotheses. The univarite results suggest that firms with lower foreign ownership, higher board independence, and larger total assets are more likely to be in the Tunneling group. The analysis of three groups shows there are significant differences regarding firm characteristics among Pure Tunneling firms, Zero Tunneling/Propping firms, and Pure Propping firms. Tukey Post Hoc tests note that Tunneling firms on average have the more total assets whereas Zero Tunneling/Propping firms have the highest managerial ownership proportion. Propping firms are characterized by a higher level of foreign ownership and leverage. Pearson correlations document a strong correlation between *RBE* and *CBE* suggesting a notable multicollinearity problem.

Overall, all logistic and OLS regression models suggest similar results. Statistical results consistently fail to support hypotheses regarding the proposed negative association between *regulatory* and *competitive* business environments with the

extent of tunneling. There is strong evidence supporting a positive association between family ownership and the extent of tunneling. The influence of managerial ownership on tunneling cannot be supported by logistic and OLS regression. Meanwhile, binary logistic regression results but not OLS regression findings are able to explain the linkage between a firm's foreign ownership and tunneling. As for control variables, legal origin and firm size variables are consistently significant in all models. No independent variables explain variation of tunneling if the regression analysis is only run for Tunneling group.

The next chapter provides additional analysis in support of the main models discussed in Chapter Five. Specifically, the dependent variable measure 'net other receivables' (*T-RPT1*) is replaced with a different proxy measure for tunneling behavior, i.e. 'other receivables' (*T-RPT2*). The sample is then group classified and analyzed based on this alternate measure of RPTs tunneling. Regressions involving partitioned samples are performed to obtain comprehensive insights into tunneling behavior.

CHAPTER SIX
ADDITIONAL ANALYSIS

6.1 Introduction

The previous chapter presents the main empirical result with a clear focus on net other receivables (*T-RPT1*) as key proxy of tunneling. Hypotheses testing is then conducted to derive conclusions on tunneling behavior. This chapter adds to the thesis analysis by highlighting a different viewpoint of tunneling from one side, i.e. other receivables from related parties (*T-RPT2*). This alternative view is different with the previous chapter's approach as the new measure does not consider the contra account in computation, i.e. other payables to related parties.

This chapter begins with an overview of *T-RPT2*, followed by analysis of two groups (Tunneling firms versus Non-Tunneling firms) highlighting descriptive statistics, T-test, and crosstabs. Correlation analysis is then provided before the regression analysis section. The regression analysis section again consists of two main parts, i.e. logistic regression and OLS regression using the full sample (n=800). The OLS regressions are then performed using partitioned samples. Specifically, regressions are rerun for the 606 cases solely having positive values of *T-RPT2*, and then the 410 cases previously assigned as Non-Tunneling firms in Chapter Five analysis. This chapter concludes with a summary of additional analysis.

6.2 RPT Other Receivables as a Proxy of Tunneling (*T-RPT2*)

Previous studies suggest that tunneling usually is widely practiced by using loans, and prepayments to related parties (Guo 2008; Jiang et al. 2010; Li 2010). Those activities can be detected by investigating the 'other receivables' account in the balance sheet. These activities are often performed with different conditions to those with third parties (e.g. interest, repayment, collateral, provision for uncollectible accounts). Although firms do not always present such activities in the same balance

sheet account, most firms report such activities as part of other receivables account. Others present such activities in a separate account under the same title of the activities. For purpose of this thesis, all activities (i.e. loans and prepayments to related parties) are pooled in the other receivables terminology.

In this chapter, tunneling is measured alternatively by using the amount of other receivables from related parties divided by total assets. This measure is labelled *T-RPT2*. The chapter categorizes two groups for the analysis. The first group consists of firms having positive value of *T-RPT2*, categorized as the Tunneling group. Firms without reported other receivables from related parties lie in second group and are called the Non-Tunneling group.

In summary, the key feature of *T-RPT2* measures RPTs tunneling by emphasizing other receivables from related parties without considering offsetting effects from propping activities.

6.3 Analysis for *T-RPT2* of Two Groups

Based on the aforementioned *T-RPT2* criteria, the full sample (n=800) is divided into two groups: (a) Tunneling and (b) Non-Tunneling Firms. As displayed in Table 6.1, 606 (75.75%) firms constitute the Tunneling group whereas the remaining 194 (24.25%) firms make up the Non-Tunneling group. Table 6.1 provides descriptive statistics and T-test of firm characteristics between these two groups.

Table 6.1: Descriptive statistics and T-test of Tunneling and Non-Tunneling Firms

PANEL A: Tunneling Firms (n=606)							
	T-RPT2	*MANOWN*	*FOROWN*	*IBD*	*Total Assets ($)*	*LNSIZE*	*LEV*
Mean	0.027	0.238	0.217	0.384	1,081,145,000	19.448	0.491
Median	0.004	0.055	0.117	0.364	258,213,100	19.369	0.504
Std. Deviation	0.090	0.283	0.256	0.145	2,043,315,600	1.785	0.272
Minimum	0.000	0.000	0.000	0.111	824,240	13.622	0.020
Maximum	0.981	0.973	0.984	0.900	13,372,000,000	23.317	4.040
PANEL B: Non-Tunneling Firms (n=194)							
Mean	0.000	0.312	0.209	0.378	308,099,704	18.706	0.435
Median	0.000	0.291	0.099	0.375	116,274,148	18.571	0.408
Std. Deviation	0.000	0.266	0.247	0.134	498,895,629	1.225	0.289
Minimum	0.000	0.000	0.000	0.143	13,457,862	16.415	0.037
Maximum	0.000	0.863	0.845	1.000	2,497,922,000	21.639	1.607
PANEL C: T-test							
Mean different	0.027	-0.074	0.008	0.006	773,045,180	0.741	0.056
t-statistics	7.446	-3.330	0.371	0.554	8.551	6.503	2.386
p-value	0.000***	0.001***	0.711	0.580	0.000***	0.000***	0.018**

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

The Tunneling group has an average of *T-RPT2* of 2.70% with a maximum value of 98.10% (see Panel A of Table 6.1) whereas *T-RPT2* values for Non-Tunneling group are zero. T-test result indicates that there is a statistically highly significant difference of *T-RPT2* between the Tunneling and Non-Tunneling groups (Panel C of Table 6.1). Comparison of managerial ownership (*MANOWN*) between the Tunneling and Non-Tunneling groups shows that the former group has a lower percentage mean value of *MANOWN* than the latter group (23.80% compared to 31.20%). The mean value difference is statistically highly significant at the 0.01 level (Panel C of Table 6.1).

Table 6.1 reports a similar mean value of board independence proportion (*IBD*) between the Tunneling and Non-Tunneling groups (i.e. 38.40% and 37.80% respectively) and is not statistically different (p-value>0.1). The data shows that average numbers of independent of directors are more than one third of total board

members for most firms in both groups. These numbers generally satisfy minimal requirement or recommendation of good independent board of director proportion under 33.33% (e.g., listing requirement in Indonesia, Malaysia, Singapore, and Thailand).

The Tunneling group has far higher total assets than the Non-Tunneling group. Tunneling group has a mean value of US$ 1,081 million compared to a much smaller US$ 308 million figure for Non-Tunneling group. The difference is statistically highly significant at the 0.01 level.

In regard to leverage, the Tunneling group also demonstrates a statistically higher level than the Non-Tunneling group on average. This result implies that higher borrowing is linked to higher tunneling.

The distribution of firms with regard to categorical variables is presented in Table 6.2. Of the 606 firms within Tunneling group, 339 (55.9%) cases are categorized as Family firm whereas 267 (44.1%) cases are deemed as Non-Family firms (see Panel A of Table 6.2). As for the Non-Tunneling group, the composition is 112 (57.7%) Family firms and the remaining 82 (42.3%) are Non-Family firms. As can be seen from this table, Family firms are not uncommon in ASEAN countries.

The last three column of Table 6.2 Panel A displays the distribution of firms based on Tunneling categorization and legal origin. Within the Tunneling group, 269 (44.40%) cases come from Civil Law countries while 337 (55.60%) have a Common Law countries origin. As for the Non-Tunneling group, the number of firm from Common Law countries also outnumbers that of Civil Law countries. Panel B of Table 6.2 documents the statistically significant association between Tunneling/Non-Tunneling category and legal origin. Accordingly, result confirms that tunneling is associated with Common Law/Civil Law country of origin.

Table 6.2: Categorical variables frequencies: Chi-square tests of Two Groups

Panel A: Frequencies						
Group	Family	Non-Family	Total	Civil Law	Common Law	Total
Tunneling Firms	339	267	606	269	337	606
% within group	55.90	44.10	100.00	44.40	55.60	100.00
Non-Tunneling Firms	112	82	194	51	143	194
% within group	57.70	42.30	100.00	26.30	73.70	100.00
Total	451	349	800	320	480	800
% of total	56.40	43.60	100.00	40.00	60.00	100.00
Panel B: Chi-square tests						
	Significance			Significance		
Pearson Chi-square	0.661			0.000***		
n	800			800		

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

Overall, descriptive statistics and T-test findings in terms of *T-RPT2* suggest the Tunneling group has lower managerial ownership, larger total assets, and higher leverage levels than the Non-Tunneling group. There are no statistically significant differences in terms of the proportion of foreign ownership and the proportion of board independence between the Tunneling and Non-Tunneling groups. Chi-square test findings, meanwhile, suggest there is an association between Tunneling/Non-Tunneling categorization and legal origin.

6.4 Correlation Analysis

This section highlights correlation analysis for variables utilized in the sensitivity analysis. Three correlation matrices are provided in Tables 6.3 to 6.5 to report correlations based on the total sample (n=800) and partitioned samples (n=606; n=194). Included in the correlation matrices are the dependent, independent, and control variables.

Table 6.3 presents the Pearson correlation for the full sample (n=800) with the dependent variable defined as *T-RPT2* instead of the earlier *T-RPT1* proxy. As shown in Table 6.3, both *regulatory* (*RBE*) and *competitive* (*CBE*) business environments have negative significant correlations with *T-RPT2*, though the correlations are weak. A similar finding is shown for the family ownership variable but with a positive correlation. Managerial ownership reports a positive insignificant correlation with the dependent variable whereas foreign ownership reveals a negative insignificance with *T-RPT2*. Two control variables (i.e., legal origin and firm size (*LNSIZE*)) have significant correlations with *T-RPT2*. Although some variable correlations are insignificant, all correlation results between the dependent and independent variables demonstrate directionalities as predicted. As for correlations between independent variables, a strong positive significant correlation (0.961) is again found between *regulatory* and *competitive* business environment variables indicating a possible multicollinearity problem. Similar with the Chapter Five approach, *RBE* and *CBE* are run separately in the regression analysis to deal with a multicollinearty problem. Table 6.3 also reports a high correlation between *RBE* and legal origin (-0.757) and the correlation between *CBE* and legal origin (-0.660). As these correlation values are below the critical limit of 0.9 (Hair et al. 2010), multicollinearity is not considered a problem.

Another correlation analysis for the subsample Tunneling group (n=606) is tabulated in Table 6.4. Findings show that both *regulatory* (*RBE*) and *competitive* (*CBE*) business environments have a weak negative significant correlation with *T-RPT2*. Family ownership and managerial ownership demonstrate a positive significant correlation with the dependent variable. The other independent variable foreign ownership has a negative insignificant correlation with *T-RPT2*. Legal origin (*LO*) and firm size (*LNSIZE*) also have significant correlations with dependent variable. A strong positive significant correlation is yet again shown between *regulatory* and *competitive* business environments.

Table 6.5 displays a final Pearson correlation using the Non-Tunneling group (n=194). Different from first two correlation matrices presented in Table 6.3 and

Table 6.4, Table 6.5 documents correlations for independent and control variable only. Given that the Non-Tunneling group has zero values of *T-RPT2*, this variable is excluded from Table 6.5. As per the previous findings, *regulatory* (*RBE*) and *competitive* (*CBE*) business environment variables have a strong positive significant correlation. Managerial ownership has weak positive correlation coefficients with *CBE* and *RBE* whereas family ownership shows a moderate positive correlation coefficient with managerial ownership. Foreign ownership indicates a weak negative significant correlation with *RBE*, *CBE*, family ownership, and managerial ownership.

In summary, the correlation analysis using samples with 800 and 606 observations (see Table 6.3 and 6.4) reveal similar results. The *regulatory* and *competitive* business environments are negatively significantly correlated with *T-RPT2*. Findings also report a significant positive correlation between family ownership and *T-RPT2*. Managerial ownership appears to have a significant positive correlation with dependent variable for the Tunneling subsample. All correlation results between the independent and dependent variables have directionalities as predicted. Highly positive correlations between *regulatory* and *competitive* business environments indicate a potential multicollinearity problem when performing regression analysis. Therefore, as done previously, *RBE* and *CBE* will not be run together in the same regression models.

Table 6.3: Pearson correlations of full sample (n=800)

	T-RPT2	*RBE*	*CBE*	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LO*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT2	1	-0.093***	-0.076**	0.082**	0.053	-0.031	-0.066	0.161***	-0.245***	-0.052	-0.009	-0.014	0.014	0.009
RBE	-0.093***	1	0.961***	0.022	0.193***	-0.170***	0.337***	-0.757***	0.070**	-0.059	0.000	0.000	0.000	0.000
CBE	-0.076**	0.961***	1	0.041	0.172***	-0.150***	0.404***	-0.660***	0.103***	-0.021	0.000	0.000	0.000	0.000
FAMOWN	0.082**	0.022	0.041	1	0.573***	-0.250***	-0.003	-0.079**	-0.212***	-0.015	-0.016	-0.004	0.007	0.013
MANOWN	0.053	0.193***	0.172***	0.573***	1	-0.342***	-0.021	-0.171***	-0.321***	-0.154***	0.010	-0.008	-0.005	0.003
FOROWN	-0.031	-0.170***	-0.150***	-0.250***	-0.342***	1	0.034	0.120***	0.168***	0.046	-0.039	0.027	0.014	-0.003
IBD	-0.066	0.337***	0.404***	-0.003	-0.021	0.034	1	-0.350***	0.213***	-0.004	-0.048	-0.007	0.020	0.036
LO	0.161***	-0.757***	-0.660***	-0.079**	-0.171***	0.120***	-0.350***	1	-0.155***	0.103***	0.000	0.000	0.000	0.000
LNSIZE	-0.245***	0.070**	0.103***	-0.212***	-0.321***	0.168***	0.213***	-0.155***	1	0.116***	-0.070**	0.011	0.015	0.044
LEV	-0.052	-0.059	-0.021	-0.015	-0.154***	0.046	-0.004	0.103***	0.116***	1	0.035	-0.017	0.008	-0.026
YEARD1	-0.009	0.000	0.000	-0.016	0.010	-0.039	-0.048	0.000	-0.070**	0.035	1	-0.333***	-0.333***	-0.333***
YEARD2	-0.014	0.000	0.000	-0.004	-0.008	0.027	-0.007	0.000	0.011	-0.017	-0.333***	1	-0.333***	-0.333***
YEARD3	0.014	0.000	0.000	0.007	-0.005	0.014	0.020	0.000	0.015	0.008	-0.333***	-0.333***	1	-0.333***
YEARD4	0.009	0.000	0.000	0.013	0.003	-0.003	0.036	0.000	0.044	-0.026	-0.333***	-0.333***	-0.333***	1

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

Table 6.4: Pearson correlations of Tunneling firms (n=606)

	T-RPT2	*RBE*	*CBE*	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LO*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT2	1	-0.098*	-0.085*	0.098*	0.081*	-0.038	-0.078	0.158**	-0.301**	-0.076	-0.013	-0.018	0.019	0.011
RBE	-0.098*	1	0.963**	0.028	0.183**	-0.150**	0.395**	-0.777**	0.089*	-0.080*	0.016	-0.012	-0.016	0.012
CBE	-0.085*	0.963**	1	0.045	0.169**	-0.123**	0.456**	-0.695**	0.109**	-0.051	0.016	-0.014	-0.019	0.017
FAMOWN	0.098*	0.028	0.045	1	0.550**	-0.214**	-0.038	-0.043	-0.264**	0.033	-0.035	0.003	0.020	0.012
MANOWN	0.081*	0.183**	0.169**	0.550**	1	-0.287**	-0.069	-0.101*	-0.343**	-0.123**	0.008	-0.012	-0.003	0.007
FOROWN	-0.038	-0.150**	-0.123**	-0.214**	-0.287**	1	0.063	0.094*	0.173**	0.000	-0.045	0.026	0.028	-0.008
IBD	-0.078	0.395**	0.456**	-0.038	-0.069	0.063	1	-0.407**	0.231**	-0.013	-0.035	-0.012	0.005	0.042
LO	0.158**	-0.777**	-0.695**	-0.043	-0.101*	0.094*	-0.407**	1	-0.194**	0.049	-0.022	0.001	0.014	0.007
LNSIZE	-0.301**	0.089*	0.109**	-0.264**	-0.343**	0.173**	0.231**	-0.194**	1	0.118**	-0.059	0.008	0.017	0.035
LEV	-0.076	-0.080*	-0.051	0.033	-0.123**	0.000	-0.013	0.049	0.118**	1	0.034	-0.030	0.017	-0.021
YEARD1	-0.013	0.016	0.016	-0.035	0.008	-0.045	-0.035	-0.022	-0.059	0.034	1	-0.338**	-0.332**	-0.335**
YEARD2	-0.018	-0.012	-0.014	0.003	-0.012	0.026	-0.012	0.001	0.008	-0.030	-0.338**	1	-0.332**	-0.335**
YEARD3	0.019	-0.016	-0.019	0.020	-0.003	0.028	0.005	0.014	0.017	0.017	-0.332**	-0.332**	1	-0.329**
YEARD4	0.011	0.012	0.017	0.012	0.007	-0.008	0.042	0.007	0.035	-0.021	-0.335**	-0.335**	-0.329**	1

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

Table 6.5: Pearson correlations of Non-Tunneling firms (n=194)

	T-RPT2	*RBE*	*CBE*	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LO*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT2	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]
RBE	.[a]	1	0.957***	-0.004	0.223***	-0.252***	0.106	-0.697***	0.021	0.027	-0.060	0.048	0.058	-0.047
CBE	.[a]	0.957***	1	0.023	0.189***	-0.256***	0.195***	-0.557***	0.079	0.082	-0.060	0.053	0.070	-0.065
FAMOWN	.[a]	-0.004	0.023	1	0.659***	-0.366***	0.116	-0.200***	0.009	-0.153**	0.045	-0.028	-0.034	0.017
MANOWN	.[a]	0.223***	0.189***	0.659***	1	-0.536***	0.159**	-0.364***	-0.146**	-0.218***	0.022	0.009	-0.021	-0.009
FOROWN	.[a]	-0.252***	-0.256***	-0.366***	-0.536***	1	-0.066	0.210***	0.153**	0.184**	-0.020	0.032	-0.028	0.016
IBD	.[a]	0.106	0.195***	0.116	0.159**	-0.066	1	-0.167**	0.130	0.018	-0.093	0.008	0.068	0.016
LO	.[a]	-0.697***	-0.557***	-0.200***	-0.364***	0.210***	-0.167**	1	-0.174**	0.234***	0.072	-0.010	-0.037	-0.024
LNSIZE	.[a]	0.021	0.079	0.009	-0.146**	0.153**	0.130	-0.174**	1	0.042	-0.140	0.017	0.028	0.092
LEV	.[a]	0.027	0.082	-0.153**	-0.218***	0.184**	0.018	0.234***	0.042	1	0.034	0.019	-0.012	-0.040
YEARD1	.[a]	-0.060	-0.060	0.045	0.022	-0.020	-0.093	0.072	-0.140	0.034	1	-0.320***	-.338***	-0.329***
YEARD2	.[a]	0.048	0.053	-0.028	0.009	0.032	0.008	-0.010	0.017	0.019	-0.320***	1	-.338***	-0.329***
YEARD3	.[a]	0.058	0.070	-0.034	-0.021	-0.028	0.068	-0.037	0.028	-0.012	-0.338***	-0.338***	1	-0.347***
YEARD4	.[a]	-0.047	-0.065	0.017	-0.009	0.016	0.016	-0.024	0.092	-0.040	-0.329***	-0.329***	-0.347***	1

Notes: [a.] Cannot be computed because at least one of the variables is constant.
* moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

6.5 Multivariate: Full Sample Binary Logistic Regression (n=800)

This section provides the multivariate analysis for the total sample of 800 observations using a binary logistic regression. Firms having positive values of *T-RPT2* are coded one (1) whereas those having *T-RPT2* values of zero are coded zero (0). The summary of the regression results is displayed in Table 6.6.

Table 6.6: Logistic regression results for dummy *T-RPT2* with exclusion of *CBE* (n=800)

DV:Dummy *T-RPT2*			
Variables	Sign Prediction	Coefficients	p-value
Constant		-11.612	0.000***
RBE (H1) ¶	-	0.676	0.000***
FAMOWN (H3)	+	0.498	0.028**
MANOWN (H4)	+	-0.802	0.058*
FOROWN (H5)	-	-0.424	0.258
IBD	-	0.502	0.486
LO	+	1.982	0.000***
LNSIZE	-	0.378	0.000***
LEV	-	0.293	0.441
YEARD1		0.195	0.435
YEARD2		0.105	0.672
YEARD3		-0.029	0.905
YEARD4		excluded	excluded
Chi-square	90.173		
Significant	0.000***		
Percentage correct	77.0		
Nagelkerke R square	0.159		

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.
¶Because of severe multicollinearity (see Table 6.3), *CBE* (H2) is not tested in the above regression table.

The logistic regression model is significant at the 0.01 level. The Negelkerke R square value indicates 15.9% of firms tunneling status can be explained by the regression model.

The coefficient on *regulatory* business environment (*RBE*) is positive and significant at the 0.01 level indicating a rejection of H1 that predicts a negative association

between *regulatory* business environment and tunneling. This finding is consistent with the regressions involving *T-RPT1* as the dependent variable (see Chapter Five).

As presented in Table 6.6, family ownership (*FAMOWN*) reports a statistically significant coefficient (p-value<0.05). Since the directionality of the *FAMOWN* coefficient is positive, H3 is supported. In other words, there is empirical evidence that family ownership has a positive association with tunneling.

It is also indicated in Table 6.6 that managerial ownership (*MANOWN*) has a moderately significant coefficient (p-value<0.1) with a negative directionality. This result rejects H4 that proposes a positive association between managerial ownership and tunneling. In regard to foreign ownership (*FOROWN*), the coefficient is negative and insignificant. Thus, H5 is also rejected.

Two control variables (i.e. legal origin (*LO*) and firm size (*LNSIZE*)) reveal highly statistically significant coefficients. The legal origin coefficient has a positive value indicating firms in Civil Law countries is more likely to perform tunneling than firms in Common Law countries. The positive coefficient of *LNSIZE* suggests larger firms are more likely to experience tunneling. The three remaining control variables, consisting of board independence (*IBD*), leverage (*LEV*) and years, do not have statistically significant coefficients.

Similar logistic regression results are documented from a second equation in Appendix B substituting *CBE* instead of *RBE*. Like the model using *RBE*, the coefficient of *competitive* business environment (*CBE*) is statistically significant but in the opposite directionality as predicted. This means that H2 is again not statistically supported. All the other appendix table results are similar to Table 6.6. For family ownership, the model partially supports H3 since the coefficient only shows statistically moderate significance (p-value<0.1). Furthermore, the model does not support managerial ownership hypothesis (H4) and foreign ownership hypothesis (H5) (p-values 0.079 and 0.221 respectively). Other important findings document

that legal origin (*LO*) and firm size (*LNSIZE*) clearly have significant coefficients and directionalities as predicted.

Overall, after altering *T-RPT1* with *T-RPT2*, binary logistic regression results cannot find statistical evidence regarding the association between *regulatory* business environment and tunneling. A similar finding is shown in respect to the other country predictor variable (i.e., *competitive* business environment). The logistical regression model result, meanwhile, supports the hypothesis of a positive association between family ownership and tunneling. Neither hypothesis regarding the influence of managerial ownership and foreign ownership are supported by logistical regression results. Finally, two control variables (i.e., legal origin and firm size) are consistently statistically significant in both logistic models (see Table 6.6 and Appendix B).

6.6 Multivariate: Full Sample OLS Regression (n=800)

In addition to the binary logistic regression, this section provides an analysis of the alternate dependent variable measure *T-RPT2* using OLS multiple regression techniques. Table 6.7 documents the *RBE* is significant but with a lower of significance level (p-value<0.05). Similar with the logistic regression results, the coefficient is in the wrong directionality suggesting the rejection of H1.

Different from the logistic model, the coefficient for family ownership does not appear statistically significant. Hence, this multiple regression model does not support H3 regarding a positive association between family ownership and tunneling.

The managerial ownership variable also documents a similar result with the logistic model which the coefficient is moderately significant, yet with an incorrect directionality. Again, the model shown in Table 6.7 does not support H4. Interestingly, foreign ownership (*FAMOWN*) is statistically moderately significant

with a directionality of the coefficient as predicted. Therefore, H5 stating a negative association between foreign ownership and tunneling is partially supported.

The control variable of legal origin indicates a statistically significant and positive coefficient as predicted. Result suggests a higher tunneling level in Civil Law countries than Common Law countries. As for firm size (*LNSIZE*), this model does not report a significant coefficient. The coefficient on firm leverage is moderately significant and positive. None of the year variables demonstrate significant results.

Table 6.7: OLS regression results for *T-RPT2* with exclusion of *CBE* (n=800)

DV: *T-RPT2*				
Variables	Sign Prediction	Coefficients	t- statistic	p-value
Constant		-0.004	-0.612	0.541
RBE (H1)¶	-	0.001	2.001	0.046**
FAMOWN (H3)	+	0.001	1.313	0.189
MANOWN (H4)	+	-0.003	-1.862	0.063*
FOROWN (H5)	-	-0.002	-1.675	0.094*
IBD	-	0.003	1.131	0.258
LO	+	0.005	4.901	0.000***
LNSIZE	-	0.000	-0.436	0.663
LEV	-	0.003	1.723	0.085*
YEARD1		0.000	-0.074	0.941
YEARD2		excluded	excluded	excluded
YEARD3		0.001	0.714	0.475
YEARD4		0.000	0.422	0.673
F	3.939			
Significant	0.000***			
R^2	0.052			
Adjusted R^2	0.039			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.
¶Because of severe multicollinearity (see Table 6.3), *CBE* (H2) is not tested in the above regression table.

Findings of the OLS multiple regression including *CBE* instead of *RBE* are provided in Appendix C showing very similar results to Table 6.7. The coefficient on *competitive* business environment is only moderately significant but has an unexpectedly positive directionality. This result suggests a rejection of H2. The

model reported in Appendix C also does not support H3 regarding the association between family ownership and tunneling. Managerial ownership and foreign ownership variables show similar results with the main chapter (see Table 6.7). Consistent results also belong to the control variable of legal origin with the influence on tunneling.

In summary, OLS multiple regression model using the full sample 800 observation points rejects the influence of *regulatory* and *competitive* business environment variables on tunneling since the coefficients have opposite signs than with expectations. Family ownership does not show a statistical significant coefficient whereas managerial ownership has a moderately significant coefficient but with an opposite directionality. Foreign ownership is the only independent variable that is partially supported by the statistical tests (p-value<0.1). Legal origin is a significant control variable.

6.7 Multivariate Analysis: Tunneling Group (n=606)

This section provides OLS regression analysis with a narrower focus on firms having positive *T-RPT2* values that is, called as the Tunneling group. This partitioned sample regression is particularly intended to find out the sensitivity of the *T-RPT2* measure and its predictors for a certain group classification. This approach is similar with Guo (2008) who solely investigates firms meeting Tunneling group criteria but with a different measure for tunneling. The 606 cases are analyzed after excluding 194 cases having zero *T-RPT2* values (Non-Tunnelers) (see Table 6.1). The summary of the analysis is presented in Table 6.8.

The model has a highly significant F-value at the 0.01 level and explains 9.1% of the variation in *T-RPT2* although none of independent variables are significant. This finding is only partially consistent with the main model using *T-RPT1* as the criteria for the Tunneling group (see Chapter Five and Appendix A). Two control variables, legal origin (*LO*) and firm size (*LNSIZE*) consistently indicate statistically significant coefficients.

The second regression (see Appendix D) using *CBE* instead of *RBE* demonstrates similar results to Table 6.8. All independent variables (i.e. *CBE*, *FAMOWN*, *MANOWN*, and *FOROWN*) are again statistically insignificant. The control variable of legal origin (*LO*) as well as firm size (*LNSIZE*) show significant coefficients whereas the three remaining control variables are not statistically significant.

Overall, the OLS multiple regression results based on 606 cases and using the proxy *T-RPT2* do not support any proposed hypotheses. Either unexpected directionalities or insignificant coefficients, account for the lack of support for the hypotheses. Similar with the previous models (Sections 6.5 and 6.6), legal origin and firm size are robust as control variables.

Table 6.8: OLS regression results for *T-RPT2* of Pure Tunneling Group with exclusion of *CBE* (n=606)

DV: *T-RPT2*				
Variables	Sign Prediction	Coefficients	t- statistics	p-value
Constant		0.276	4.123	0.000***
RBE (H1)¶	-	0.002	0.262	0.793
FAMOWN (H3)	+	0.009	1.091	0.276
MANOWN (H4)	+	-0.012	-0.770	0.441
FOROWN (H5)	-	0.000	-0.061	0.951
IBD	-	0.019	0.676	0.499
LO	+	0.024	2.033	0.043**
LNSIZE	-	-0.014	-6.345	0.000***
LEV	-	-0.018	-1.369	0.171
YEARD1		0.000	-0.070	0.944
YEARD2		excluded	excluded	excluded
YEARD3		0.006	0.621	0.535
YEARD4		0.005	0.533	0.594
F	6.483			
Significant	0.000***			
R^2	0.107			
Adjusted R^2	0.091			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.
¶Because of severe multicollinearity (see Table 6.4), *CBE* (H2) is not tested in the above regression table.

6.8 Multivariate Analysis: Tunneling Group (n=410)

This section expands the Chapter Five analysis of firms previously categorized as Non-Tunneling firms (see Panel B of Table 4.3). The alteration from *T-RPT1* to a *T-RPT2* proxy measure may cause Non-Tunneling firms to be classified as Tunneling firms. Firms having a negative value of *T-RPT1* are not necessarily without other receivables in the balance sheet. Therefore, firms categorized as Non-Tunneling group member using the *T-RPT1* criteria may be placed in the Tunneling firms group when using the *T-RPT2* criteria. The unit analysis are obtained from 410 firms previously categorized as Non-Tunneling firms by using the *T-RPT1* criteria, i.e. firm with zero (n=112) and negative (n=298) values of *T-RPT1* (see Panel B of Table 4.3 and Table 4.5). Of the 410 cases Non-Tunneling firms using the *T-RPT1* criteria (Table 4.3), the number of positive *T-RPT2* are 216 (52.7%) cases and the remaining 194 (47.3%) cases have no reported other receivables from related parties.

As can be seen in Table 6.9, the equation excluding *CBE* has a highly significant F-value at the 0.01 level and has the explanatory power of 6.1% (adjusted R-square). The *RBE* variable has a moderately significant coefficient with a negative directionality. Since this is the predicted directionality, the H1 (stating a negative association between *regulatory* business environment and tunneling via RPTs) is partially supported for this subsample (p-value=0.055).

The Table 6.9 model, however, does not find a statistically significant coefficient for the family ownership variable. Accordingly, H3 is not supported. Both managerial ownership and foreign ownership have statistically negative significant coefficients. However, H4 is rejected as managerial ownership does not have the directionality as predicted. In regards to foreign ownership, Table 6.9 result clearly supports H5 that posits a negative association between foreign ownership and RPT tunneling (p-value=0.021). Firm size only has a statistically moderately significant coefficient (p-value=0.079) whereas leverage reveals a positively highly significant coefficient (p-value=0.005). The other control variables do not demonstrate any significant coefficients.

Table 6.9: OLS regression results for -*TRPT2* with exclusion of *CBE* (n=410)

DV: *T-RPT2*				
Variables	Sign Prediction	Coefficients	t- statistics	p-value
Constant		0.066	2.797	0.005***
RBE (H1)¶	-	-0.004	-1.922	0.055*
FAMOWN (H3)	+	0.002	0.624	0.533
MANOWN (H4)	+	-0.020	-3.570	0.000**
FOROWN (H5)	-	-0.010	-2.314	0.021**
IBD	-	-0.007	-0.829	0.408
LO	+	-0.004	-1.087	0.278
LNSIZE	-	-0.001	-1.763	0.079*
LEV	-	0.011	2.794	0.005**
YEARD1		-0.001	-0.494	0.621
YEARD2		0.000	0.017	0.986
YEARD3		excluded	excluded	excluded
YEARD4		-0.000	0.000	1.000
F	3.436			
Significant	0.000***			
R^2	0.087			
Adjusted R^2	0.061			

Note: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.
¶Because of severe multicollinearity (see Table 5.5 and Table 5.6), *CBE* (H2) is not tested in the above regression table.

The alternate model including *CBE* (see Appendix E) documents that the variable is not statistically significant although it shows the directionality as expected indicating a rejection of H2. Three other independent variables (i.e. family ownership, managerial ownership, and foreign ownership) report similar results with the Table 6.9 findings. Thus, only the foreign ownership hypothesis (i.e., H5) is supported. As for control variables, leverage consistently reports a significant coefficient.

Extended analyses for the 410 cases are provided in Appendices K and L. As reported in Appendix K, OLS regression results for partitioned 216 cases tunneling firms indicates similar results with OLS regression using 410 cases. This model supports H1 and H5. Furthermore, Appendix K's model confirms firm size and leverage as consistent control variables of tunneling. Appendix L then provides extended analysis of 410 cases by using logistic regression instead of OLS

regression. Unlike the OLS model, logistic model does not note any empirical evidence regarding association between proposed independent variables and tunneling. However, the logistic model documents that the three control variables (i.e., legal origin, firm size and leverage) are able to explain tunneling behavior.

In summary, models using the subsample of 410 firm-year observations partially support the H1 positing a negative association between *regulatory* business environment and tunneling when dependent variable measured using *T-RPT2*. However, the models do not support the hypothesis about *CBE* linkage with tunneling. Family ownership and managerial ownership are not statistically supported as predictors of *T-RPT2*. Table 6.9 and Appendix E findings support H5 that posits a negative association between foreign ownership and RPT tunneling. The leverage variable can explain variation of *T-RPT2* in both models.

6.9 Summary

This chapter's additional analysis focuses on substituting the dependent variable *T-RPT1* with a different proxy of tunneling (i.e., *T-RPT2*). The Chapter Five *T-RPT1* as a proxy of tunneling involves net other receivables from related parties whereas the Chapter Six *T-RPT2* uses other receivables from related parties for the measurement. Descriptive statistics, T-test and crosstabs for Tunneling and Non-Tunneling group as well as several correlation analyses are performed ahead of this additional regression analysis sections. Binary logistic regression and OLS regression are then conducted for the full (n=800) sample. This is followed by OLS regressions for partitioned samples involving 606 cases with positive value of *TRPT2* and 410 cases formerly categorized as Non-Tunneling firms.

Descriptive statistics and t- test of full sample suggest that the Tunneling group as defined by *T-RPT2* has lower managerial ownership, larger total assets, and higher leverage level than the Non-Tunneling group. Chi-square test indicates an association between Tunneling/Non-Tunneling categorization and legal origin. All

correlation results between independent and dependent variables demonstrate directionalities as predicted.

Chapter Six results confirm the validity and add additional insights of the main chapter results. The full sample sensitivity model corroborates the main chapter findings regarding a positive association between family ownership and tunneling behavior. The sensitivity test model partially supports a negative association between foreign ownership and tunneling. Interestingly, the sensitivity model also partially supports a negative association between *regulatory* business environment and the extent of tunneling when run using the 410 partitioned samples. Legal origin and firm size are robust control variables in both main and sensitivity models.

Chapter Seven provides the thesis summary and concluding discussion of findings. Moreover, it also highlights key implications and contributions of this study. Finally, the chapter advances avenues for future research directions and concludes the thesis with summary remarks.

CHAPTER SEVEN
CONCLUDING DISCUSSION ON TUNNELING

7.1 Introduction

This final chapter discusses the research findings, and concludes with a discussion of key implications and suggested directions for future research. The coverage begins with a summary of the main thesis findings followed by an overview of the contributions of the thesis. The next section discusses each key element finding starting from the *regulatory* and *competitive* business environments position. The influence of ownership types as well as important control variables affecting tunneling behavior, are then reviewed. The rest of the chapter highlights the linked implications with the thesis findings. This is followed by text covering avenues for future research and concluding remarks for the entire thesis.

7.2 Summary of Study Key Findings

One of the most important challenges to current corporate governance structures is to constraint controlling shareholders from tunneling (expropriating) corporate resources at a cost from non-controlling shareholders. This thesis investigates the influence of regulation, competitiveness and ownership on tunneling behavior in five important ASEAN countries. For purposes of this thesis, the term tunneling relates to efforts of controlling shareholders of parent firms to exploit minority shareholders by siphoning off economic resources via related party transactions (RPTs). By way of determinants of tunneling, this thesis focuses on examining the influence of the national corporate governance system and the firm-level ownership structure. In respect to the national corporate governance system, this thesis concentrates on two feature systems: level of regulation and competition. As for firm-level ownership structure, the thesis considers three main features: (a) family ownership; (b) managerial ownership; and (c) foreign ownership levels.

The constructs for the measurement of *regulatory* and *competitive* business environments are developed using a synthesized multi-theoretical perspective combining agency, resource dependence, stakeholder, and institutional theories. The thesis involves a sample of 800 firm-year observations across five ASEAN countries (Indonesia, Malaysia, Philippines, Thailand and Singapore) spanning the economically challenging period 2006 -2009.

Given that the importance of tunneling issues in ASEAN region, this thesis seeks to address those issues by providing answers for several major research questions. Table 7.1 highlights the main research questions and related key findings for this thesis.

Table 7.1: Research questions and key findings

	Research Questions	Key findings
	Main Research Questions	
1	Does the broader national-level corporate governance system influence the extent of tunneling?	The broader national-level corporate governance system as represented by the *regulatory* and *competitive* business environment influences tunneling behavior. However, findings unexpectedly show positive associations between national-level corporate governance system and tunneling (Tables 5.7, 5.8, 5.9 and 5.10).
2	Do different ownership types (that constitute a firm's general ownership structure) influence the extent of tunneling?	Of the three ownership types investigated, family ownership and foreign ownership indicate influences on tunneling behavior (Tables 5.7, 5.8, 5.9 and 5.10).
	Details research questions:	
a	What is the extent of tunneling via RPTs in five ASEAN countries	Tunneling, as measured by using net other receivables from related parties, is statistically higher than zero indicating a significant extent of tunneling (Table 5.1).
b	Does country's *regulatory* business environment influence tunneling via RPTs?	A country's *regulatory* business environment (*RBE*) surprisingly influences tunneling via RPTs. The higher *regulatory* business environment, the higher tunneling behavior. This finding is inconsistent with thesis' expectations. Tunneling activities are persistent although ASEAN countries improve their business regulation (Tables 5.7, 5.8, 5.9 and 5.10).
c	Does country's *competitive* business environment influence tunneling via RPTs?	A country's *competitive* business environment (*CBE*) has an unexpectedly positive association with tunneling via RPTs. Therefore, competition forces do not mitigate tunneling behavior of ASEAN listed firms (Tables 5.7, 5.8, 5.9 and 5.10).
d	Does family ownership influence tunneling via RPTs?	Family ownership is a significant key predictor of tunneling behavior. Family firms are more likely to perform tunneling (Tables 5.7, 5.8, 5.9 and 5.10).
e	Does managerial ownership influence tunneling via RPTs?	Managerial ownership does not reveal its influence on tunneling via RPTs (Tables 5.7, 5.8, 5.9 and 5.10).
f	Does foreign ownership influence tunneling via RPTs?	Foreign ownership has a significant negative influence on tunneling via RPTs. The higher foreign ownership percentage, the lower the extent of tunneling (Tables 5.7and 5.8).

This thesis shows the net other receivables from related parties (*T-RPT1*) as a proxy of tunneling is statistically higher than zero (see Table 5.1). The average value of tunneling is 3.20% over the study period which is similar with the extent of tunneling in the People's Republic of China (PRC) (Guo 2008). The results suggest the presence of tunneling in ASEAN listed firms.

Univariate results find that firms with lower foreign ownership, higher board independence[14] proportions, and larger total assets are more likely to be in the Tunneling group. There are significant statistical differences in firm characteristics among Pure Tunneling firms, Zero Tunneling/Propping firms, and Pure Propping firms.

Results of hypotheses testing for the determinants of tunneling in ASEAN listed firms are summarized in Table 7.2. As presented in Table 7.2, statistical results fail to support the hypotheses regarding the proposed negative association between *regulatory* and *competitive* business environments (H1 and H2) and the extent of tunneling (refer to Tables 5.7, 5.8, 5.9 and 5.10). There is strong evidence supporting a positive association between family ownership (H3) and the extent of tunneling as reported in all models. Hypothesis testing does not provide sufficient statistical evidence regarding a positive association between managerial ownership (H4) and tunneling behavior. However, statistical analysis is able to explain the linkage between firms' foreign ownership and tunneling (H5) (see Tables 5.7 and 5.10). As for the control variables, legal origin and firms' size variables consistently explain tunneling behavior (refer to Tables 5.7, 5.8, 5.9 and 5.10). The statistical results have been subject to winsorization in the regression analysis to deal with outliers and a non-perfect normal distribution.

[14] Indonesia has a two tier system which divides the board into the board of directors and the board of commissioners. The role of independent directors in a Western sense is identical with independent commissioners in the Indonesia context (NCG 2006; OECD 2007).

Table 7.2: Summary of hypotheses testing

RQ	Hypotheses	Description	Decisions
RQ1	H1	*There is a negative association between the strength of nation's regulatory business environment and extent of listed company tunneling via RPTs.*	Rejected
	H2	*There is a negative association between the strength of nation's competitive business environment and extent of listed company tunneling via RPTs.*	Rejected
RQ2	H3	*There is a positive association between firm's family ownership and extent of listed company tunneling via RPTs*	Accepted
	H4	*There is a positive association between firm's managerial ownership and extent of listed company tunneling via RPTs* .	Rejected
	H5	*There is a negative association between firm's foreign ownership and extent of listed company tunneling via RPTs.*	Accepted

Notes: Refer to key statistical tables (Tables 5.7, 5.8, 5.9, and 5.10).

Overall, the findings do not provide convincing evidence supporting a negative association between national-level corporate governance consisting of: (1) *regulatory* business environment and (2) *competitive* business environment and the extent of tunneling. Thesis findings do highlight ownership structure influence on tunneling behavior. Family ownership and foreign ownership are proven as prime predictors of tunneling for ASEAN listed firm. Managerial ownership influence on tunneling, however, is not supported by statistical testing.

7.3 Contributions

The findings provide several important contributions. This thesis begins by helping to fill the research gap in tunneling in the ASEAN region involving a large sample comparative cross-country study. The vast majority of recent Asian tunneling studies have solely focused on the PRC. Different from the PRC environment, concentrated ownership in most ASEAN countries are dominated by family ownership as opposed to state ownership in the PRC. Therefore, this research gives contrasting empirical evidence of the impact of concentrated ownership on tunneling from a different set

of economic and business environments as well as providing comparative tunneling research across countries. Hence, this thesis findings do not just contribute to the understanding of tunneling in the ASEAN region but also provide useful insights for other regions to better understanding how the firms in various countries differ on their tunneling behavior.

This thesis enriches existing tunneling literature by examining whether the *regulatory* and *competitive* business environments explain the extent to which firms in a country engage in tunneling through RPTs. A synthesized framework of the four major theoretical perspectives of corporate governance (i.e. agency theory, resource dependence theory, stakeholder theory and institutional theory) is evolved in establishing a nation's *regulatory* business environment and *competitive* business environment. These variables potentially contribute to provide a better understanding of tunneling determinants from a national level corporate governance perspective.

In regard to the *regulatory* and *competitive* business environments, the thesis findings alert regulators in ASEAN countries that enhancing the *regulatory* and *competitive* business environments may not always achieve the intended goals of preventing expropriation problems. Hence, this thesis suggests possible alternate implementation and effectiveness systems for regulators.

The use of family ownership in this tunneling thesis is also a reasonably unique key contribution since family ownership represents an important characteristic in ASEAN listed firms. This has been rarely investigated in prior similar studies. Past research usually focuses on concentrated ownership in general rather than specific family ownership issues. Thus, the thesis findings extend the knowledge of expropriation issues generated from specific ownership types over several countries.

This thesis also gives empirical evidence regarding ownership factors which may constraint tunneling behavior, i.e. foreign ownership. Foreign investors usually have better monitoring capabilities, asking for more transparency and better minority

shareholders protection. Therefore, facilitating foreign ownership should be considered by regulators as a potentially effective governance mechanism.

Finally, this thesis provides important longitudinal data of tunneling behavior. The use of longitudinal data assists in explaining ASEAN tunneling phenomenon over an economically challenging timeframe. The findings document empirical evidence that tunneling activities is persistence over the entire GFC period (2006-2009) in the five ASEAN countries. These findings should prompt regulators to be more aware of the potential long term impact of tunneling and possible need to develop more effective governance mechanisms. Further discussions of thesis findings are presented in the subsections below.

7.3.1 *RBE* and *CBE* Effects on Tunneling

The first hypothesis regarding the association between *regulatory* business environment (*RBE*) and tunneling is rejected based on empirical findings of this study. Findings are not consistent with the argument that national corporate governance, represented by the *regulatory* business environment, negatively influences tunneling behavior (Dyck and Zingales 2004; Udayasankar and Das 2007; Welford 2007; Young et al. 2008). The data findings are surprising because the directionality is positive suggesting that higher *regulatory* business environment leads to higher tunneling. Such findings are inconsistent with the view that in a highly efficient *regulatory* business environment, there is less incentive or ability for firms to adopt practices and conventions such as expropriating resources from minority shareholders for fear it will draw unwanted regulatory and political attention (Krishnamurti et al. 2005; Udayasankar and Das 2007; OECD 2009).

There are several possible reasons for this surprising finding. Based on institutional theory, the weak institutional pressures experienced by most Southeast Asian countries may be responsible for the positive relationship between *regulatory* business environment and tunneling. Such countries generally have good statutory regulations but are weak in implementation and enforcement of the regulations

(OECD 2009). Therefore, effective regulation is absent. Parisi, Mathur and Nail (2009) suggest that in emerging markets characterized by high concentrations of ownership, well-intended corporate governance regulation may not achieve its intended goals of protecting minority shareholders. Emerging economies often attempt to adopt legal frameworks from developed economies, either as a result of internally driven reforms or as a response to international demands (Young et al. 2008). However, formal institutions such as laws and regulations regarding accounting requirements, information disclosure, securities trading, and the enforcement of such regulations are either absent, inefficient, or do not operate as intended. Consequently, standard Western-style corporate governance mechanisms have relatively little institutional support in emerging economies (Peng 2003; Peng 2004). This results in informal institutions, such as relational ties, business groups, family connections, and government contacts, all playing a greater role in shaping corporate governance (Peng and Heath 1996; Yeung 2006). In other words, the corporate governance structures in emerging economies often resemble those of developed economies in form but not in substance (Backman 1999; Peng 2004) resulting in unexpected impacts.

In addition, tunneling can even occur in countries with an effective *regulatory* environment as suggested by Chen and Wu (2010). Using the data from Taiwan Economic Journal (TEJ) Database, Chen and Wu (2010) note that tunneling via RPTs occurs in countries with effective law enforcement such as Taiwan. They (Chen and Wu 2010) argue that concentrated ownership is responsible for the results. If the controlling rights of a company are under control by controlling shareholders, then concentrated ownership may enable the controlling shareholders to exercise excessive control regardless of the country environment (Burkart, Gromb, and Panunzi 1997). The controlling shareholder virtually always takes control in the discretion of allocating financial resources. Hence, the controlling shareholders tend to expropriate company funds away from minority shareholders easily (Chen and Wu 2010). ASEAN listed firms have similar concentrated ownership characteristics. This implies that tunneling exists in firms with controlling shareholders despite possible improvements in the *regulatory* business environment of ASEAN countries.

Some countries have pre-determined norms on the most important points on corporate governance. Partial proof of this may be found in the principles of corporate governance dictated by the Organization for Economic Cooperation and Development (OECD), which have been transformed into a practical guide for implementing pro corporate governance provisions in many countries (Parisi et al. 2009). Yet, Young (2003) finds no clear relation between good corporate practices and company performance. The structures and processes of good corporate governance may not obviously boost the performance of a business, but without good corporate governance, investors may face the more insidious tunneling risk that the economic value created may be hijacked (CLSA 2010). The case with ASEAN's firms may be an example of such conditions.

From a stakeholder theory viewpoint, the findings suggest ineffective government involvement in the business environment. This is a common phenomenon of governments in developing countries that struggle to manage stakeholder expectations properly. Margolis and Walsh (2003), e.g., state that stakeholder management (any set of actions for any stakeholder) is preoccupied with consequences (financial consequences in particular). Such ineffective regulations do not empower stakeholders, resulting in unfavorable firms' performance as represented by high levels of tunneling.

Stakeholder theory highlights protection of the stakeholder interests. Whilst the legal system is considered central to investor protection (e.g., weak legal system leads to weak investor protection)(La Porta et al. 1998), the broader legislative system and political agenda is viewed as important for the protection of stakeholder rights (Boatright 2002; Parmar et al. 2010). It is commonly assumed that the government is responsible for, and has the necessary power, to ensure the protection of stakeholder rights (La Porta et al. 1998; Glaeser et al. 2001). If the government fails to recognize and protect the broader interests and freedoms of stakeholder groups through suitable legislation and policies, growth and influence of special interest groups will be curtailed providing firms with little incentives to act in a corporate social responsible manner (Roberts 1992). Consequently, firm value may well diminish (Wurgler

2000). As mentioned before, ideal protection for stakeholder interest has been formally provided by government as represented in regulations. However, these regulations are weak in implementation in most ASEAN countries (OECD 2009). In other words, focusing on form rather than substance, may well results in ineffective regulations protecting stakeholders' interest. Therefore, there is higher tunneling although the countries 'officially' are perceived as having a good regulation.

The second hypothesis developed in this thesis proposed a negative association between *competitive* business environment (*CBE*) and tunneling. This hypothesis cannot be supported by statistical evidence presented in this thesis. Findings suggest that competitive forces do not necessarily create pressures for firms in the ASEAN region to run efficiently. Rejection of H2 is not in line with the notion stating market competition puts pressure on managers to act in an efficient manner, as otherwise they will be forced out of business. This is also not consistent with arguments that competition is a mechanism to tackle the agency problem and provides protection to shareholders and creditors in that it represents a natural constraint on the extraction of private benefits (Dyck and Zingales 2004).

Many economists believe that the market for corporate control is a key ingredient of corporate governance (Gillan 2006). The central mechanisms for the transfer of corporate control are mergers and takeovers. The market for corporate control better disciplines managers with the threat of losing control (Jensen and Ruback 1983; Burkart 1997). Takeovers are much more common in the US and the UK, where ownership is dispersed, than in Continental Europe and East Asia where ownership is more concentrated (Jensen and Ruback 1983; Burkart et al. 1997; Burkart, Gromb, and Panunzi 1998). Concentrated ownership characteristics are also experienced by ASEAN firms. The takeover markets tend to be passive in these ASEAN countries because of the high concentration of share ownership among founding families, interrelated institutions and government-linked organizations (Mak and Phan 2001). High levels of equity ownership may insulate CEOs from external market discipline and facilitate collusion between family owners and the CEO to share the private

benefits (Jiang and Peng 2011). These reasons may partly explain the surprising thesis findings regarding *competitive* business environments.

Apart from the market for corporate control, the degree of product and factor markets competition can affect insider opportunities for accruing private benefits in two ways (Shleifer and Vishny 1997; Dyck and Zingales 2004). First, prices are relatively easy to verify in a competitive market, which makes it difficult for insiders to tunnel out resources by manipulating transfer prices without incurring legal penalties or a cost to their reputations (Dyck and Zingales 2004). Second, the distortions produced by the extraction of private benefits are more likely to endanger the survival of the firm in a competitive market. However, those mechanisms may not function optimally in certain conditions. Product and factor markets may be concentrated and firms may enjoy monopoly or near monopoly power, exploit consumers and engage in rent seeking activities (ADB 2000). In addition, pervasive informational problems may prevent market forces from functioning efficiently in monitoring corporate performance and in allocating and overseeing the use of finances (ADB 2000). In many emerging markets, government interventions such as directed credits, implicit and explicit guarantees, and state ownership seriously distort incentive structures and weaken market discipline (Berglof, Rey, and Roell 1997).

Similar unexpected results to this thesis are shown by Udayasankar et al. (2008). Their study covers a number of countries that have recently engendered strong levels of competition known as newly competitive economies. Udayasankar et al. (2008), however, find that stronger competition is associated with the lower governance score. They argue that in such economies, it may be possible that firms do not adequately understand the potential benefits of competition as a governance mechanism, particularly since these benefits may not be well-institutionalized. Accordingly, these arguments provide support for this thesis findings that are especially conducted in newly competitive economies.

The significant positive influence of competitive business environment on tunneling may also be caused by competitive index scores used in this project. This index score focuses on regulations that encourage competitive environment. As noted by Stigler (1971) and Peirson and Ramsay (1983), economic regulation serves the private interest of politically effective groups. Regulation is deemed as the product of coalitions between regulated industry and related interest group in order to maximize their income (Tower 1991; Belkaoui 2004). Those arguments are part of private interest/interest group theories (Mitnick 1980; Belkaoui 2004). General economic theory holds the assumption of self-interest and rationality of people imply that politically effective groups tend to benefit themselves from generated regulation (Mitnick 1980). Competitive regulation is possibly favorable for family controlling shareholders as politically effective groups in ASEAN countries. Therefore, formally competitive regulation enhancement still enables family controlling shareholders to serve their own interest including expropriation of firms' resources at the expense of minorities.

Another alternative explanation is that thesis data covers countries where the forces of competition do not necessarily vary greatly. This is because of relatively similar competition scores for the five countries (Singapore is an exception). Therefore, it is possible that the statistical results are affected by the choice of country sample, which represents countries in the same region (ASEAN).

Overall, in a perfectly competitive world, market discipline should be a sufficient guarantee that firms act in the interests of investors. However, firms generally do not operate in a perfectly competitive world (ADB 2000). Perfect competition as an important assumption in agency and resource dependence theories is thus questioned.

7.3.2 Family Ownership and Tunneling

A key characteristic of Asia is that many of the largest companies in the region are owned and controlled by major controlling shareholders. These are often individuals,

families and sometimes the state (Welford 2007). Controlling shareholders have strong incentives for monitoring the company and its management and can often have a positive impact on the governance of the company. On the other hand, dominance of the controlling shareholders also means that they can force a company to operate in their own interests and this can have negative impacts on smaller minority shareholders (Chen and Wu 2010). In Asia, the most common controlling shareholder is the family (Welford 2007).

Hypothesis Three dealing with family ownership positive influence on tunneling is accepted. This result implies that family dominated firms are more likely to extract firm resources for the controlling shareholder's benefit. Therefore, this finding is consistent with the view regarding the potential negative impact of concentrated ownership in the form of family ownership. This ownership type is dominant in Southeast Asian firms (Claessens et al. 2000; Fan and Wong 2002; Welford 2007). Such a condition potentially increases the opportunities of controlling family to 'tunnel' out wealth from other shareholders (Claessens et al. 2000; Faccio et al. 2001; Villalonga and Amit 2006).

In a seminal work by Claessens et al..(2000), of 2,980 East Asian listed corporations examined, more than two thirds are found to be controlled by a single shareholder or family. Generally, family controlling shareholders gain firm control by using a pyramid structure (i.e. obtaining control of a firm through other firms) (Faccio et al. 2001; Claessens and Fan 2002). For instance, in Malaysia and the Philippines, over 35% of listed companies are controlled with a pyramid structure whereas in Indonesia and Singapore, it is well over 50% (Welford 2007). As mentioned before the most common controlling shareholder is the family, this thesis documents that 56.4% of total sample are family controlled firms (see Table 4.1). Thesis finding also shows that 62.56 % of the firms classified as Tunneling are dominated by family firms (Table 4.4). This is consistent with the hypothesis testing conclusion.

There are several reasons regarding why family concentrated ownership is prevalent in ASEAN countries and how this ownership structure type creates additional

opportunities to extract firm resources for their own benefit at the expense of minority shareholders. High concentrated corporate ownership is often associated with the effectiveness of legal protection in countries. That is, concentrated ownership tends to be a substitute for weak legal protection (World Bank 2001). In emerging economies because of the weak institutional environment, it is common for even the largest firms to be under the control of the founding family (Young et al. 2004; Liu et al. 2006). These large firms usually organize business groups to mitigate uncertainties (Almeida and Wolfenzon 2006). Families business groups can be a barrier to policy reform, and could negatively affect the evolution of the legal and other institutional frameworks for corporate governance, and the manner in which economic activity is conducted (Claessens et al. 2000).

For expropriation to occur, insiders must have both the ability and incentive to divert funds for private advantage. Johnson et al. (2000b) indicate a common occurrence is when a family controlled entity uses a variety of means to transfer a significant proportion of free cash flows from a company in which the family controlling shareholders have small cash flow rights into a company in which they have large cash flow rights and control. Controlling shareholders could transfer wealth, or get special benefits, by self-dealing transactions between the controlling shareholders and the controlled firms (Gilson and Gordon 2003). Through pyramiding, one family can control multiple publicly listed firms that have many minority shareholders, and: (a) may tunnel out company resources to other controlled affiliates in the business group (Claessens et al. 2000); (b) buy from intra group firms at below-market costs (Johnson et al. 2000a); (c) to sell firm assets to themselves or related parties at below-market prices; or (d) spin off the most profitable part of a public firm and merge it with another of their privately held firms (Jiang and Peng 2011). As investigated in this thesis, liquid assets are transferred to family controlling shareholders by using ‘other receivables’ categorized as related party transactions. These transactions usually include favorable conditions for the controlling shareholder (for instance: loans without interest and collateral, unspecified repayments). In a similar vein, Chen and Wu (2010) find higher family ownership

concentration speeds up related party transaction and in turn hurts minority shareholders of companies.

Overall, family-owned firms are characterized by controlling – minority shareholders conflicts of interests which are likely to be intensified in emerging economies like the ASEAN countries where institutions are commonly underdeveloped and markets for corporate control less effective. Thus, family controlled firms more vigorously pursue tunneling behavior based on the evidence in this thesis.

7.3.3 Managerial Ownership and Tunneling

Many studies suggest a positive association between managerial ownership and the expropriation of minority shareholder rights (e.g. Klein 2002; Santiago-Castro and Brown 2011). High managerial shareholding degrades the level of monitoring, and may negatively affect minority shareholders in the absence of other corporate governance mechanisms. Morck et al. (1988) suggest that high shareholding by top management may cause moral hazard and information asymmetry problems between the inside (management and directors) and outside investors.

Contrary to the above arguments, this thesis does not provide empirical evidence regarding a positive association between managerial ownership and tunneling via RPTs in ASEAN listed firm. The result is not fully consistent with the original agency theory argument that when managerial shareholdings grow as a fraction of personal wealth, the interest of management becomes more aligned with the majority shareholder (Jensen and Meckling 1976; Weisbach 1988). Findings of the thesis imply a support for typical agency conflict in emerging economies. Instead of concentrating of the conflict between managers and shareholders, the conflict shifts between controlling shareholder and minority shareholders needs to be highlighted. This conflict is often referred to as Agency Problem II or principal-principal conflicts (Shleifer and Vishny 1997; Qu 2004; Jaggi et al. 2009). The family controlling shareholders use their dominant control to protect their own interests.

Given the dominance of family control, management often acts for the interests of the controlling shareholder (family).

Another possible explanation of the rejection of the hypothesis positing a positive association between managerial ownership and tunneling is that there is a relatively moderate level of managerial ownership in ASEAN listed firms (with a mean value 25.6% and a median value 11.1%) insufficient to truly influence tunneling behavior. This is a similar finding documented by Li (2010) that the percentage of common shares held by CEOs of public companies in the PRC does not have a significant impact on the severity of tunneling because management usually hold a very small number of companies' shares.

7.3.4 Foreign Ownership and Tunneling

This thesis provides support for a negative association between foreign ownership and tunneling. The thesis documents that the Tunneling firms group has a lower average foreign ownership level than the Non-Tunneling firms group (see Table 4.3 and Table 5.1). In other words, the higher the level of a firm's foreign ownership, the lower the extent of tunneling. Thesis findings offer evidence that foreign ownership is a key governance mechanism against expropriation behavior. This finding also sheds an insight regarding the important role foreign ownership plays in curbing expropriation of minority shareholder in ASEAN listed firms.

The result is consistent with the view that foreign ownership can be seen as an effective mechanism that can complement the current governance structure in order to better prevent the management from non-value maximizing activities (Dahlquist and Robertsson 2001). Foreign investors have better monitoring capabilities, which can help firms to move away from an over-reliance on concentrated ownership (Khanna and Palepu 2000). The research on transition economies suggest that if foreigners become influential owners, they do much more restructuring in former SOEs than when the new owners are diffused shareholders (Djankov and Murrell (2002).

Findings of the thesis support the important role of foreign investors in institutional reform. Foreign owners are more likely to push for transparent deals and pressure governments to improve minority shareholder protection (Peng 2003). Foreign owners may be more pressure-resistant to locally-generated majority–minority shareholders problems (Kochhar and David 1996; Tihanyi et al. 2003). Demand for transparency reduces asymmetry information and consequently prevents opportunistic behavior such as tunneling. Exposure to outside ideas and influence will likely accelerate governance reforms (Young et al. 2008).

The findings are also consistent with prior studies in East Asian countries suggesting that firms with foreign ownership are significantly more productive than those without foreign ownership (Hallward-Driemeier, Larossi, and Sokoloff 2002). In line with the thesis findings, other studies report that foreign ownership participation is likely positively related to better practices of corporate governance (Chevalier, Prasetyantoko, and Rokhim 2006; Kim et al. 2010). Foreign investors show more sensitivity to the corporate governance issues than their domestic counterparts (Kim et al. 2010).

The use of foreign ownership variable is rarely used in tunneling research either in ASEAN context or other region. Therefore, this thesis provides an important contribution on tunneling and corporate governance studies as well as better informing regulators.

7.3.5 Control Variables of Tunneling

Among five control variables employed in this thesis, two control variables, i.e. legal origin and firm size, are consistent statistically significant control variables of tunneling. Board independence, leverage and year cannot explain tunneling behavior.

These findings suggest that Common Law countries give better protection on minority shareholders' rights than Civil Law countries do. This is consistent with Johnson et al. (2000b) that identify some potential differences between Civil Law

(French origin) and Common Law (British origin) countries in how courts approach tunneling cases. In Common Law legal systems, judges are expected to rule on new situations by applying general principles even when specific conduct has not yet been described or prohibited in the statutes whereas laws in Civil Law systems are made by legislatures, and judges are not supposed to go beyond the statutes (La Porta et al. 2000). Consequently, insiders who find a way not explicitly forbidden by the statutes to expropriate outside investors can proceed without fear of an adverse judicial ruling (La Porta et al. 2000). Haw, Hu, Hwang, and Wu (2004) also document that the Common Law tradition is more effective in curbing expropriation.

Interestingly, the role of board independence to restrain tunneling behavior is not supported by evidence in this thesis. Most firms in the five sample countries have satisfied the 'minimum' number of independent directors required by their domestic regulators. However, their conformity may be a mere formality. Their boards tend to be influenced by the controlling shareholders and may well be mere 'rubber stamps' of the dominant owner (Klein 2002).

This thesis also documents that firm size as a control variable has a positive association with tunneling. The finding suggests that large firms are more susceptible to tunneling. Large firms tend to have better visibility by analysts, yet they may also have more assets available to be diverted (Claessens et al. 2000). Whereas Jiang and Peng (2011) argue that whether family ownership and control in large firms are good or bad to firm performance, is systematically correlated with the legal and regulatory institutions governing shareholder protection in a country.

This thesis does not find that firm's leverage is a significant predictor variable for tunneling behavior. As reported in Table 5.1, Tunneling and Non-Tunneling groups have similar levels of leverage and the difference between the two groups is not statistically significant. Hence, the thesis finding does not support an association between firm's leverage and tunneling as suggested by Gao and Kling (2008).

The year dummy variable cannot explain the variation of tunneling over the study period (2006-2009). This implies that there are no significant differences of the extent of tunneling via RPTs prior, during and immediately after the global financial crisis in these five key Southeast Asia countries. The finding is supported by argument stating that the financial crises did not lead to fundamental structural reform of the ownership concentration of Asian firms that is a cause of tunneling (Dela Rama 2011).

Sensitivity analysis results largely confirm the main thesis analysis (see Sections 6.5 and 6.6). By altering tunneling proxy from 'net other receivables' (*T-RPT1*) into 'other receivables' (*T-RPT2*), the findings again find no evidence regarding the negative association between *regulatory* business environment as well as *competitive* business environment and tunneling. The important finding is that sensitivity model supports the hypothesis of a positive association between family ownership and tunneling. The independent variable of foreign ownership is also partially supported by statistical test to have a negative association with tunneling (see Tables 6.7 and C-1). Legal origin and firm size consistently remain as significant control variables.

7.4 Implications

Better *regulatory* and *competitive* business environments are expected to mitigate tunneling behavior. However, the thesis finds an opposite condition for ASEAN listed firm when tunneling behavior exist. This implies that improvements in regulation are not sufficient if the focus is on form rather than substance. This means that regulators must better focus on the enforcement and implementation of regulation. This is consistent with the OECD (2009) conclusion that many countries have good formal regulation, but are weak in implementation. ASEAN countries should strengthen the institutional environment especially considering inherent concentrated ownership characteristic of firms and weak legal environment in the region.

Competition forces do not necessarily create effective pressures for firms in the ASEAN region to run efficiently. Given that concentrated ownership and imperfect regulation for both product and factor markets are probably causes for ineffective competitive pressure, enhancing the investment environment to facilitate more investors, and improving fairer regulation on product and factor markets should become important agenda for ASEAN countries. This improvement would strengthen the probability that the competition would serve as a real good external governance mechanism.

There is strong evidence of the dominance of family-owned firm structure in ASEAN listed firms. This is positively associated with tunneling behavior. This finding should prompt attention for regulators, prospective investors, and other interested parties. Family ownership is not always bad, but the thesis findings provide evidence of an unfavorable side of such an ownership type. As related party transactions are common channels for tunneling, regulatory improvement for RPTs should take place. Additional governance requirements could also be implemented for such transactions (e.g. sufficient disclosures, approval system) (Welford 2007; OECD 2009). Although several ASEAN countries have adopted those provisions formally, its effective implementation is still in question.

The clear finding of tunneling by family controlled firms implies that the treatment of minority shareholders remains a big issue for corporate governance in the ASEAN region. The use of voluntary compliance and disclosure codes of conduct backed up by strong legal protection can be a good solution (Welford 2007). In addition, having multiple blockholders may be a useful mechanism to constrain expropriation of minority shareholders (Jiang and Peng 2011).

Focusing on controlling shareholder regulation and minority shareholder protection should be a priority for ASEAN countries in light of these thesis findings. Given the high prevalence of family controlled firms in ASEAN countries, regulators and prospective investors should be aware that controlling shareholders tend to force or influence firm management to act in line with their interests. There is a concern if

controlling shareholder interests cause adverse impacts on minority shareholders such as tunneling.

Thesis finding confirms the important role of foreign ownership on tunneling mitigation. Foreign investors avoid poorly governed firms. This implies that a higher existence of foreign investors indicates a better corporate governance. Emerging economies such as ASEAN countries should encourage transparency and investor protection as economic and structural incentives to attract more foreigners to invest in their countries.

Most ASEAN countries have made improvements to their regulation as a lesson from past financial crises 1997 (Kawai 2008; CLSA 2010). Yet, it is documented in thesis findings that during the most recent Global Financial Crisis of 2008–2009, ASEAN listed firms show ongoing expropriation practices. In times of crisis, controlling shareholders may become more desperate to extract firm resources in an attempt to protect their own wealth as occurred earlier in the Asian Financial Crisis in 1997 (Johnson et al. 2000b; Young et al. 2008). Therefore, a severe crisis may continuously threaten ASEAN listed firms if tunneling practices are persistent and there are no significant improvements on business environment in the future.

7.5 Avenues for Future Research

This thesis derives several important insights into the tunneling behavior for ASEAN listed firms. Yet, there are many other areas to be explored to obtain a better understanding of the tunneling phenomenon. Therefore, this thesis suggests several avenues for future research.

This thesis only focuses on net other receivables from related parties as a main proxy of tunneling. A second measure (gross ‘other receivables’) is also used in the Chapter Six sensitivity analysis. There are, however, many other ways of tunneling as suggested by the prior literature such as transfer pricing, sales and purchase of assets, loan guarantees, dilutive offerings, freeze-out of minority shareholders and

equity-based incentive compensation (Johnson et al. 2000b; Atanasov et al. 2008). Future analysis could explore how tunneling is achieved using a more comprehensive set of related party transaction proxy measures other than the two employed in this thesis. In addition, identification of most prevalent tunneling methods in a region is also an interesting issue to be investigated. Knowledge of the specific prevalent method of tunneling in a region could assist policy makers to better prepare effective prevention measures.

Thesis findings on regulatory and business environments show unexpected results. Such results may be due to specific environments/traits among ASEAN countries. Future research, therefore, could expand the sample by sampling multiple regions in other parts of the world. In addition, future research could use alternative measures of the *regulatory* and *competitive* business environment. Future results could be used as a comparative counterpoint to the current findings.

As family ownership seems to promote tunneling, there is a need for further studies concerning effective ways to prevent such behavior. Research on improved disclosure and governance mechanisms for such an ownership type could be a priority.

The findings reveal persistent tunneling practices over the entire GFC period. Further research is needed to understand why this happened. For instance, a future study could provide a comparative analysis of tunneling behavior between the GFC and earlier AFC periods, particularly in the ASEAN region.

7.6 Concluding Remarks

Preventing the controlling shareholder from tunneling corporate resources at the expense of minority shareholders is a continuous issue for corporate governance especially in emerging economies. To address this issue, this thesis offers an in-depth longitudinal international analysis involving five ASEAN countries (i.e., Indonesia, Malaysia, Philippines, Singapore and Thailand) of the extent and

determinants of tunneling via related party transactions. A synthesized justification of four corporate governance theoretical perspectives (agency, resource dependence, stakeholder, and institutional theories) is used to develop the national level corporate governance constructs of *regulatory* and *competitive* business environments. Family, managerial and foreign ownership are also investigated as potential key tunneling determinants.

One insight that can be drawn from thesis findings is that national-level corporate governance has an unexpected impact on mitigating tunneling via related party transactions in the ASEAN region. Formal regulation improvements are not sufficient to protect minority shareholder from the effects of such self dealings. Another important insight is that imperfect competition (in reality) is probably responsible for the ineffectiveness of the *competitive* business environment to prevent tunneling behavior. Competition force as a governance mechanism to discipline managers for efficiently running firms is not optimally functional in this region.

The negative side of dominant family ownership characteristics in ASEAN listed firms is also highlighted in this thesis. The high level of family ownership leads to the extraction of benefits from a firm to the detriment of minority shareholders. In addition, the dominance of family controlling shareholders also potentially forces firm management to act in their own interests. More effort is needed to enhance foreign investor involvement in ASEAN listed firms. The role of foreign ownership is highlighted in this thesis because it encourages good governance practices specifically for the protection of minority shareholder rights and the efficiency of firm operation.

This thesis helps to fill the research gap in tunneling in the ASEAN region specifically involving a large sample cross country study in a longitudinal study over the entire GFC period. Tunneling by family controlled firms implies that the treatment of minority shareholders remains a critically important issue for corporate governance in the ASEAN region. *Regulatory* and *competitive* business

environments findings alert regulators in ASEAN countries that formal improvements on *regulatory* and *competitive* business environments may not always result in its intended goals of preventing expropriation problem. The persistence of tunneling practices over the recent GFC period suggests that ASEAN's regulators quickly need to evolve more effective governance mechanisms.

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Appendix A: OLS Regression Results for *T-RPT1* of Pure Tunneling Group (n=390)

This appendix provides further and different analysis by solely investigating the 390 observations of just the Tunneling group (i.e., firms with *T-RPT1*>0). OLS regression is again used to explain predictors of *T-RPT1* in this group. Table A-1 provides a summary of regression analysis for these 390 firms.

Table A-1: OLS regression: *T-RPT1* of Pure Tunneling Group (exclusion of *CBE*; n=390)

DV: *T-RPT1*				
Variables	Sign Prediction	Coefficients	t- statistics	p-value
Constant		0.321	3.790	0.000***
RBE (H1)¶	-	0.005	0.583	0.560
FAMOWN (H3)	+	0.010	0.906	0.366
MANOWN (H4)	+	-0.020	-0.976	0.330
FOROWN (H5)	-	0.012	0.553	0.581
IBD	-	0.009	0.231	0.818
LO	+	0.036	2.289	0.023**
LNSIZE	-	-0.018	-5.942	0.000***
LEV	-	-0.018	-0.937	0.349
YEARD1		excluded	excluded	excluded
YEARD2		0.004	0.334	0.739
YEARD3		0.007	0.528	0.598
YEARD4		0.008	0.624	0.533
F	5.950			
Significant	0.000***			
R^2	0.148			
Adjusted R^2	0.123			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.
¶Because of severe multicollinearity (see Table 5.3), *CBE* (H2) is not tested in the above regression table.

The model is highly significant at the 0.01 level and has an adjusted R-square of 12.3%. As reported in the table, none of independent variables have a statistically significant p-value. Findings suggest rejection of H1, H3, H4, and H5 in this partitioned sample. Accordingly, none of the proposed hypotheses are supported for the n=390 analysis. Two control variables, i.e. *LO* and *LNSIZE* are significant at the 0.05 and the 0.01 levels respectively with directionalities as predicted.

The following Table A-2 presents OLS regression findings solely for the narrower focused 390 Tunneling firms with *RBE* excluded. The equation has a significant F value at the 0.01 level and can explain the variation of tunneling at 12.4% (adjusted

R-square). As presented in Table A-2, the coefficient for *CBE* is not significant. Similarly, the other three independent variables, i.e. *FAMOWN*, *MANOWN*, and *FOROWN*, also do not have statistically significant coefficients. Overall, these findings indicate that H2, H3, H4, and H5 are not supported. In other words, there is no statistical evidence about the relationship between *competitive* business environment, family ownership, managerial ownership, foreign ownership, and tunneling.

Table A-2: OLS regression: *T-RPT1* of Pure Tunneling Group (exclusion of *RBE*; n=390)

DV: *T-RPT1*				
Variables	Sign Prediction	Coefficients	t- statistics	p-value
Constant		0.318	4.324	0.000***
CBE (H2)[§]	-	0.006	0.873	0.383
FAMOWN (H3)	+	0.011	0.932	0.352
MANOWN (H4)	+	-0.022	-1.048	0.295
FOROWN (H5)	-	0.012	0.541	0.589
IBD	-	0.003	0.089	0.929
LO	+	0.037	2.687	0.008***
LNSIZE	-	-0.018	-5.970	0.000***
LEV	-	-0.019	-0.979	0.328
YEARD1		excluded	excluded	excluded
YEARD2		0.004	0.337	0.736
YEARD3		0.007	0.538	0.591
YEARD4		0.008	0.626	0.532
F	5.995			
Significant	0.000***			
R^2	0.149			
Adjusted R^2	0.124			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.
[§]Because of severe multicollinearity (see Table 5.3), *RBE* (H1) is not tested in the above regression table.

Two controls variables have statistically significant coefficients in the equation. Legal origin (*LO*) reports a significant positive coefficient whereas firm size (*LNSIZE*) shows a significant negative coefficient. The findings uncover linkage between legal system and tunneling. Within the Tunneling group, smaller firms are more likely to be tunneled. The other three control variables comprising *IBD*, leverage and dummy year, do not have statistically significant coefficients.

Overall, the independent variables do not report any relationship with tunneling if the equation only involves the Pure Tunneling firms.

Appendix B: Logistic Regression *T-RPT2* with Exclusion of *RBE* (n=800)

The second logistic regression model uses *competitive* business environment (*CBE*) as a tunneling predictor instead of *regulatory* business environment (*RBE*). Table B-1 displays the regressions results. As shown in the table, the equation has significant Chi-square figure and is able to explain the variation of tunneling status by 15.4%. This explanatory power is slightly lower than main chapter model involving *RBE*.

Table B-1: Logistic regression: *T-RPT2* (exclusion of *RBE*; n=800)

DV:Dummy *T-RPT2*			
Variables	Sign Prediction	Coefficients	p-value
Constant		-9.747	0.000***
CBE (H2) [§]	-	0.457	0.000***
FAMOWN (H3)	+	0.440	0.050*
MANOWN (H4)	+	-0.739	0.079*
FOROWN (H5)	-	-0.457	0.221
IBD	-	0.308	0.672
LO	+	1.689	0.000***
LNSIZE	-	0.364	0.000***
LEV	-	0.280	0.456
YEARD1		0.183	0.461
YEARD2		0.100	0.686
YEARD3		-0.031	0.899
YEARD4		excluded	excluded
Chi-square	87.152		
Significant	0.000***		
Percentage correct	76.1		
Nagelkerke R square	0.154		

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

[§] Because of severe multicollinearity (see Table 6.3), *RBE* (H1) is not tested in the above regression table.

H2 posits a negative association between *competitive* business environment and tunneling. The coefficient of *CBE* is statistically highly significant at the 0.01 level. However, the result does not have the directionality as predicted. Hence, H2 is not supported. The family ownership hypothesis (H3) is supported (p-value=0.05). Managerial ownership has a moderately significant coefficient but it has an unpredicted directionality prompting a rejection of H4. Foreign ownership hypothesis (H5) cannot be supported since the coefficient is insignificant although it has a predicted directionality.

Legal origin (*LO*) and firm size (*LNSIZE*) clearly have significant coefficients and directionalities as predicted. In regard of *IBD*, leverage, and year, those variables are not statistically significant in this model.

Appendix C: OLS Regression *T-RPT2* with Exclusion of *RBE* (n=800)

Table C-1 summarizes the OLS regression for the total sample of 800 firm-year observations with the substitution of *RBE* by inclusion of *CBE*. The model can explain the variation of *T-RPT2* at only 0.039 (adjusted R-square). As shown in the table, the coefficient for *competitive* business environment is only moderately significant at the 0.10 level and has an unexpected positive directionality. The result suggests a rejection of H2 stating a negative association between *competitive* business environment and tunneling.

The appendix model cannot support H3 regarding the association between family ownership and tunneling since its coefficient is not significant. Managerial ownership is moderately significant at the 0.10 level but it has an unexpected directionality indicating a rejection of H4. Foreign ownership shows a negative coefficient as predicted but it is only moderately significant (p-value=0.087), this latter finding partially supports H5. As for the control variables, legal origin (*LO*) consistently reports a positively highly significant coefficient. Likewise leverage (*LEV*) is negatively moderately significant. The three others control variables, i.e. *IBD*, *LNSIZE*, and year, do not have any significant coefficients in this model.

Table C-1: OLS regression: *T-RPT2* (exclusion of *RBE*; n=800)

DV: *T-RPT2*				
Variables	Sign Prediction	Coefficients	t- statistic	p-value
Constant		0.000	-0.188	0.851
CBE (H2) [§]	-	0.001	1.940	0.053*
FAMOWN (H3)	+	0.001	1.198	0.231
MANOWN (H4)	+	-0.003	-1.822	0.069*
FOROWN (H5)	-	-0.002	-1.714	0.087*
IBD	-	0.003	0.879	0.380
LO	+	0.005	5.151	0.000**
LNSIZE	-	0.000	-0.532	0.595
LEV	-	0.003	1.662	0.097*
YEARD1		0.000	-0.088	0.930
YEARD2		excluded	excluded	excluded
YEARD3		0.001	0.722	0.471
YEARD4		0.000	0.433	0.665
F	3.915			
Significant	0.000***			
R^2	0.052			
Adjusted R^2	0.039			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

[§] Because of severe multicollinearity (see Table 6.3), *RBE* (H1) is not tested in the above regression table.

Appendix D: OLS Regression *T-RPT2* of Tunneling Group with Exclusion of *RBE* (n=606)

As an alternate to the inclusion *RBE* in main text, this appendix equation uses *CBE* as a predictor variable. The equation demonstrates similar results with the earlier model involving *RBE*. F-value and adjusted R-square are almost identical with the first model. Table D-1 reports that all independent variables, i.e. *CBE*, *FAMOWN*, *MANOWN*, and *FOROWN* are statistically insignificant. The control variable of legal origin (*LO*) is statistically positively significant at the 0.05 level indicating a higher extent of tunneling in Civil Law countries' firms. Firm size as calculated by using natural logarithm of total assets has a significant negative coefficient whereas the three remaining control variables are not statistically significant.

Table D-1: OLS regression: *T-RPT2* of Tunneling Group (exclusion of *RBE*; n=606)

DV: *T-RPT2*				
Variables	Sign Prediction	Coefficients	t- statistic	p-value
Constant		0.271	4.674	0.000***
CBE (H2) [§]	-	0.003	0.508	0.612
FAMOWN (H3)	+	0.009	1.102	0.271
MANOWN (H4)	+	-0.013	-0.807	0.420
FOROWN (H5)	-	0.000	-0.051	0.959
IBD	-	0.016	0.555	0.579
LO	+	0.024	2.434	0.015**
LNSIZE	-	-0.014	-6.364	0.000***
LEV	-	-0.018	-1.379	0.168
YEARD1		0.000	-0.075	0.940
YEARD2		excluded	excluded	excluded
YEARD3		0.006	0.623	0.533
YEARD4		0.005	0.530	0.597
F	6.502			
Significant	0.000***			
R^2	0.107			
Adjusted R^2	0.091			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

[§] Because of severe multicollinearity (see Table 6.4), *RBE* (H1) is not tested in the above regression table.

Appendix E: OLS Regression *T-RPT2* of Tunneling Group with Exclusion of *RBE* (n=410)

This appendix presents the second running of the OLS regression for n=410 with exclusion of *RBE*. Similar with the model using *RBE*, this model also has a significant F-value but with lower explanatory power of 5.5% compared to model utilizing *RBE* (see Table E-1).

Table E-1 reveals that *CBE* is not statistically significant although it shows directionality as expected. This finding suggests a rejection of H2. Family ownership is statistically insignificant showing the same result with the main text. Two other independent variables report significant coefficients. Managerial ownership is statistically significant at the 0.01 level but it has an unexpected directionality. Foreign ownership consistently reports a negative significant coefficient (p-value<0.05). This result indicates that foreign ownership hypothesis is supported. Of the five control variables, only leverage is statistically highly significant in the model at the 0.01 level. This finding implies that the higher leverage, the higher tunneling via RPTs.

Table E-1: OLS regression: *T-RPT2* (exclusion of *RBE*; n=410)

DV: *T-RPT2*				
Variables	Sign Prediction	Coefficients	t- statistic	p-value
Constant		0.044	2.221	0.027**
CBE (H2) [§]	-	-0.002	-1.011	0.313
FAMOWN (H3)	+	0.003	0.974	0.331
MANOWN (H4)	+	-0.021	-3.702	0.000***
FOROWN (H5)	-	-0.009	-2.114	0.035**
IBD	-	-0.006	-0.688	0.492
LO	+	0.000	-0.220	0.826
LNSIZE	-	-0.001	-1.602	0.110
LEV	-	0.010	2.620	0.009***
YEARD1		-0.001	-0.441	0.660
YEARD2		0.000	0.046	0.964
YEARD3		excluded	excluded	excluded
YEARD4		0.000	0.048	0.962
F	3.173			
Significant	0.000***			
R^2	0.081			
Adjusted R^2	0.055			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

[§]Because of severe multicollinearity (see Table 5.5 and Table 5.6), *CBE* (H2) is not tested in the above regression table.

In summary, the appendix findings are generally consistent with the main chapter findings. None of the sensitivity models provide support for the hypothesis regarding a negative association between *competitive* business environment and tunneling behavior. However, the appendix findings do lend support for the main chapter findings specifically regarding H3 (family ownership hypothesis) and H5 (foreign ownership hypothesis). The results also generate more evidence that legal origin and firm size are consistent control variables for tunneling via RPTs.

Appendix F: Country Regression Analysis: Indonesia

This appendix provides additional regression analysis for the Indonesian country subsample. This analysis uses 160 firm-year observations of Indonesia's listed firms. The presentation in this appendix consists of correlations matrix, logistic regression and OLS regression. Different from the regression analysis for the full sample of ASEAN listed firms (n=800) in the main analysis, this analysis excludes some predictor variables including *RBE*, *CBE*, and *LO*. Those variables represent country-level variables which are not relevant for this analysis.

Table F-1 presents the correlation matrix of dependent variable and predictors variables of *T-RPT1* for the Indonesia subsample. The ownership variables of family ownership (*FAMOWN*) and managerial ownership (*MANOWN*) have very weak positive correlations with *T-RPT1* (0.068 and 0.037) while foreign ownership has a negative correlation with *T-RPT1* (-0.047). Although correlations between ownership variables and *T-RPT1* show directionalities as predicted, none of the correlation coefficient is statistically significant. For the control variables, Table F-1 shows that *IBD*, *LNSIZE*, *LEV* and year dummy variables (*YEARD*) are statistically insignificant correlated with *T-RPT1*. Significant positive correlations are found for the correlation between *FAMOWN* and *MANOWN* (0.475; p-value<0.01); *FAMOWN* and *LEV* (0.181; p-value<0.05); *FOROWN* and *IBD* (0.333; p-value<0.01); *FOROWN* and LEV (0.188; p-value<0.05). The highest significant negative correlation is observed between *FAMOWN* and *IBD* (-0,336; p-value<0.01). There are no multicollinearity concerns for the correlation results since all correlation figures are far below the critical limit of 0.90 (Hair et al. 2010).

The logistic regression results for 160 firm-years Indonesia listed firms are reported in Table F-2. As shown in this table, the equation has a pseudo Chi-square of 17.880 with a p-value of 0.037 and it is statistically significant at the 0.05 level. The reported pseudo Negelkerke R square indicates that regression model explains 14.1% of a firm's tunneling status. Of the three ownership variables, managerial ownership (*MANOWN*) has a highly significant positive coefficient (p-value<0.01). This result supports H4 stating a positive association between managerial ownership and tunneling. The two other ownership variables, *FAMOWN* and *FOROWN*, do not have significant coefficients. Thus, the findings neither support H3, positing a positive association between family ownership and tunneling, nor H5, predicting a negative association between foreign ownership and tunneling. None of the control variables, i.e. *LNSIZE*, *LEV* and *YEARD* has a significant coefficient.

Table F-3 summarizes OLS regression results for 160 firm-years Indonesia listed firms. Table F-3 shows an insignificant F value of 0.841 indicating that this model is not a significant fit. In other words, this regression equation cannot explain well the influence of predictor variables in this model on the dependent variable of tunneling although this equation has a similar significant coefficient on managerial ownership as in the logistic model.

Table F-1: Pearson correlations of Indonesia subsample (n=160)

	T-RPT1	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT1	1	0.068	0.037	-0.047	0.074	-0.116	-0.118	-0.009	0.005	-0.015	0.018
FAMOWN	0.068	1	0.475***	-0.317***	-0.336***	-.0321***	0.181**	0.000	-0.030	0.030	0.000
MANOWN	0.037	0.475***	1	-0.279***	-0.149	-0.213***	-0.138	0.034	-0.001	0.008	-0.040
FOROWN	-0.047	-0.317***	-0.279***	1	0.333***	0.188**	-0.191**	-0.076	0.011	.017	0.047
IBD	0.074	-0.336***	-0.149	0.333***	1	0.220***	-0.075	-0.050	-0.033	.024	0.060
LNSIZE	-0.116	-0.321***	-0.213***	0.188**	0.220***	1	0.045	-0.069	-0.009	.013	0.066
LEV	-0.118	0.181**	-0.138	-0.191**	-0.075	0.045	1	0.004	0.002	.033	-0.038
YEARD1	-0.009	0.000	0.034	-0.076	-0.050	-0.069	0.004	1	-0.333***	-0.333***	-0.333***
YEARD2	0.005	-0.030	-0.001	0.011	-0.033	-0.009	0.002	-0.333***	1	-0.333***	-0.333***
YEARD3	-0.015	0.030	0.008	0.017	0.024	0.013	0.033	-0.333***	-0.333***	1	-0.333***
YEARD4	0.018	0.000	-0.040	0.047	0.060	0.066	-0.038	-0.333***	-0.333***	-0.333***	1

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

Table F-2: Logistic regression of Indonesia subsample (n=160)

DV: Dummy *T-RPT1*			
Variables	Sign Prediction	Coefficients	p-value
Constant		-2.099	0.312
FAMOWN (H3)	+	-0.262	0.542
MANOWN (H4)	+	2.731	0.001***
FOROWN (H5)	-	-0.426	0.531
IBD	-	-0.367	0.839
LNSIZE	-	0.105	0.303
LEV	-	-0.060	0.946
YEARD1		0.136	0.775
YEARD2		-0.161	0.737
YEARD3		0.175	0.712
YEARD4		excluded	excluded
Chi-square	17.880		
Significant	0.037**		
Percentage correct	61.9		
Nagelkerke R square	0.141		

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

Table F-3: OLS regression of Indonesia subsample (n=160)

DV: *T-RPT1*				
Variables	Sign Prediction	Coefficients	t- statistics	p-value
Constant		-0.009	-1.126	0.262
FAMOWN (H3)	+	0.000	-0.313	0.754
MANOWN (H4)	+	0.006	1.932	0.055*
FOROWN (H5)	-	-0.002	-0.596	0.552
IBD	-	0.008	1.164	0.246
LNSIZE	-	0.000	0.655	0.514
LEV	-	0.002	0.495	0.621
YEARD1		0.001	0.362	0.718
YEARD2		0.000	-0.355	0.723
YEARD3		excluded	excluded	excluded
YEARD4		0.000	-0.245	0.807
F	0.841			
Significant	0.580			
R^2	0.048			
Adjusted R^2	0.009			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

In summary, the results that solely uses Indonesia listed firm sample only support a positive association between managerial ownership and tunneling when using logistic regression model. This finding is different with the main model using the full sample which does not support this hypothesis. None of the control variables has a significant influence on tunneling.

Appendix G: Country Regression Analysis: Malaysia

This appendix presents regression analysis for the subsample of Malaysian companies comprising 160 firm-year observations. As discussed in the previous model in Appendix F, this model also removes country-level variables of *RBE*, *CBE*, and *LO*. The first section of this appendix summarizes the correlation matrix for analysis and the remaining sections describe the regression analysis.

As shown in Table G-1, all independent variables (i.e., ownership variables) are highly significantly correlated with the dependent variable of *T-RPT1* (p-values<0.01). Family ownership (*FAMOWN*) and managerial ownership (*MANOWN*) have positive correlations with *T-RPT1* whereas foreign ownership (*FOROWN*) has a negative correlation with *T-RPT1*. These findings show directionalities as predicted. The only control variable of leverage (*LEV*) has a significant correlation with the dependent variable. Family ownership has a positive correlation with *MANOWN* (0.478; p-value<0.01) and negative correlations with *FOROWN* (0.478; p-value<0.01) and IBD (0.478; p-value<0.01). Managerial ownership is negatively correlated with *FOROWN*, *IBD*, and *LNSIZE* whereas *FOROWN* is positively correlated with *LNSIZE* and *LEV*. None of correlation coefficients indicates a multicollinearity concern.

Table G-2 highlights logistic regression for the Malaysian listed firms (n=160). As shown in Table G-2, this logistic model has a pseudo Chi-square of 29.669 and a statistically highly significant p-value (0.000). This equation has an explanatory power of 24.5%. Table G-2 shows that family ownership has a significant positive coefficient as predicted suggesting that H3 is supported. By contrast, managerial ownership has a highly significant negative coefficient with unexpected directionality indicating rejection of H4. A significant negative coefficient is also documented for foreign ownership. Since the directionalities as predicted, it means that H5 is supported. Firm size is the only control variable with a significant coefficient.

Table G-3 presents country analysis when using OLS regression model. The equation has a significant F value at the 0.05 level and can explain the variation of tunneling at 5.8% (adjusted R-square). As reported in Table G-3, family ownership (*FAMOWN*) has a moderately significant positive coefficient (p-value<0.10). Finding indicates that H3 positing a positive association between family ownership and tunneling is partially supported. Managerial ownership (*MANOWN*) shows a statistically moderately significant coefficient but it has an unexpected negative coefficient. Hence, the result does not support H4. The foreign ownership variable (*FOROWN*), it has a highly significant negative coefficient (p-value<0.01). The result supports H5 predicting a negative association between foreign ownership and tunneling. None of the control variable has a significant coefficient.

Table G-1: Pearson correlations of Malaysia subsample (n=160)

	T-RPT1	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT1	1	0.300***	0.239***	-0.507***	-0.089	-0.078	-0.230***	0.025	0.021	-0.025	-0.020
FAMOWN	0.300***	1	0.478***	-0.356***	-0.208***	-0.099	-0.057	-0.023	0.008	0.008	0.008
MANOWN	0.239***	0.478***	1	-0.414***	-0.204***	-0.453***	-0.099	-0.018	-0.005	0.011	0.012
FOROWN	-0.507***	-0.356***	-0.414***	1	0.025	0.207***	0.234***	0.014	0.049	-0.010	-0.053
IBD	-0.089	-0.208***	-0.204***	0.025	1	0.118	0.027	-0.059	-0.065	0.034	0.090
LNSIZE	-0.078	-0.099	-0.453***	0.207***	0.118	1	0.072	-0.093	0.003	0.041	0.048
LEV	-0.230***	-0.057	-0.099	0.234***	0.027	0.072	1	0.006	-0.026	0.037	-0.017
YEARD1	0.025	-0.023	-0.018	0.014	-0.059	-0.093	0.006	1	-0.333***	-0.333***	-0.333***
YEARD2	0.021	0.008	-0.005	0.049	-0.065	0.003	-0.026	-0.333***	1	-0.333***	-0.333***
YEARD3	-0.025	0.008	0.011	-0.010	0.034	0.041	0.037	-0.333***	-0.333***	1	-0.333***
YEARD4	-0.020	0.008	0.012	-0.053	0.090	0.048	-0.017	-0.333***	-0.333***	-0.333***	1

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

Table G-2: Logistic regression of Malaysia subsample (n=160)

DV: Dummy *T-RPT1*			
Variables	Sign Prediction	Coefficients	p-value
Constant		-9.485	0.010**
FAMOWN (H3)	+	1.009	0.046**
MANOWN (H4)	+	-2.844	0.006***
FOROWN (H5)	-	-3.451	0.014**
IBD	-	1.010	0.663
LNSIZE	-	0.440	0.011**
LEV	-	0.477	0.647
YEARD1		0.086	0.874
YEARD2		-0.428	0.448
YEARD3		-0.387	0.483
YEARD4		excluded	excluded
Chi-square	29.669		
Significant	0.000***		
Percentage correct	74.4		
Nagelkerke R square	0.245		

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

Table G-3: OLS regression of Malaysia subsample (n=160)

DV: *T-RPT1*				
Variables	Sign Prediction	Coefficients	t- statistics	p-value
Constant		-0.002	-0.260	0.795
FAMOWN (H3)	+	0.002	1.963	0.052*
MANOWN (H4)	+	-0.004	-1.881	0.062*
FOROWN (H5)	-	-0.006	-3.014	0.003***
IBD	-	-0.004	-0.778	0.438
LNSIZE	-	0.000	0.652	0.516
LEV	-	0.000	0.219	0.827
YEARD1		0.000	-0.159	0.874
YEARD2		0.000	-0.680	0.498
YEARD3		excluded	excluded	excluded
YEARD4		0.000	-0.125	0.901
F	2.083			
Significant	0.034**			
R^2	0.111			
Adjusted R^2	0.058			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

Overall, this appendix provides additional insights to the main analysis regarding the Malaysia subsample. Both logistic and OLS models support the findings of the main analysis regarding a positive association between family ownership and tunneling and a negative association between foreign ownership and tunneling. Contrary to the proposed hypothesis (H4), managerial ownership has a negative association with tunneling behavior.

Appendix H: Country Regression Analysis: Philippines

Appendix H highlights country regression analysis for the Philippines (n=160). This specific country analysis excludes all country-level variables including *RBE*, *CBE*, and *LO*. Table H-1 displays the correlation matrix for this analysis. As reported in Table H-1, family ownership (*FAMOWN*) has a positive insignificant correlation with the dependent variable *T-RPT1* whereas the managerial ownership (*MANOWN*) has a positive significant correlation with *T-RPT1*. Foreign ownership (*FOROWN*) is insignificantly negatively correlated with *T-RPT1*. All these correlations between independent and dependent variables have directionalities as predicted. Two control variables, i.e. firm size (*LNSIZE*) and leverage (*LEV*), show significant negative correlations with the dependent variable (p-values<0.01). Family ownership has a significant positive correlation with managerial ownership (*MANOWN*) and board independence (*IBD*). Furthermore *FAMOWN* is significantly negatively correlated with *FOROWN*, *LNSIZE*, and *IBD*. Managerial ownership has a significant negative correlation with *FOROWN*, *LNSIZE*, and *LEV* whereas foreign ownership is significantly positively correlated with *LEV*.

Table H-2 presents logistic regression for Philippines listed firms (n=160). This logistic model has a pseudo Chi-square of 36.941 and a statistically highly significant p-value at the 0.01 level. This equation is able to explain firm tunneling status by 27.6%. Family ownership has a moderately significant coefficient at the 0.10 level indicating partial support on H3. Furthermore, foreign ownership also shows a significant negative coefficient (p-value<0.05) as expected suggesting that H5 is statistically supported. On the other hand, managerial ownership coefficient is not significant. This model also documents that *LNSIZE* and *LEV* have significant coefficients to explain tunneling.

For the OLS regression, this analysis is summarized in Table H-3. Table 3 documents that this model has a highly significant F value (p-value<0.01) and an adjusted R-square of 16.3%. However, none of the ownership variables has a significant coefficient. Therefore, these results cannot fully support the main full model's findings in the main text. On the other hand, this model reveals two control variables have significant influences on tunneling. Those variables are *LNSIZE* (p-value<0.05) and *LEV* (p-value<0.01).

In summary, the logistic model utilizing the Philippines subsample data seems to have better results than OLS model. The logistic model provides evidence a positive association between family ownership and RPTs tunneling in this country. In addition, this model also lends support on H5 positing a negative association between foreign ownership and tunneling. Two control variables (firm size and leverage) can explain tunneling behavior of listed firms in this country. Again, Philippines' findings are generally consistent with the main model.

Table H-1: Pearson correlations of Philippines subsample (n=160)

	T-RPT1	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT1	1	0.115	0.198**	-0.084	0.089	-0.185**	-0.219***	0.015	-0.057	0.025	0.017
FAMOWN	0.115	1	0.660***	-0.176**	0.345***	-0.341***	-0.166**	-0.007	-0.007	-0.007	0.022
MANOWN	0.198**	0.660***	1	-0.319***	0.085	-0.391***	-0.238***	0.040	-0.005	-0.020	-0.015
FOROWN	-0.084	-0.176**	-0.319***	1	-0.017	0.129	0.161**	-0.016	0.002	0.015	-0.002
IBD	0.089	0.345***	0.085	-0.017	1	-0.096	-0.083	-0.113	0.067	0.033	0.013
LNSIZE	-0.185**	-0.341***	-0.391***	0.129	-0.096	1	0.153	-0.061	0.029	0.011	0.022
LEV	-0.219***	-0.166**	-0.238***	0.161**	-0.083	0.153	1	0.095	-0.046	-0.016	-0.033
YEARD1	0.015	-0.007	0.040	-0.016	-0.113	-0.061	0.095	1	-0.333***	-0.333***	-0.333***
YEARD2	-0.057	-0.007	-0.005	0.002	0.067	0.029	-0.046	-0.333***	1	-0.333***	-0.333***
YEARD3	0.025	-0.007	-0.020	0.015	0.033	0.011	-0.016	-0.333***	-0.333***	1	-0.333***
YEARD4	0.017	0.022	-0.015	-0.002	0.013	0.022	-0.033	-0.333***	-0.333***	-0.333***	1

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

Table H-2: Logistic regression of Philippines subsample (n=160)

DV: Dummy *T-RPT1*			
Variables	Sign Prediction	Coefficients	p-value
Constant		-4.980	0.020**
FAMOWN (H3)	+	0.942	0.074*
MANOWN (H4)	+	0.483	0.563
FOROWN (H5)	-	-1.599	0.043**
IBD	-	1.768	0.337
LNSIZE	-	0.290	0.011**
LEV	-	-3.059	0.002***
YEARD1		0.095	0.852
YEARD2		-0.078	0.878
YEARD3		0.146	0.772
YEARD4		excluded	excluded
Chi-square	36.941		
Significant	0.000***		
Percentage correct	67.5		
Nagelkerke R square	0.276		

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

Table H-3: OLS regression for Philippines subsample (n=160)

DV: *T-RPT1*				
Variables	Sign Prediction	Coefficients	t- statistics	p-value
Constant		-0.011	-1.809	0.072*
FAMOWN (H3)	+	0.002	0.973	0.332
MANOWN (H4)	+	0.002	0.615	0.539
FOROWN (H5)	-	0.001	0.281	0.779
IBD	-	0.005	0.842	0.401
LNSIZE	-	0.001	2.483	0.014**
LEV	-	-0.013	-5.060	0.000***
YEARD1		excluded	excluded	excluded
YEARD2		-0.001	-0.630	0.530
YEARD3		0.001	0.391	0.697
YEARD4		0.000	-0.093	0.926
F	4.429			
Significant	0.000***			
R^2	0.210			
Adjusted R^2	0.163			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

Appendix I: Country Regression Analysis: Singapore

Regression analysis for the Singapore listed firms subsample (n=160) is provided in this Appendix. Consistent with the previous country specific regression analysis, three country-level variables (*RBE*, *CBE*, and *LO*) are taken out from this analysis. Table I-1 reports the Pearson correlations matrix for the analysis. This table documents unexpected correlations between ownership variables and the dependent variable of *T-RPT1*. There is no correlation found between family ownership (*FAMOWN*) and *T-RPT1* whereas *MANOWN* is negatively correlated with *T-RPT1*. Both correlation coefficients are not statistically significant. An unexpected significant positive correlation is revealed between *MANOWN* and *T-RPT1*. Of four control variables, leverage (*LEV*), has a significant negative correlation with dependent variable. A similar with other ASEAN countries sample findings, family ownership has a significant positive correlation with managerial ownership at a moderate level (0.660). Moreover, *FAMOWN* is significantly negatively correlated with board independence and firm size. Managerial ownership has significant negative correlations with *IBD*, *LNSIZE*, and *LEV* while foreign ownership has a positive correlation with *T-RPT1*.

Table I.2 presents the logistic model of 160 firm-years Singapore listed firms. As revealed in Table I-2, this logistic model has a pseudo Chi-square of 14.954 and it is moderately significant at the 0.10 level. This model has explanatory power of 12.3%. However, Table I.2 reports that family ownership, managerial ownership, and foreign ownership do not have significant coefficients. Findings cannot confirm any proposed ownership hypotheses (H3, H4, and H5). *LNSIZE* is the only significant control variable in this model (p-value<0.01).

Table I-3 displays the OLS regression results for Singapore listed firms. The equation has a highly significant F value (p-value<0.01). The OLS model is able to explain variation in *T-RPT1* value at 11.6% (adjusted R-square). Table I-3 also documents that the two ownership variables (i.e., family ownership and managerial ownership) do not have any statistically significant coefficients. Foreign ownership has a highly significant coefficient with an unexpectedly positive directionality. Those findings indicate that this model does not lend support for H3, H4, and H5. However, the control variables of *LNSIZE* and *LEV* have significant coefficients.

In summary, the logistic and the OLS regression models cannot provide empirical evidence regarding predicted association between the two ownership variables (i.e., family ownership and managerial ownership) and tunneling behavior for Singapore subsample. In addition, the OLS model notes an unexpectedly positive association between foreign ownership and tunneling. Firm size and leverage are confirmed as consistent control variables of tunneling behavior.

Table I-1: Pearson correlations of Singapore subsample (n=160)

	T-RPT1	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT1	1	0.000	-0.084	0.278***	0.043	0.023	-0.186**	-0.051	0.027	0.018	0.006
FAMOWN	0.000	1	0.660***	-0.091	-0.225***	-0.229***	-0.104	-0.015	-0.015	0.015	0.015
MANOWN	-0.084	0.660***	1	-0.084	-0.387***	-0.364***	-0.179**	-0.002	-0.016	-0.012	0.030
FOROWN	0.278***	-0.091	-0.084	1	0.053	0.195**	0.098	-0.110	0.070	0.041	-0.002
IBD	0.043	-0.225***	-0.387***	0.053	1	0.243***	0.080	-0.003	0.003	-0.007	0.007
LNSIZE	0.023	-0.229***	-0.364***	0.195**	0.243***	1	0.087	-0.084	0.008	0.025	0.052
LEV	-0.186**	-0.104	-0.179**	0.098	0.080	0.087	1	0.027	0.020	0.014	-0.061
YEARD1	-0.051	-0.015	-0.002	-0.110	-0.003	-0.084	0.027	1	-0.333***	-0.333***	-0.333***
YEARD2	0.027	-0.015	-0.016	0.070	0.003	0.008	0.020	-0.333***	1	-0.333***	-0.333***
YEARD3	0.018	0.015	-0.012	0.041	-0.007	0.025	0.014	-0.333***	-0.333***	1	-0.333***
YEARD4	0.006	0.015	0.030	-0.002	0.007	0.052	-0.061	-0.333***	-0.333***	-0.333***	1

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

Table I-2: Logistic regression of Singapore subsample (n=160)

DV: Dummy *T-RPT1*			
Variables	Sign Prediction	Coefficients	p-value
Constant		-6.625	0.015**
FAMOWN (H3)	+	0.194	0.679
MANOWN (H4)	+	1.251	0.208
FOROWN (H5)	-	1.149	0.233
IBD	-	0.817	0.610
LNSIZE	-	0.355	0.008***
LEV	-	-0.828	0.371
YEARD1		-0.399	0.425
YEARD2		-0.198	0.699
YEARD3		-0.568	0.258
YEARD4		excluded	excluded
Chi-square	14.954		
Significant	0.092*		
Percentage correct	66.9		
Nagelkerke R square	0.123		

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

Table I-3: OLS regression of Singapore subsample (n=160)

DV: *T-RPT1*				
Variables	Sign Prediction	Coefficients	t- statistics	p-value
Constant		-0.012	-1.854	0.066
FAMOWN (H3)	+	0.001	0.994	0.322
MANOWN (H4)	+	0.002	0.950	0.344
FOROWN (H5)	-	0.008	3.460	0.001***
IBD	-	0.003	0.713	0.477
LNSIZE	-	0.001	2.158	0.033**
LEV	-	-0.005	-2.245	0.026**
YEARD1		excluded	excluded	excluded
YEARD2		0.000	0.089	0.929
YEARD3		0.000	0.224	0.823
YEARD4		0.001	1.169	0.244
F	3.328			
Significant	0.001***			
R^2	0.166			
Adjusted R^2	0.116			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

Appendix J: Country Regression Analysis: Thailand

This appendix provides country regression analysis for Thailand subsample (n=160). Regression analysis does not use the country-level variables of *RBE*, *CBE*, and *LO*. Pearson correlation matrix for the analysis is presented in Table J-1. The second row of Table J-1 shows that family ownership (*FAMOWN*) has a positive correlation with T-RPT1 whereas managerial ownership (*MANOWN*) and foreign ownership (*FOROWN*) are negatively correlated with *T-RPT1*. None of those correlations has a significant coefficient. *FAMOWN* also has a significant positive correlation with *MANOWN* and negative correlations with board independence (*IBD*) and firm size (*LNSIZE*). *MANOWN* has negative correlations with *FOROWN* and *LNSIZE*, and a positive correlation with *IBD* while *FOROWN* is significantly positively correlated with *LNSIZE*. There is no severe multicollinearity problem appeared in the correlation matrix since the highest correlation coefficient is 0.631.

The logistic regression is summarized in Table J-2. Regression result reported in Table J-2 has a pseudo Chi-square of 47.191 with a highly significant p-value at the 0.01 level. This model has a relatively high explanatory power of *T-RPT1* at 34.2%. This table shows that family ownership has highly significant coefficient. Managerial ownership coefficient is also highly significant but it has unexpected directionality while foreign ownership has a highly significant negative coefficient as posited. Hence, results confirm H3 and H5. The logistic model also document that leverage as a significant control variable of tunneling.

Table J-3 highlight results utilizing OLS regression model. The OLS regression model report a statistically highly significant p-value at 0.01 the level indicating that at least one predictor variable can explain variation in dependent variable *T-RPT1*. The equation has an adjusted R-square accounts for 17.0% of the extent of tunneling. As reported in Table J-3, *FAMOWN* has a highly significant coefficient (p-value<0.01) indicating that H3 positing a positive association between family ownership and tunneling is supported. Managerial ownership has a highly significant coefficient, but it has an unexpected negative directionality while foreign ownership has a highly significant negative coefficient as predicted. Result supports H5 stating a negative association between foreign ownership and tunneling. For the control variable, the only *IBD* shows a moderately significant coefficient but it has an unexpected positive directionality.

In summary, regression analysis for 160 firm-years Thailand listed firms is consistent with full sample regression findings by using both regression models. Family ownership has a positive association with tunneling whereas foreign ownership has a negative association with tunneling behavior. Leverage and board independence are found as significant control variables of tunneling of Thailand listed firms.

Table J-1: Pearson correlations of Thailand subsample (n=160)

	T-RPT1	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT1	1	0.026	-0.094	-0.059	0.128	-0.008	-0.031	0.013	0.015	0.002	-0.031
FAMOWN	0.026	1	0.631***	-0.322***	0.021	-0.355***	0.054	-0.036	0.022	-0.007	0.022
MANOWN	-0.094	0.631***	1	-0.462***	0.199**	-0.470***	0.020	-0.010	-0.015	-0.011	0.036
FOROWN	-0.059	-0.322***	-0.462***	1	0.008	0.264***	-0.012	-0.010	0.021	0.008	-0.019
IBD	0.128	0.021	0.199**	0.008	1	-0.060	0.042	-0.093	-0.026	0.052	0.067
LNSIZE	-0.008	-0.355***	-0.470***	0.264***	-0.060	1	0.224***	-0.068	0.026	-0.004	0.046
LEV	-0.031	0.054	0.020	-0.012	0.042	0.224***	1	0.008	-0.020	-0.011	0.022
YEARD1	0.013	-0.036	-0.010	-0.010	-0.093	-0.068	0.008	1	-0.333***	-0.333***	-0.333***
YEARD2	0.015	0.022	-0.015	0.021	-0.026	0.026	-0.020	-0.333***	1	-0.333***	-0.333***
YEARD3	0.002	-0.007	-0.011	0.008	0.052	-0.004	-0.011	-0.333***	-0.333***	1	-0.333***
YEARD4	-0.031	0.022	0.036	-0.019	0.067	0.046	0.022	-0.333***	-0.333***	-0.333***	1

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

Table J-2: Logistic regression for Thailand subsample (n=160)

DV: Dummy *T-RPT1*			
Variables	Sign Prediction	Coefficients	p-value
Constant		-2.611	0.414
FAMOWN (H3)	+	1.525	0.003***
MANOWN (H4)	+	-4.677	0.000***
FOROWN (H5)	-	-4.504	0.000***
IBD	-	3.128	0.121
LNSIZE	-	0.050	0.753
LEV	-	3.394	0.001***
YEARD1		0.141	0.791
YEARD2		0.341	0.516
YEARD3		0.329	0.529
YEARD4		excluded	excluded
Chi-square	47.191		
Significant	0.000***		
Percentage correct	71.2		
Nagelkerke R square	0.342		

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

Table J-3: OLS regression for Thailand subsample (n=160)

DV: *T-RPT1*				
Variables	Sign Prediction	Coefficients	t- statistics	p-value
Constant		-0.013	-1.542	0.125
FAMOWN (H3)	+	0.006	4.880	0.000***
MANOWN (H4)	+	-0.011	-3.946	0.000***
FOROWN (H5)	-	-0.008	-3.779	0.000***
IBD	-	0.009	1.687	0.094*
LNSIZE	-	0.001	1.402	0.163
LEV	-	0.001	0.382	0.703
YEARD1		0.001	0.397	0.692
YEARD2		0.001	0.512	0.610
YEARD3		excluded	excluded	excluded
YEARD4		0.000	-0.191	0.849
F	4.614			
Significant	0.000***			
R^2	0.217			
Adjusted R^2	0.170			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

Appendix K: OLS Regression *T-RPT2* of Tunneling Group (n=216)

This appendix provides additional analysis to the Section 6.8 in the main text. Regression analysis uses a sample of 216 firm-year observations that categorized as Tunneling firms by using *T-RPT2*. The unit analysis is part of 410 cases that previously categorized as Non-Tunneling firm using *T-RPT1* criteria. Of 410 cases, 216 cases are classified as Tunneling firms and the remaining 194 cases are classified as Non-Tunneling firms when using *T-RPT2* criteria. Pearson correlation matrix for this analysis is provided in Table K-1 while regression results are reported in Table K-2 and K-3.

Table K-1 documents that *regulatory* business environment (*RBE*) and *competitive* business environment (*CBE*) have negative correlations with *T-RPT2*. Although the directionality as predicted, both coefficients are not significant. For the ownership variable, Table K-1 reveals that those variables (i.e., *FAMOWN*, *MANOWN*, and *FOROWN*) have negative correlations with *T-RPT2*. However, the only correlation coefficient between *MANOWN* and *T-RPT1* is significant. Two control variables (firm size and leverage) show significant correlations with *T-RPT2*. A significant very high correlation is found between *RBE* and *CBE* (0.938; p<0.01) suggesting multicollinearity concerns. *RBE* is also significantly correlated with *MANOWN*, *FOROWN* and board independence (*IBD*) while CBE is significantly correlated with *IBD*, legal origin (*LO*) and firm size (*LNSIZE*). Significant correlations are also found between *FAMOWN* several independent and control variables: *MANOWN* (positive; p-value<0.01); *FOROWN* (negative; p-value<0.01); and *LNSIZE* (negative; p-value<0.01). Managerial ownership has significant negative correlations with *FOROWN*, *IBD*, and *LNSIZE* while *FOROWN* reveals a significant positive correlation with *LNSIZE*.

As conducted in the main analysis, two OLS regression equations are utilized to overcome multicollinearity problem between *RBE* and *CBE*. Table K-2 summarized OLS regression results with exclusion of *CBE* variable. This model has a highly significant F-value at the 0.01 level and has the explanatory power 7.6% (adjusted R-square). This explanatory power is slightly higher than the model using 410 cases (6.1%, see Table 6.9).

Similar with model in Table 6.9, this regression result documents that *RBE* has a moderately significant coefficient with a negative directionality. This result partially support H1 positing a negative association between *regulatory* business environment and tunneling. As findings in Table 6.9, both managerial and foreign ownership have a negative significant coefficient (p-value<0.01 and p-value<0.1, respectively). These findings indicate rejection of H4 dealing with a positive association between managerial ownership and tunneling via RPTs. On the other hand, H5 predicting a negative association between foreign ownership and tunneling is partially supported. As for the control variables, *LNSIZE* and *LEV* show statistically significant coefficients.

Table K-1: Pearson correlations of Tunneling firms (n=216)

	T-RPT2	*RBE*	*CBE*	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LO*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT2	1	-0.133	-0.091	-0.014	-0.166**	-0.071	-0.084	0.097	-0.148**	0.185***	-0.028	0.004	0.004	0.022
RBE	-0.133	1	0.938***	0.009	0.212***	-0.138**	0.339***	-0.772***	0.112	-0.061	0.096	-0.042	0.030	-0.087
CBE	-0.091	0.938***	1	0.035	0.122	-0.100	0.443***	-0.682***	0.138**	-0.068	0.104	-0.048	0.027	-0.087
FAMOWN	-0.014	0.009	0.035	1	0.556***	-0.348***	-0.078	-0.053	-0.289***	0.137**	-0.035	0.073	-0.007	-0.035
MANOWN	-0.166**	0.212***	0.122	0.556***	1	-0.363***	-0.171**	-0.185***	-0.326***	-0.074	0.063	0.012	-0.025	-0.052
FOROWN	-0.071	-0.138**	-0.100	-0.348***	-0.363***	1	0.119	0.014	0.219***	-0.079	-0.076	0.013	0.025	0.040
IBD	-0.084	0.339***	0.443***	-0.078	-0.171**	0.119	1	-0.426***	0.268***	-0.111	-0.026	-0.025	0.035	0.018
LO	0.097	-0.772***	-0.682***	-0.053	-0.185***	0.014	-0.426***	1	-0.248***	0.087	-0.080	0.004	-0.005	0.084
LNSIZE	-0.148**	0.112	0.138**	-0.289***	-0.326***	0.219***	0.268***	-0.248***	1	-0.114	-0.042	-0.056	0.095	0.005
LEV	0.185***	-0.061	-0.068	0.137**	-0.074	-0.079	-0.111	0.087	-0.114	1	0.101	-0.036	-0.019	-0.048
YEARD1	-0.028	0.096	0.104	-0.035	0.063	-0.076	-0.026	-0.080	-0.042	0.101	1	-0.358***	-0.337***	-0.320***
YEARD2	0.004	-0.042	-0.048	0.073	0.012	0.013	-0.025	0.004	-0.056	-0.036	-0.358***	1	-0.345***	-0.328***
YEARD3	0.004	0.030	0.027	-0.007	-0.025	0.025	0.035	-0.005	0.095	-0.019	-0.337***	-0.345***	1	-0.309***
YEARD4	0.022	-0.087	-0.087	-0.035	-0.052	0.040	0.018	0.084	0.005	-0.048	-0.320***	-0.328***	-0.309***	1

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

Table K-2: OLS regression: *T-RPT2* of Tunneling Group (exclusion of *CBE*; n=216)

DV: *T-RPT2*				
Variables	Sign Prediction	Coefficients	t- statistics	p-value
Constant		0.137	3.152	0.002***
RBE (H1)¶	-	-0.007	-1.622	0.106*
FAMOWN (H3)	+	0.000	0.055	0.957
MANOWN (H4)	+	-0.031	-3.086	0.002***
FOROWN (H5)	-	-0.013	-1.787	0.075*
IBD	-	-0.013	-0.860	0.391
LO	+	-0.011	-1.603	0.111
LNSIZE	-	-0.003	-2.715	0.007***
LEV	-	0.013	1.908	0.058*
YEARD1		-0.002	-0.323	0.747
YEARD2		excluded	excluded	excluded
YEARD3		0.002	0.339	0.735
YEARD4		0.001	0.268	0.789
F	2.598			
Significant	0.004***			
R^2	0.123			
Adjusted R^2	0.076			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.
¶Because of severe multicollinearity (see Table K-1), *CBE* (H2) is not tested in the above regression table.

The second OLS model with exclusion of *RBE* is presented in Table K-3. This alternate model has similar results with model in Table K-2. Table K-2 documents that *CBE* has no significant coefficient suggesting rejection of H2. Therefore, a negative association between *competitive* business environment and tunneling is not supported by empirical evidence. A similar finding with Table K-2 is found for managerial ownership that has a significant coefficient but unexpected directionality. Foreign ownership has a negative coefficient as predicted but the coefficient is not significant (p-value=0.120). This model reveals *LNSIZE* and *LEV* have significant coefficients at the 0.05 and 0.10 levels respectively.

Overall, partitioned sample regression model solely uses *T-RPT2* Tunneling firms (n=216) has consistent results with model using n=410. This model can partially supports H1 positing a negative association between *regulatory* business environment and tunneling. In addition, a negative association between foreign ownership and tunneling (H5) are also partially supported. Firm size and leverage are confirmed as robust control variables of tunneling.

Table K-3: OLS regression: *T-RPT2* of Tunneling Group (exclusion of *RBE*; n=216)

DV: *T-RPT2*				
Variables	Sign Prediction	Coefficients	t- statistics	p-value
Constant		0.098	2.573	0.011**
CBE (H2)[§]	-	-0.002	-0.601	0.549
FAMOWN (H3)	+	0.002	0.340	0.734
MANOWN (H4)	+	-0.033	-3.265	0.001***
FOROWN (H5)	-	-0.012	-1.561	0.120
IBD	-	-0.012	-0.809	0.419
LO	+	-0.005	-0.858	0.392
LNSIZE	-	-0.003	-2.576	0.011**
LEV	-	0.013	1.847	0.066*
YEARD1		-0.002	-0.340	0.734
YEARD2		excluded	excluded	excluded
YEARD3		0.001	0.265	0.792
YEARD4		0.001	0.251	0.802
F	2.366			
Significant	0.009***			
R^2	0.113			
Adjusted R^2	0.065			

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

[§]Because of severe multicollinearity (see Table K-1), *RBE* (H1) is not tested in the above regression table.

Appendix L: **Logistic Regression Results for *T-RPT2* (n=410)**

This appendix extends OLS regression analysis in Section 6.8 (see also Appendix E) by providing logistic regression model for 410 cases previously classified as Non-Tunneling firms in the main analysis. Prior to regression analysis, Pearson correlation matrix is presented in Table L-1. As can be seen in Table L-1, *regulatory* business environment (*RBE*) and *competitive* business environment (*CBE*) have significant negative correlations with *T-RPT2* as predicted. Family ownership (*FAMOWN*), managerial ownership (*MANOWN*) and foreign ownership (*FOROWN*), also show negative correlation with *T-RPT2*. However, the only correlation between foreign ownership and *T-RPT 2* has directionality as predicted but its coefficient is not significant. Similar with the main model, there is a very high correlation between *RBE* and *CBE* (0.948) prompting a multicollinearity problem. Legal origin (*LO*) and leverage (*LEV*) are control variables that have significant correlation with *T-RPT2*. Family ownership reveals a significant positive correlation with *MANOWN* and negative correlation with *LO*, *LNSIZE*, and *LEV*. MANOWN is significantly negatively correlated with *FOROWN*, *LO*, *LNSIZE* and *LEV* while *FOROWN* shows positive correlation with *LO* and *LNSIZE*.

Considering a severe multicollinearity between *RBE* and *CBE*, those variables are tested in separate equations as performed in the main text. The first logistic regression results with exclusion of *CBE* are displayed in Table L-2. As reported in Table L-2, this model has pseudo Chi-square of 79.175 with a highly significant p-value at the 0.01 level. This equation has an explanatory power of firm tunneling status by 23.4%. Unlike the OLS model, none of the independent variables shows a statistically significant coefficient. The three control variables including *LO*, *LNSIZE*, and *LEV* reveal statistically significant coefficients (at the 0.01, 0.01, and 0.05 levels).

The second running logistic regression with exclusion of *RBE* is summarized in Table L-3. As appeared in Table L-3, p-value for pseudo Chi-square is highly significant (p-value<0.01). The explanatory power is exactly the same with the first equation at 23.4%. Similar with the first equation, none of the independent variables has a significant coefficient. This model also reports three significant control variables of tunneling, i.e., *LO*, *LNSIZE*, and *LEV*.

In comparison with OLS model in Section 6.8 and Appendix E, logistic model for n=410 cannot provide any empirical evidence regarding association between proposed independent variables (business environments and ownership variables) and tunneling via RPTs. However, the logistic model corroborates previous findings regarding the control variables of tunneling. Again, legal origin, firm size and leverage are able to explain tunneling behavior.

Table L-1: Pearson correlations of Tunneling and Non-Tunneling firms (n=410)

	T-RPT2	*RBE*	*CBE*	*FAMOWN*	*MANOWN*	*FOROWN*	*IBD*	*LO*	*LNSIZE*	*LEV*	*YEARD1*	*YEARD2*	*YEARD3*	*YEARD4*
T-RPT2	1	-0.139***	-0.102**	-0.043	-0.176***	-0.025	-0.078	0.133***	-0.053	0.170***	-0.015	0.010	-0.002	0.007
RBE	-0.139***	1	0.948***	0.029	0.255***	-0.204***	0.243***	-0.749***	0.023	-0.050	0.019	-0.006	0.046	-0.061
CBE	-0.102**	0.948***	1	0.052	0.190***	-0.185***	0.330***	-0.634***	0.063	-0.022	0.020	-0.003	0.052	-0.069
FAMOWN	-0.043	0.029	0.052	1	0.614***	-0.365***	0.015	-0.148***	-0.200***	-0.021	0.000	0.022	-0.017	-0.005
MANOWN	-0.176***	0.255***	0.190***	0.614***	1	-0.448***	-0.011	-0.310***	-0.302***	-0.176***	0.038	0.003	-0.018	-0.023
FOROWN	-0.025	-0.204***	-0.185***	-0.365***	-0.448***	1	0.039	0.118**	0.218***	0.051	-0.049	0.025	0.000	0.026
IBD	-0.078	0.243***	0.330***	0.015	-0.011	0.039	1	-0.324***	0.195***	-0.064	-0.056	-0.013	0.050	0.019
LO	0.133***	-0.749***	-0.634***	-0.148***	-0.310***	0.118**	-0.324***	1	-0.140***	0.186***	-0.008	0.006	-0.024	0.027
LNSIZE	-0.053	0.023	0.063	-0.200***	-0.302***	0.218***	0.195***	-0.140***	1	-0.009	-0.071	-0.019	0.060	0.030
LEV	0.170***	-0.050	-0.022	-0.021	-0.176***	0.051	-0.064	0.186***	-0.009	1	0.072	-0.005	-0.019	-0.049
YEARD1	-0.015	0.019	0.020	0.000	0.038	-0.049	-0.056	-0.008	-0.071	0.072	1	-0.340***	-0.338***	-0.325***
YEARD2	0.010	-0.006	-0.003	0.022	0.003	0.025	-0.013	0.006	-0.019	-0.005	-0.340***	1	-0.342***	-0.329***
YEARD3	-0.002	0.046	0.052	-0.017	-0.018	0.000	0.050	-0.024	0.060	-0.019	-0.338***	-0.342***	1	-0.327***
YEARD4	0.007	-0.061	-0.069	-0.005	-0.023	0.026	0.019	0.027	0.030	-0.049	-0.325***	-0.329***	-0.327***	1

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level (2-tailed).

Table L-2: Logistic regression: *T-RPT2* (exclusion of *CBE*; n=410)

DV:Dummy *T-RPT2*			
Variables	Sign Prediction	Coefficients	p-value
Constant		-9.851	0.000***
RBE (H1) ¶	-	0.097	0.680
FAMOWN (H3)	+	0.011	0.969
MANOWN (H4)	+	-0.619	0.278
FOROWN (H5)	-	-0.104	0.819
IBD	-	-0.439	0.585
LO	+	1.321	0.000***
LNSIZE	-	0.446	0.000***
LEV	-	0.976	0.039**
YEARD1		0.326	0.302
YEARD2		0.302	0.333
YEARD3		0.046	0.883
YEARD4		excluded	excluded
Chi-square	79.175		
Significant	0.000***		
Percentage correct	68.5		
Nagelkerke R square	0.234		

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

¶Because of severe multicollinearity (see Table L-1), *CBE* (H2) is not tested in the above regression table.

Table L-3: Logistic regression: *T-RPT2* (exclusion of *RBE*; n=410)

DV:Dummy *T-RPT2*			
Variables	Sign Prediction	Coefficients	p-value
Constant		-8.696	0.000***
CBE (H2) §	-	-0.061	0.735
FAMOWN (H3)	+	-0.023	0.934
MANOWN (H4)	+	-0.600	0.292
FOROWN (H5)	-	-0.173	0.704
IBD	-	-0.358	0.662
LO	+	1.153	0.000***
LNSIZE	-	0.442	0.000***
LEV	-	1.034	0.029**
YEARD1		0.336	0.288
YEARD2		0.311	0.318
YEARD3		0.061	0.847
YEARD4		excluded	excluded
Chi-square	79.120		
Significant	0.000***		
Percentage correct	69.3		
Nagelkerke R square	0.234		

Notes: * moderately significant at p-value<0.10 level, ** significant at p-value<0.05 level, *** highly significant at p-value<0.01 level.

§ Because of severe multicollinearity (see Table L-1), *RBE* (H1) is not tested in the above regression table