THE ROLE OF INVESTOR PROTECTION AND CORPORATE GOVERNANCE IN MITIGATING INSIDER TRADING

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THE ROLE OF INVESTOR PROTECTION AND CORPORATE GOVERNANCE IN MITIGATING INSIDER TRADING

by

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ABSTRAK

Meskipun kerajaan berusaha memperkukuh dan menguatkuasakan undang-undang perlindungan perlabur terhadap perdagangan orang dalam, orang dalam masih berjaya menyembunyikan tindakan mereka dengan menggunakan kaedah-kaedah yang lebih baru dan canggih. Walaupun kajian ini tidak menafikan keberkesanan perlindungan undang-undang, pencarian mekanisme lain yang berpotensi untuk memperkukuhkan fungsi perlindungan pelabur dalam mengurangkan perdagangan orang dalam masih bermanfaat. Oleh itu, kajian ini bertujuan untuk mengkaji keberkesanan perlindungan pelabur dan mekanisme-mekanisme tadbir urus korporat (tadbir urus korporat di tahap firma, persaingan pasaran produk, dan leverage kewangan) dalam mengatasi perdagangan orang dalam. Selain daripada siri ujian diagnostik dan pendekatan pemulihan, kajian ini juga menangani isu-isu endogeneity dan perdagangan orang dalam yang berterusan dengan menggunakan penganggar kuasa dua terkecil dua-peringkat and kaedah momen umum dinamik. Set data panel terdiri daripada sekurang-kurangnya 26806 pemerhatian firma-tahun daripada 42 negara yang merangkumi tahun 2002-2015. Penemuan kajian menunjukkan bahawa perlindungan pelabur dan persaingan pasaran produk secara amnya berkesan dalam mengurangkan perdagangan orang dalam. Walau bagaimanapun, fungsi persaingan pasaran produk adalah terhad apabila perdagangan orang dalam adalah berterusan. Sebaliknya, dapatan kajian juga menunjukkan bahawa fungsi-fungsi tadbir urus korporat di tahap syarikat dan leverage kewangan adalah tidak ketara dalam mengurangkan perdagangan orang

dalam. Secara keseluruhannya, selain menunjukkan perkaitan teori pencegahan dan kepentingan sekatan undang-undang, hasil kajian juga menyiratkan bahawa kerajaan sepatutnya menggalakkan persaingan pasaran produk untuk membendung perdagangan orang dalam. Selain itu, hasil kajian juga mencadangkan bahawa, bagi sesuatu mekanisme untuk menjadi berkesan dan paling baik dalam mengurangkan perdagangan orang dalam, ia sepatutnya, tidak boleh mempunyai sebarang perhubungan dengan orang dalam.

THE ROLE OF INVESTOR PROTECTION AND CORPORATE GOVERNANCE IN MITIGATING INSIDER TRADING

ABSTRACT

Despite the efforts of governments to strengthen and enforce the investor protection laws, insider trading is still evident as insiders have been shown to counteract using new and more sophisticated trading methods to camouflage their actions. Although this study does not deny the effectiveness of legal protection, an exploration of other potential mechanisms that could reinforce the function of investor protection in alleviating insider trading is still worthwhile. Therefore, this study aims to examine the underlying effects of country-level investor protection and corporate governance mechanisms (firm-level corporate governance, product market competition, and financial leverage) on insider trading. On top of a series of diagnostic tests and remedial approaches, this study also addresses the potential endogeneity and persistent insider trading issues by using the two-stage least squares and the dynamic generalized method of moments estimators. The panel data set consists of at least of 26806 firm-year observations from 42 different countries, spanning from year 2002 to 2015. The results generally show that investor protection and product market competition per se are effective and can substitute each other in mitigating insider trading. However, the function of the product market competition is restricted when insider trading is persistent. On the other hand, the role of the firm-level corporate governance and financial leverage are found to be insignificant in this study. In conclusion, on top of showing the relevance of deterrence theory and the importance of legal sanctions, the results also imply that government should encourage greater product market competition in curbing insider trading. In addition,

the results also suggest that, for a mechanism to be effective in mitigating insider trading, it should, at best, be independent from insiders.

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter begins with the background and overview of insider trading, and how it is affected by country-level investor protection. Then, the next section (Section 1.3) discusses the motivations and problem statements of the study. This is followed by the outline of research questions and objectives in Sections 1.4 and 1.5 respectively. The theoretical and practical contributions of the study are presented in Section 1.6, whereas the key terms used in this study are summarized in Section 1.7. This chapter ends with a brief description of the organization of the entire thesis.

1.2 Research Background

The World Development Indicators[1] of World Bank reported that in 94 countries worldwide, the global stock market capitalization has risen to $61.78 trillion U.S. dollars (or 98.7% of GDP) in 2015 from $51.45 trillion U.S. dollars (or 86.8% of GDP) in 2010. On top of that, its total value of shares traded is 1.63 times of the total market capitalization in 2015, which is higher than the 1.31 times in 2010. While the significant roles of stock markets in financial and economic developments are well recognized, attempt by regulatory agencies in promoting and sustaining the growth of stock markets has proved challenging. The prevalent view is that the stock market is imperfect due to weakly functioning institutions and impotent legal systems. The absence of strong institutional and legal frameworks could disproportionately diminish investor confidence and limit the supply of capital in financial markets. When a

[1] Source: World Development Indicators, The World Bank. URL: http://wdi.worldbank.org/table/5.4. Accessed on 23 July 2016.

financial market has weak investor protections and is negatively impacted by financial frauds and scandals, the confidence of investors will be undermined. As a result, investors will refrain from trading and in turns, public investment will reduce and cost of capital will increase. Although most countries have legislations in deterring financial frauds, one of the main challenges facing by regulators worldwide is how to legislate more effective laws and regulations in strengthening investor protection particularly against insider trading.

The debate on the effects of insider trading is still ongoing between two opposing schools of thought. The proponents of insider trading argue that insider trading can function as a compensation mechanism in rewarding management and it leads to more efficient stock prices (Carlton & Fischel, 1983; Dye, 1984; Ma & Sun, 1998; Manne, 1966). In particular, most of the advocates of insider trading have focused on the informativeness and efficiency of stock prices that could lead to more efficient markets (e.g., Meulbroek, 1992; Piotroski & Roulstone, 2004; Ronen, 2000). Another group of scholars also believes that insider trading can reduce the compensation cost and induces incentives for innovations among managers that will in turn enhance the firm's value (e.g., Carlton & Fischel, 1983; Dye, 1984; Hu & Noe, 2001).

On the other hand, the contenders of insider trading, on the contrary, argue that insider trading has negative impact on investor confidence, which in turn will deter public investment, increase cost of capital and tarnish the integrity of capital markets (Ausubel, 1990; Gilbert, Tourani-Rad & Wisniewski, 2007; Maug, 2002). Other arguments against insider trading are that it lowers the market efficiency (Brunnermeier, 2005; Fishman & Hagerty, 1992; Keenan, 2000), inflates the cost of information which in turn reduces the analyst coverage (Bushman, Piotroski & Smith, 2005; Gilbert, Tourani-Rad & Wisniewski, 2006), and causes loss of liquidity (Engelen & Van Liedekerke, 2007; Gilbert, Tourani-Rad & Wisniewski, 2007). Similarly, against insider trading, but from a different perspective, a stream of research raises concerns about the fairness and the morality issues of insider trading. Huss and Leete (1987) regard insider trading as a threat to fairness, which would eventually jeopardize the integrity of the market. The results of Cho and Shaub (1991) and Shaw (1990) also suggest that insider trading should be prohibited. This is in parallel to Brudney (1979)'s notion that insider trading could give rise to a perception of unfairness, particularly among outside investors, which will undermine investors' confidence. In a study that concentrates on the morality aspect of insider trading, Hirshleifer (1971) asserts the unethical conduct associated with insider trading. The view is then corroborated by studies such as Strudler and Orts (1999), and Werhane (1989), which are also against insider trading. Opponents of insider trading generally agree that insider trading will diminish investor confidence and raise the cost of capital (Cinar, 1999).

To date, at least 110 (or 95%) of the world's securities markets are regulating insider trading. They share the common core objectives and principles that are also adopted by the World Bank and International Monetary Fund (IMF). These include the protection of investors, assurance of the fairness, efficiency and transparency of markets, and the diminution of systemic risk[2]. This has generally proved that regimes and firms have reached consensus that investor protection is vital and financial markets are in need of insider trading regulations. Investor protection has been viewed as a necessity in cultivating the development of financial markets (La Porta, Lopez-de-Silanes, Shleifer & Vishny, 1997; Poshakwale & Thapa, 2011). Studies such as Gilbert,

[2] Source: The International Organization of Securities Commissions (IOSCO). https://www.iosco.org/. Accessed on 10 August 2015.

Tourani-Rad and Wisniewski (2007) and Maug (2002), among others, have also shown that the investor confidence and financial market integrity could be undermined by financial frauds and market manipulations[3]. Many scholars (Borg, 2007; Gilbert, 2007; Kadir & Muhamad, 2012) also emphasize on the importance of investor protection regulatory framework in safeguarding the fairness and the efficiency of capital markets.

The effectiveness of investor protection in the stock market has always been the main concern of government and regulatory agencies worldwide. The issue has attracted heightened interest in 2013, following the highest record of insider trading penalty in history. The SAC Capital, a U.S. based hedge fund, has agreed to plead guilty in insider trading settlement and pay a total of $1.8 billion U.S. dollars fine to resolve a 7-year probe of criminal insider trading charges brought against the firm by the U.S. Securities and Exchange Commission[4]. The settlement marks the highest fine imposed for insider trading in history since the 1989 insider trading prosecution against the Drexel Burnham Lambert Inc., a Wall Street investment-banking firm, which involved a total of $650 million U.S. dollar penalty[5].

In 2016, another insider trading scandal under the spotlight was reported on the other side of the globe. In the U.K., a chartered accountant and a senior investment banker were brought to court by the Financial Conduct Authority (FCA) after a nine-year long investigation using the nickname "Operation Tabernula". This is the biggest and most complex case ever prosecuted for insider trading in the U.K. as the offenders used nicknames in attempts to camouflage their real identities and used sophisticated encryption systems and unregistered mobiles to conceal their activity. After a four-

[3] Market manipulation is defined as "the trading practices that distort prices and enable manipulators to profit at the expense of other market participants." by Cumming, Johan and Li (2011).

[4] Source: http://www.bloomberg.com/news/articles/2014-04-10/sac-judge-approves-record-insider-trading-accord-with-u-s. Accessed on 23 July 2016.

[5] Source: http://www.nytimes.com/1990/02/14/business/the-collapse-of-drexel-burnham-lambert-key-events-for-drexel-burnham-lambert.html. Accessed on 23 July 2016.

month trial, they were found guilty of conspiring to insider dealings between November 2006 and March 2010, and were sentenced to 3.5 years and 4.5 years imprisonment, respectively[6]. In China, a state-controlled brokerage firm, the Everbright Securities Co. was fined $86 million U.S. dollars (or 523.29 million yuan) in 2013. This is a record insider trading penalty in China and the brokerage's ex-president also faces a life ban from the securities market by the China Securities Regulatory Commission (CSRC)[7].

While the stock markets are booming and are getting more important in the country's development, these incidents as well as other insider trading frauds have raised concerns about the efficacy of investor protection laws in preventing insider trading. Despite the ongoing and increasing efforts of legislators and regulators in strengthening and enforcing investor protection laws (Bhattacharya & Daouk, 2002; Dolgopolov, 2008), insiders have been shown to counteract using new and more sophisticated trading methods to avoid being detected (Barclay & Dunbar, 1996; Giambona & Golec, 2010; McInish, Frino & Sensenbrenner, 2011). Although this does not imply that investor protection regulation is totally ineffective and have no impact on the insider's trading behaviour (Dye, 1984), an exploration of other potentially useful instruments that could reinforce the relationship between investor protection and insider trading is still worthwhile. This study, therefore intends to investigate the potential use of corporate governance mechanisms, interacting with investor protection, in mitigating the (illegal) trades by insiders. By taking the intricacy and large number of likely proxies of governance mechanisms into account, this study takes a comprehensive approach by considering the influences of both internal (firm-

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[6] Source: U.K. Financial Conduct Authority (FCA), http://www.fca.org.uk/news/insider-dealers-sentenced-in-operation-tabernula-trial. Accessed on 23 July 2016.

[7] Source: http://www.bloomberg.com/news/articles/2013-08-30/everbright-securities-hit-with-fines-employee-bans-for-error. Accessed on 24 July 2016.

level corporate governance) and external (product market competition, and financial leverage) governance mechanisms. In addition to their common role in monitoring and disciplining managers, these mechanisms also share mutual linkage to the topic of interest, that is, via the firm-level proprietary information.

1.3 Problem Statement

In spite of the constructive roles of insider trading on managerial compensation scheme and market efficiency, yet, studies that examine the negative impact of insider trading on investor confidence unanimously claim that trades by insiders would diminish investor confidence, deter public investment and damage the integrity of capital markets (Ausubel, 1990; Maug, 2002; Qi, 1996). As Cinar (1999) pointed out, a potential damage of insider trading is the public's perception that the capital market is a place that is full of unethical activities and scams, which in turns will cause investors to lose faith and thence elevate the cost of capital. Therefore, insider trading is considered as a threat to fairness as it would tarnish the market's integrity, and thus financial markets must preserve a fair system in order to encourage investors to trade and assure all market participants are rewarded accordingly (Huss & Leete, 1987).

Governments and regulators worldwide in general have reached consensus that insider trading should be banned. The grounds for banning insider trading are owing to the aims of promoting and preserving the investor confidence, fairness and integrity of the financial market (Ausubel, 1990; Cinar, 1999; Maug, 2002). The effectiveness of newly legislated investor protection law as well as the effects of regulatory change and stricter enforcement in deterring dishonest conduct and behaviour have sparked interest among scholars (e.g., Agrawal & Jaffe, 1995; Garfinkel, 1997; Gilbert & Tourani-Rad, 2008; Madura & Ngo, 2014). The findings of Ackerman, van Halteren and Maug (2008), Bhattacharya and Daouk (2002), and Durnev and Nain (2007) demonstrate that better investor protections are generally associated with fewer insider trading. Both Kadir and Muhamad (2012), and Shin (1996) also agreed that stricter insider trading laws with intense enforcement and severe penalty can deter insider trading. Paternoster and Simpson (1993) and Schlegel (1990) further note that owing to the risk averse nature of corporate offenders, the law is more effective especially in deterring corporate crimes such as insider trading. Nevertheless, not all the scholars unanimously agree that stricter law and intense enforcement can effectively reduce insider trading. For instance, Seyhun (1992) observed only a trivial effect on insider trading following the increased in the extent and enforcement of U.S. insider trading laws in 1980s. Wisniewski and Bohl (2005)'s study also show that insiders gain much more than the expected market returns, and hence conclude that this is due to the insufficiency of investor protection (lax law enforcement).

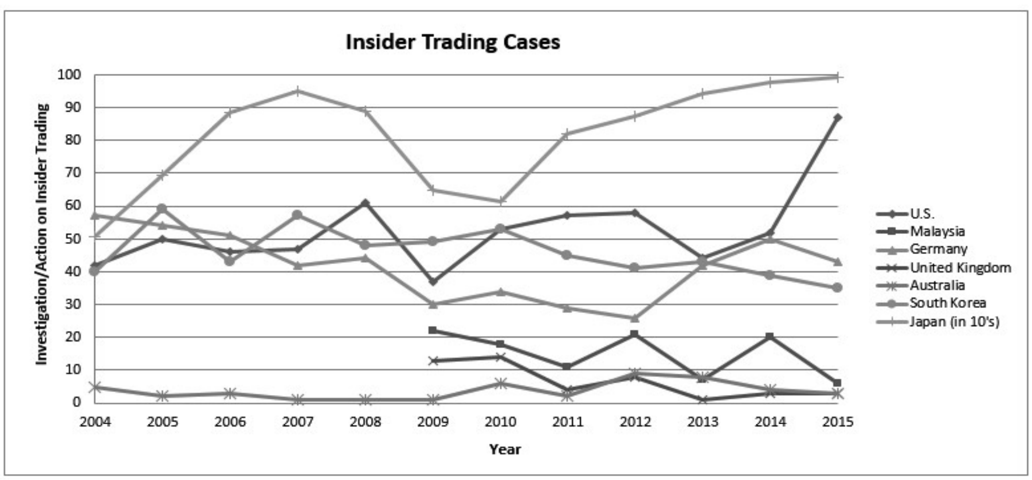

Figure 1.1: The number of insider trading cases in selected countries (U.S., Malaysia, Germany, United Kingdom, Australia, South Korea, and Japan).
Sources: U.S. Securities and Exchange Commission Annual Reports (number of allegations); Malaysia Securities Commission Annual Reports (referrals received)#; Germany Federal Financial Supervisory Authority Annual Reports (new investigations); National Economic Research Associates Reports (indictment of individuals in U.K.); Australian Securities and Investments Commission Annual Reports (convicted cases); South Korea Financial Services Commission Annual Reports (suspected cases); Japan Financial Services Agency Annual Reports (oversight cases). #Insider trading data for Malaysia and U.K. are only available from 2009 onwards.

Despite the efforts of governments in embracing, enforcing and strengthening investor protection laws (Bhattacharya & Daouk, 2002; Dolgopolov, 2008), the number of insider trading cases worldwide is not reducing. Since the world's first prosecution of insider trading (Rule 10b-5, Securities and Exchange Act of 1934) in the U.S. in the year 1961, the incidents of insider trading are still evident and remain persistent, for instance, in the selected countries as reported in Figure 1.1. Although regulators do consistently review and enhance investor protection laws, insider trading, at the same time, might also become less visible to regulators as obstinate insiders might conceal their activities through timing, spreading, deceiving or trading in a more sophisticated pattern (Barclay & Dunbar, 1996; Giambona & Golec, 2010; McInish, Frino & Sensenbrenner, 2011). However, even if regulators failed to detect the offence of insider trading, it would be too hasty to conclude that the regulation is (totally) ineffective since this does not definitely imply that such regulation has no impact on insider's behaviour and contemplating insiders are not deterred (Arshadi, 1998; Dorn, 2011; Dye, 1984).

Although this study, too, does not deny the significant role of investor protection laws in alleviating insider trading, but yet agree with studies that pointed out the deficiencies of laws and the necessity to further strengthen the investor protection against the misconduct of insiders (Bhattacharya & Daouk, 2002; Dolgopolov, 2008; McInish, Frino & Sensenbrenner, 2011). Hence, this has motivated the present study to examine the potency of investor protection in deterring insider trading by using a more recent longitudinal data. This study is grounded on the notion of deterrence theory, which emphasizes the importance of legal sanctions in the conformity of public and crime prevention (Cornish & Clarke, 1986; Packer, 1968).

Moreover, instead of confining the search within the scope of law only, it may also be beneficial if one could explore beyond the law for other potential investor protection mechanism that can diminish insider trading.

The potentiality of the corporate governance mechanisms is examined in this study as they are known to play significant roles in resolving agency problems, and also provide better investor protection by restraining managerial misbehaviour and alleviating information asymmetry (Armstrong, Balakrishnan & Cohen, 2012; Campbell, 1979; Frankel & Li, 2004; Grossman & Hart, 1982; Hart, 1983; Jensen, 1986; Shleifer, 1985; Shleifer & Vishny, 1997). Furthermore, in line with the notion of monitoring hypothesis, a better corporate governance and stricter monitoring are shown to discourage insider trading (Amira, John, Prezas & Vasudevan, 2013; Cziraki, De Goeij & Rennboog, 2014; Fidrmuc, Korczak & Korczak, 2013).

Fortified by the aforementioned rationales, this study, hence attempts to study the potentials of corporate governance mechanisms (i.e. firm-level corporate governance, product market competition, and financial leverage) in relation to investor protection in mitigating insider trading. In sum, on top of strengthening the investor protection merely from the law's perspective, this study proposes to address the issue from the view of corporate governance mechanisms. In hope, this could provide a better insight into the issue and perhaps could be one of the feasible ways of strengthening the law in protecting investors from the detrimental effects of insider trading.

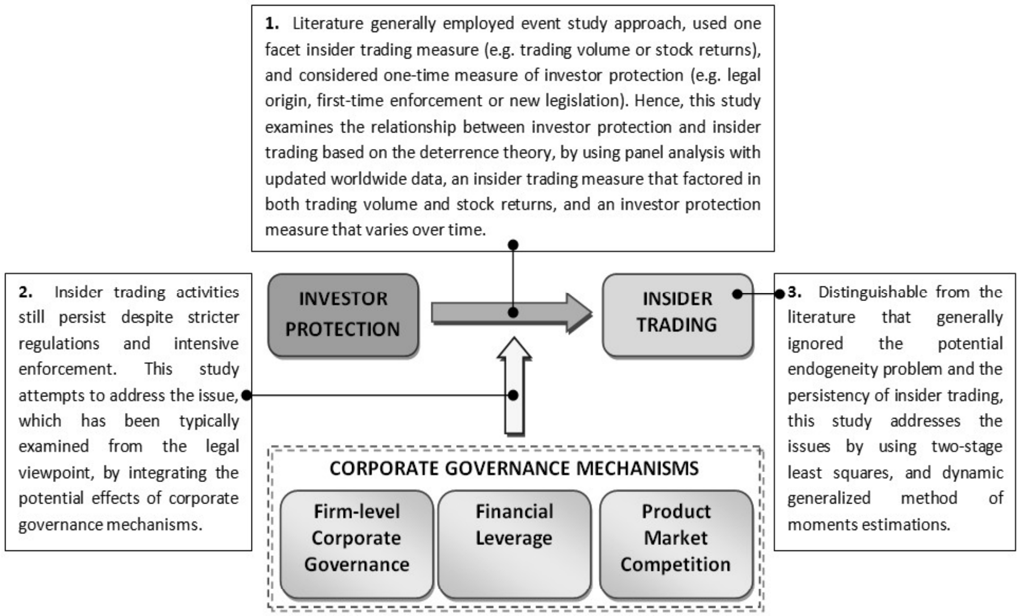

Figure 1.2: The main research gaps.

1.4 Research Questions

The main issue materializes from the above deliberations is the necessity to identify other means that could possibly reinforce the function of regulatory laws in protecting investors from insider trading. Based on the view that corporate governance mechanisms are significant in constraining managerial opportunistic behaviour and diminishing information asymmetry, this study, hence aims to address the central research question: "Can investor protection and corporate governance mechanisms mitigate insider trading?"

In more specific, this study attempts to answer the main research question by examining the following sub-questions:

1. What is the relationship between country-level investor protection and insider trading?

2. What is the relationships between corporate governance mechanisms (firm-level corporate governance, product market competition, and financial leverage) and insider trading?
3. How do the corporate governance mechanisms (firm-level corporate governance, product market competition, and financial leverage) interact with investor protection in mitigating insider trading?

1.5 Research Objectives

The primary research objective of this study is to investigate the role of investor protection and corporate governance mechanisms in mitigating insider trading. Specifically, the sub-objectives of this study are as follows:

1. To examine the relationship between country-level investor protection and insider trading.
2. To study the relationships between corporate governance mechanisms (firm-level corporate governance, product market competition, and financial leverage) and insider trading.
3. To study the interaction effects of corporate governance mechanisms (firm-level corporate governance, product market competition, and financial leverage) and investor protection on insider trading.

1.6 Significance and Contribution of Study

The significance and contribution of this study to existing knowledge and practices are manifold. First, this study enriches existing literature that has typically examined the impacts of investor protection from the legal viewpoint. These studies posed question whether more stringent legal environment with intense enforcement can offer better protection to investors (e.g., Beny, 2005; Durnev & Nain, 2007). More specifically, legal systems worldwide have adopted securities laws and other investor protection regulations in protecting investors, in which the functionality of these laws is generally built on the notion of deterrence theory (Cornish & Clarke, 1986; Packer, 1968). Legislators and regulators have great faith in laws and strongly believed that a crime such as the insider trading would be negatively impacted by strict regulations and intense enforcement (Arshadi, 1998; Paternoster & Simpson, 1993; Schlegel, 1990). However, their beliefs are being challenged by the facts that insider trading still persists despite their efforts. Besides, this study also notes the caveat on the difficulty in precisely identifying the events that involved insider trading (Abumustafa & Nusair, 2011; Barclay & Dunbar, 1996). Therefore, on top of providing evidence that could corroborate the notion of deterrence theory by using updated worldwide panel data, this study is also distinguishable from literature that employed event study approach in examining the relationship between investor protection and insider trading (e.g., Ackerman, van Halteren & Maug, 2008; Madura & Ngo, 2014; Wisniewski & Bohl, 2005).

Second, a strand of research that stemmed from the agency theory of Jensen and Meckling (1976) focuses specifically on the substitute or complementary function between investor protection by law and corporate governance mechanisms (e.g., Becher & Frye, 2011; Boubakri, Cosset & Guedhami, 2005; Mitton, 2004). The general aim of the corporate governance system is shown to be in parallel with the goal of the legal system, that is, to safeguard the wealth and maximize the benefits of stakeholders through monitoring and disciplining managers. Its effectiveness has been well supported by empirical evidence as well (Cheung & Chan, 2004; Dunlop, 1999; Kaplan, 1997). Although studies have reported plausible evidence on the efficacy of proper legal and corporate governance systems in protecting investors, yet their interplay with insider trading has received little attention[8]. Hence, this study can be distinguished from existing literature as it attempts to fill the gap by addressing the interaction effects between investor protection and corporate governance mechanisms in the same model in mitigating insider trading. More importantly, the findings, perhaps can shed light on the underlying interaction effects between the investor protection and corporate governance mechanisms, which are essential in the battle against the insider trading.

Third, on top of addressing the potential endogeneity issue by using the two-stage least squares (2SLS)[9], this study also takes a distinctive approach by including the persistence of insider trading into the models via the dynamic generalized method of moments (GMM) estimations. The consideration of the dynamic model is jointly motivated by two reasons. First, the model is formulated after taking into account of the possibility that insiders might persistently exploit the long-lived and newly emerged private information (Holden & Subrahmanyam, 1992; Zhou, 2012), which is also in line with Grishchenko, Litov and Mei (2002)'s suggestion that researcher should investigate whether asymmetric information is persistent or not as insiders might obstinately exploit private information through insider trading. Second, the dynamic GMM model relaxes the assumption of homoscedasticity of error terms and has advantages over the 2SLS estimator (Stock & Watson, 2012). This hence permits a comparison of the consistency of the estimations with and without the homoscedasticity assumption.

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[8] It is worth to note that there are studies examining the interaction effects of country- and firm-level governance mechanisms but mostly are related to firm performance and economic developments (Aguilera & Jackson, 2010; Bruno & Claessens, 2010; Chen, Chen & Wei, 2009; La Porta, Lopez-de-Silanes, Shleifer & Vishny, 2000a).

[9] The two-stage least squares (2SLS) is a special case of generalized method of moments (Baum, Schaffer & Stillman, 2003).

Fourth, although there are other proxies for insider trading in literature, such as the insider trading volume (Chakravarty & McConnell, 1999; Meulbroek, 1992), stock price informativeness (Fernandes & Ferreira, 2009; Yu, Li, Tian & Zhang, 2013), probability of informed trading (Brockman & Yan, 2009; Byun, Hwang & Lee, 2011), and share abnormal returns (Bhattacharya & Marshall, 2012; Wisniewski & Bohl, 2005), yet these estimates are computed from either share prices or trading volumes only. Therefore, unlike the aforesaid studies, this study adopts a more comprehensive measure of insider trading, that is the private information-based trading of Llorente, Michaely, Saar and Wang (2002). By contrast, the private information-based trading measure considers realized transactions data and it also factored in both facets of share prices and trading volumes in its estimation. The measure has been used in studies such as in Durnev and Nain (2007), Fernandes and Ferreira (2009), Ferreira and Laux (2007), Reeb, Zhang and Zhao (2012), and Yu (2011), among others. The choice of investor protection measure is also done after much consideration. Following the studies that have shown that laws and legal protections do evolve over time (Bordo & Rousseau, 2006; Freeman, Pearson & Taylor, 2013; Sgard, 2006), therefore, different from the studies that have employed one-time protection measure such as the legal origin (Beck, Demirguc-Kunt & Levine, 2003b; La Porta, Lopez-De-Silanes, Shleifer & Vishny, 1997) and the first time law enforcement (Bhattacharya & Daouk, 2002; Bris, 2005), this study uses the rule of law as it best matches the time varying characteristic of legal protection, as well as being widely employed as a proxy for investor protection (e.g. Enikolopov, Petrova & Stepanov, 2014; Gupta, Prakash & Rangan, 2013; Jeanjean, 2012; Miller & Puthenpurackal, 2002).

Fifth, the continuing efforts of governments worldwide in strengthening the protection of investors have faced challenges as insider trading still occurring. The deterrence effect of more stringent sanctions is not as expected and insiders continue to use subtler ways (e.g. timing, spread, or camouflage their trades) in exploiting private information to avoid being detected. Although literature generally do not refute the fact that strong legal protection could reduce insider trading, scholars and practitioners unanimously concur that the protection of investor by law still have room of improvement. Besides, Dyck, Morse and Zingales (2010) and Piotroski (2013) have also pointed out that, since corporate fraud detection by typical inspectors (e.g., federal regulators, auditors, and investors) is rigid and costly, it is usually less effective than the non-conventional actors (e.g., employees, industry regulators and media). Therefore, motivated by the above, this study attempts to explore outside the scope of law for alternative mechanisms that could strengthen the investor protection. The findings of this study can provide insight into the potency of corporate governance mechanisms, interacting with investor protection, in mitigating insider trading. Instead of depending on the law alone, policymakers perhaps could deal with the insider trading by concentrating on these governance mechanisms as well. Hence, on top of consolidating the laws to alleviate insider trading, maybe governments should also strengthen the firm-level corporate governance, encourage greater product market competition and also improve the creditors' incentive to monitor their borrowers.

Lastly, the findings of this study could be valuable to the principals (e.g. shareholders) of firms in monitoring the agents (e.g. managers) and also for the investors in investment decision making. This study enriches the literature by proposing an additional function of corporate governance mechanisms, together with investor protection, that is to restrain insiders from engaging in insider trading. As the saying goes, "one bad apple spoils the bunch". Hence, on top of minimizing the agency cost, this definitely will provide extra incentive for firms to strive for a better corporate governance, especially for firms with notable reputational capital, in protecting investor confidence and their image from being tarnished by insider trading (Dyck, Morse & Zingales, 2010; Hirschey & Jones, 2001). The findings reported in this study are also beneficial to investors, particularly in the process of investment portfolio construction. Studies have reported that investors are inclined to invest in countries with strong investor protection and tend to avoid problematic firms (Boubakri, Cosset & Guedhami, 2005; Leuz, Lins & Warnock, 2008; Poshakwale & Thapa, 2011). Since the opportunistic behavior of managers is usually unnoticeable by outsiders, hence, in addition to the quality of firm-level corporate governance and country-level investor protection, investors can also take into account the extent of product market competition and firm's financial leverage ratio in investment decision making.

1.7 Glossary of Terms

The definition of the key variables and major terms used in this study are presented in this section. This includes the definitions of the independent variable (insider trading), and the main explanatory variables (country-level investor protection, firm-level corporate governance, product market competition, and financial leverage ratio), and also the definitions of other major terms such as the private information, insider, and deterrence.

- "Insider trading" is the purchase or sale of securities, with *scienter* (or guilty knowledge), while in possession of material, non-public information in breach of a duty arising out of a fiduciary relationship or other relationship of trust and confidence" (Thomsen, 2008). The term "insider trading" shall refer to "illegal insider trading" for brevity. The insider trading is measured by the private information-based trading proposed by Llorente, Michaely, Saar and Wang (2002).

- "Investor protection" is defined as the "efforts and activities to observe, safeguard, and enforce the rights and claims of investors", where a few commonly used mechanisms of investor protection, are the rule of law, board structure, and the efficiency of legal system (Jeanjean, 2012, p.358). The country-level investor protection measure is adopted from the rule of law of The Heritage Foundation.

- "Corporate governance" is defined as "the reconciliation of conflicts of interest between various corporate claimholders" (Becht, Bolton & Röell, 2003, p.3) or in other words: "the system through which the behaviour of a company is monitored and controlled" (Cheung & Chan, 2004, p.1). The firm-level corporate governance score is adopted from the ASSET4 ESG Data of Datastream, Thomson Reuters.

- "Product market competition" is defined as "the extent to which firms attempt to win business from their rivals" (Karuna, 2007, p.277). The product market competition is measured by one minus the industry Herfindahl-Hirschman Index, that is, one minus the sum of squared market shares of *N* listed firms in the industry at three-digit ICB code level. (Giroud & Mueller, 2011; John, Litov & Yeung, 2008; Piotroski & Roulstone, 2004; Tookes, 2008). The alternative measure of product market competition used in the sensitivity analysis is measured by one minus the 4-firm concentration ratio of a country accounted for by the four largest listed firms (by sales) in the industry (at three-digit Industry Classification Benchmark code) in a country (Birt, Bilson, Smith & Whaley, 2006; Chen, Wang & Li, 2012; Chu & Song, 2010; Karuna, 2007).

- "Financial leverage" is defined as "the extent to which a firm relies on debt" (Hillier, Ross, Westerfield, Jaffe & Jordan, 2010, p.326). The financial leverage is measured by the ratio of total debt to the total asset. The alternative measure of financial leverage used in the sensitivity analysis is measured by the ratio of total debt to the total capital (Abor, 2005; Cline, Garner & Yore, 2014; Li, Nguyen, Pham & Wei, 2011).

- "Private information" means influential information that is private or yet to be disseminated through proper means which would probably affect the share price of a security and also the investment decisions of reasonable investors (Aier, 2013; Aktas, De Bodt & Van Oppens, 2008; Albuquerque, De Francisco & Marques, 2008; Allen, 2001; Barclay & Dunbar, 1996; Damodaran & Liu, 1993; Narayanan, 1985; Ronen, 2000; U.S. SEC Section 10(b) and Rule 10b-5)

- "Insiders" are individuals, such as company's directors, managers and officers, who are directly involved in the company's daily management and operations, and are likely to have privileged access to the firm's proprietary information (Becher & Frye, 2011; Jin & Myers, 2006; Kapopoulos & Lazaretou, 2007; Morck, Shleifer & Vishny, 1988). In a broader definition, potential "insiders" include substantial shareholders, tippees, legislators, government employees, professional service providers, and individuals who misappropriate the confidential information (Du & Wei, 2004; Khanna, 1997; Lemmon & Lins, 2003; Linciano, 2003; Moore, 1990;

Nagy, 2011; Newkirk & Robertson, 1998; Schieberl & Nickles, 2013; Thomsen, 2008; Wisniewski, 2004).

- "Deterrence" is defined as "the felt worry about or fear of consequences when considering breaching a moral rule or committing an act of crime" (Wikström, 2007).

1.8 Organization of the Thesis

This thesis is systematically organized into five chapters, each with their own purpose. This chapter (Chapter 1) first discusses the background and the problems that initiated this study, followed by the research questions and objectives developed from the current issues. The importance and the expected contributions of the study are also outlined in this chapter.

The second chapter discusses the outcome of the review of literature concerning insider trading and its impacts, country-level investor protection and deterrence theory, firm-level corporate governance, product market competition, and financial leverage. In addition, this chapter also elaborates the rationales behind the formulation of the hypotheses of the relationships between the investor protection and corporate governance mechanisms in relation to insider trading.

In Chapter three, the methodology of the research involved in this study is presented in details. This includes the research framework that is supported by a summary of the theoretical foundations, the list of hypotheses, the specifications of the 2SLS and dynamic GMM models, the details of the diagnostic tests and remedial methods, the definitions and estimations of the main and control variables, the alternative measures used in the sensitivity analysis, and lastly, the sources and the description of the data.

Chapter four presents the descriptive statistics, the results of the 2SLS and GMM main and sub-models, as well as the outputs of the diagnostic and robustness tests in details. Lastly, the conclusions and implications of the study are put forth in Chapter five, and it ends with a discussion on the limitations of the study and also a few recommendations for future study.

CHAPTER 2

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

2.1 Introduction

This chapter presents a systematic review of literature on insider trading, country-level investor protection, corporate governance mechanisms, as well as the rationales of their relationships. Section 2.2 provides the overview of insider trading and discusses the impacts of insider trading from the consequentialist and non-consequentialist perspectives. The literature related to country-level investor protection such as the legal origin, insider trading law, and the legal enforcement is presented in Section 2.3. The relationship between investor protection and insider trading, on the basis of deterrence theory, is also discussed in this section. This is followed by a review on the firm-level corporate governance and a discussion on the reasoning of its relationship with insider trading in Section 2.4. The summary of the literature review on product market competition and financial leverage is presented in Section 2.5 and 2.6, respectively, with each section ends with the justification of their relationship with insider trading. The relationships between the investor protection, corporate governance mechanisms, and insider trading are discussed in Section 2.7. The development of hypotheses of this study is presented in Section 2.8. Finally, Section 2.9 concludes the chapter. The summary of the literature concerning the relations of investor protection, firm-level corporate governance, product market competition, and financial leverage to insider trading is presented in Appendix A.

2.2 Insider Trading

This section first provides an overview of insider trading in sub-section 2.2.1, which includes the definitions of private information, insiders and insider trading. This section also provides the evidence of insider trading as well as noting the reason why insider still engage in insider trading in spite of probable legal action. The impacts of insider trading are also discussed in the sub-section 2.2.2.

2.2.1 An Overview of Insider Trading

Following the review on the subjects related to insider trading, this section first presents the definitions of private information and insider. This is followed by a discussion on the meaning of legal and illegal insider trading. The last sub-section presents the evidence of insider trading, and also discusses the incentives of insider trading, that is, what actually tempted insider to realize their information advantage through (illegal) insider trading despite the probable legal actions?

2.2.1(a) Definition of Private Information

The financial markets typically comprised of various types of traders who, with different incentives and motivations, trade using all sorts of trading strategies. Among them are those who are perceived to have advantages over other traders by having the possession of material non-public information (Fishman & Hagerty, 1992). In this study, it is essential to define the term "material non-public information" clearly and unambiguously. Following the explication of the Supreme Court of U.S. in the case of *TSC Industries v. Northway, Inc.*[10], which is expressly adopted by the Securities and Exchange Commission (SEC) of U.S. for the Section 10(b) and Rule 10b-5 as there is

[10] Case 426 U.S. 438 (1976). Accessible in https://www.law.cornell.edu/supremecourt/text/426/438.

no statutory definition available, a fact is defined as “material”, if: “a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the "total mix" of information made available.”[11] Put differently, information is considered as “material” if, when it is disclosed, it would probably distort the existing aggregate information of a firm in the market, which in turn would be factored in by reasonable investors in their investment decision making process and thence cause impact on the share prices (Joint Market Practices Forum, 2003). The U.S. SEC has also explained that: “Information is non-public if it has not been disseminated in a manner making it available to investors generally.”[12] In other words, “non-public information” is private information that is yet to (or might never) be disclosed to the public through proper channels. Thus, if terms “material” and “non-public information” and the respective definitions are integrated, “material non-public information” can be defined as influential information that is private or yet to be disseminated through proper means which would probably affect the share prices of a security and also the investment decisions of reasonable investors.

However, in finance literature, the terms such as “private information” (e.g., Aier, 2013; Aktas, De Bodt & Van Oppens, 2008; Albuquerque, De Francisco & Marques, 2008; Allen, 2001; Barclay & Dunbar, 1996; Damodaran & Liu, 1993; Narayanan, 1985; Ronen, 2000) and “inside information” (e.g., Abumustafa & Nusair, 2011; Banerjee & Eckard, 2001; Barnes, 1996; Bernhardt, Hollifield & Hughson, 1995; Bettis, Coles & Lemmon, 2000; Bhattacharya & Marshall, 2012; Boardman, Liu,

[11] Kindly refer to Lin, T.C.W., 2015. Reasonable investors. Boston University Law Review, 95, pp.461-518, for the definition of “reasonable investor”.

[12] Kindly refer to Selective Disclosure and Insider Trading, Securities and Exchange Commission, 17 CFR Parts 240, 243, and 249, Release Nos, 33-7881, 34-43154, IC-24599, File No. S7-31-99. https://www.sec.gov/rules/final/33-7881.htm#P111_41843.

Sarnat & Vertinsky, 1998) are usually used instead of "material non-public information", which is a common term in legal literature. Hence, for brevity, the term "private information" will hereinafter be used with the same meaning as "material non-public information" in this study unless otherwise noted.

2.2.1(b) Definition of Insider

Who might actually possess the private information? Intuitively, there is only a limited number of individuals particularly those who are directly involved in the company's daily management and operations are likely to have privileged access to the information (Jin & Myers, 2006). In line with the U.S. and many other jurisdictions, this group of individuals is typically known as corporate "insiders", for instance, company's directors, managers and officers (Becher & Frye, 2011; Kapopoulos & Lazaretou, 2007; Morck, Shleifer & Vishny, 1988). Nevertheless, in a broader definition, other likely "candidates" of insiders are substantial shareholders who have the company's control rights (Jaffe, 1974; Kini & Mian, 1995; Liang, Lin & Syu, 2010), tippees such as family members and friends who received private information from corporate insiders (Khanna, 1997; Lemmon & Lins, 2003; Linciano, 2003; Moore, 1990), those who render legal, financial or other professional services to company or corporate insiders such as lawyers, accountants, auditors, brokers, investment bankers and financial advisors (Du & Wei, 2004; Etebari, Tourani-Rad & Gilbert, 2004; Hensley, 1969; Wisniewski, 2004), legislators or government employees (Nagy, 2011; Schieberl & Nickles, 2013), and also individuals who misappropriate confidential information from their employer or family members (Newkirk & Robertson, 1998; Thomsen, 2008).