A Study on the Market Reaction to Hybrid Securities Announcements
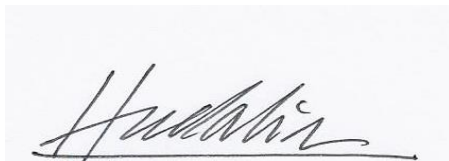
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Declaration

This thesis is submitted in fulfilment of requirement of the degree of Doctor of Philosophy in Finance at the University of Stirling. This work also has not previously been accepted and is not concurrently submitted in candidature for any degree. I declare that this thesis is based on my original work, except where otherwise stated. Other sources are appropriately acknowledged in this thesis.

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Abstract

The thesis presents three studies that focus on the wealth effects of hybrid securities namely: convertible bonds and warrant-bonds. The wealth effects of these hybrid securities are investigated through both meta-analysis and event-studies.

Chapter 2 incorporates a review of the literature on wealth effects associated with the announcement of convertible bonds and warrant-bond loans. The findings of 35 event studies, which include 84 sub-samples and 6,310 announcements, are analysed using meta-analysis. A mean cumulative abnormal return of -1.14% for convertible bonds compared with -0.02% for warrant-bonds are observed, the significant difference confirming a relative advantage for warrant-bonds. Abnormal returns for hybrid securities issued in the United States are significantly more negative than for those issued in other countries. In addition, issuing hybrid securities to refund debt does not seem to be favoured by investors. Finally, several factors identified as important by theory or in prior research are not significant within the cross-study models, suggesting that more evidence is needed to confirm whether they are robust.

Chapter 3 presents a study that examines the market reaction to hybrid security announcements in an emerging country, specifically Malaysia, from January 1996 to December 2009. The results indicate that announcements of the intention to issue convertible bonds in Malaysia are associated with significantly negative abnormal returns of -1.10% (significant at the 10% level) on the event window of (-1, 1). On the

other hand, announcements of the intention to issue warrant-bonds document significantly positive abnormal returns of 2.25% (significant at the 10% level) on the same event window. The 'univariate' test confirms that the wealth effects associated with the announcement of the intention to issue warrant-bonds is larger (i.e., more positive) than convertible bonds in line with few studies in different markets: Japan (Kang, Kim, Park, and Stulz, 1995), the Netherlands (De Roon and Veld, 1998), and German (Gebhardt, 2001). Non-significant abnormal returns of -0.81% and 0.23% on the event window (-1, 1) are reported for announcements of hybrid securities by means of private placements and rights offerings, respectively, contradict with the 'certification hypothesis' of Hertzel and Smith (1993), and 'signalling hypothesis' of Heinkel and Schwartz (1986).

This chapter also finds that there is no support for 'information-signalling' hypothesis (Ross, 1977), as non-significant abnormal returns are observed in the event window (-1, 1) for announcements of hybrid securities for all purposes of offering (i.e., debt restructuring, mergers and acquisitions, capital expenditure, and working capital). These findings also highlight that listed firms in Malaysia with high risk uncertainty contribute to more negative abnormal returns in comparison to lower risk uncertainty firms, which contradicts with the 'risk uncertainty hypothesis'.

The final study presented in this thesis, Chapter 4, considers the wealth effects of hybrid security announcements in a developed country, the United Kingdom. This third study investigates the wealth effects of announcements of the intention to issue convertible bonds in the UK market over a period from January 1990 until July 2010. The study period also allows for an investigation on the market reaction to announcements of convertible bonds during the financial crisis that started in August 2007. Using the

standard event study methodology, a negative abnormal return of -1.75% (significant at the 5% level) on the two-day event window is reported, confirming the findings of previous UK studies (Abyhankar and Dunning, 1999, and Wolf et al., 1999) which are also in line with studies performed using data from other countries such as US, Canada, Australia, and others. There are no significant differences between the results of the sub-samples before and during the financial crisis, suggesting that the economic conditions do not influence the market response. The results of the event study and the multivariate analysis in this chapter are consistent with the 'market timing hypothesis' implying that managers in the UK announce their intention to issue convertible bonds after a period of good stock price performance.

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Chapter 1

Introduction

1.1   Hybrid securities: Convertible bonds and warrant-bonds

Convertible bonds and warrant-bonds are unique in the sense that they are hybrid securities in that they have features of both equity and debt. Jones and Mason (1986) call them 'equity-linked debt' or a debt with equity participation. As the name implies, it is a security that has the right but not the obligation to convert to equity at a pre-determined price. Investors refer to these securities as having an up-side potential in terms of capital gain in equity, and a down-side protection, in the form of a steady income from the debt. Warrants alone are securities that give the rights, but not obligation, to buy equity of a company at a specific price and period. Warrants are usually issued in combination with other securities, namely: bonds and equities.

Convertible bonds and warrant-bonds are very similar but not identical. In other words, they have similar characteristics but are different in several ways. Firstly, warrant-bonds are detachable, which allows investors to sell the warrant and keep the bond. This characteristic gives the opportunity to the issuer to set different maturities for bonds and warrants. For convertible bonds, as investors exercise the option, the debt component disappears. Secondly, unlike convertible bonds, warrant-bonds are not callable. This characteristic presents a disadvantage to warrant-bond issuers as they cannot force conversion to get equity if they required. Thirdly, convertible bonds are more popular among investors. According to Dong, Dutordoir, and Veld (2011), managers choose to issue convertible bonds instead of warrant-bonds because the former securities are more marketable than the latter.

The existing literature highlights various potential motives for why firms issue hybrid securities. Brennan and Schwartz (1988) based their argument on the insensitivity of convertible bonds value to the risk of the issuing firm. This theory argues that hybrid securities mitigate agency cost between shareholders and debt holders, which benefits firms that have risk uncertainty or disagreement about risk. Because of the nature of hybrid securities, this disagreement about risk is easily resolved. Their justification is: while the market perceived that the risk of the firms is higher than the perception of the management, an increase in the firm's risk will reduce the value of the debt component, but the reduced value is off-set by the increased value of the 'option' component.

Stein (1992) states that convertible bonds also play a role as indirect financing or so called 'back door equity' financing where the cost of equity issuance is expensive due to the presence of information asymmetry. The 'call feature' of convertible bonds helps firms to force investors to exercise the option if the purpose of the issuance is to get equity sometime in the future. Stein also emphasises the cost of financial distress. Leveraged firms that issue convertible bonds should be confident that their share price will not fall so that they can force conversion, or else they will be financially troubled. According to Stein, taking into account the need for equity and the cost of financial distress, medium quality firms will neither issue equity because of the asymmetric information problem, nor straight debt because of their debt burden. They are more likely to issue convertible bonds that can be transferred into equity, thereby also signalling to the market that the stock price is likely to remain high enough to force conversion.

While Stein (1992) based his model on asymmetric information, the 'sequential financing' model of Mayers (1998) is based on the uncertainty of firms' future

investment options. The model argues that convertible bonds can lower the cost of 'sequential financing', which may benefit firms at a later date when there is an opportunity to undertake positive Net Present Value (NPV) projects. Nevertheless, through redemption, convertible bonds also help firms to control the overinvestment problem when the investment option is not available.

Despite the fact that there are great deals of convertible bond research available in the literature, studies focused exclusively on warrant-bonds are a much less explored area. Jones and Mason (1986) discuss the differences between convertible bonds and warrant-bonds in terms of the design and pricing for both of these hybrid securities in the United States. Using the pricing analogy, without taking a tax into consideration, they conclude that warrant-bonds fail to be a perfect analogy to convertible debt. They also conclude that, in the United States, the debt components in warrant-bonds are larger than the comparable convertible debt. Jones and Mason (1986) and Finnerty (1986) also argue that there are also tax advantages in the US for warrant-bonds in comparison to convertible bonds.

Early empirical studies on hybrid securities also tended to focus on the announcement effects and the design of convertible bonds (Burlacu, 2000, Lewis, Rogalski, and Seward, 2003; Suchard, 2007; Dutordoir and Van de Gucht, 2007; Loncarski, Ter Horst and Veld, 2008). However, recently published literature raises more issues; for example: the demand side of hybrid securities (De Jong, Duca, and Dutordoir, 2010); convertible bonds and stock repurchase (De Jong, Dutordoir, and Verwijmeren, 2011); convertible bonds and arbitrageurs (Choi, Getmansky, Henderson, and Tookes, 2010; Duca, Dutordoir, Veld, and Verwijmeren, 2012).

This thesis focuses on a detail review of the literature relating to the announcement effects of hybrid securities using meta-analysis (Chapter 2), followed by presenting a study of the announcement effects in an emerging country, specifically Malaysia in Chapter 3, and also a developed country, the United Kingdom, in Chapter 4.

1.2   Motivations, objectives, and research questions of the thesis

1.2.1   Motivations

The empirical evidence on the wealth effects of hybrid security announcements, namely convertible bonds and warrant-bonds is mixed. In general, the results of empirical studies document negative abnormal returns (to name a few: Eckbo, 1986; Mikkelson and Partch, 1986; Burlacu, 2000; Arsiraphongphisit, 2008). However, in some countries, the abnormal returns are positive (Fields and Mais, 1991; Kang and Stulz, 1996; Christensen, Faria, Kwok and Bremer, 1996; De Roon and Veld, 1998; Chang, Chen and Liu, 2004; Fenech, 2008). The first study, presented in Chapter 2, is motivated by these mixed results that lead researchers to review the empirical literature and to generalise the results through meta-analysis.

Despite the mixed results on the wealth effects of hybrid securities in different financial markets; the thesis is also motivated by the fact that both convertible bonds and warrant-bonds are perceived differently by the market participants. Convertible bonds are popular; in fact, in Malaysia, the issuance of convertible bonds is increasing especially during the financial crisis, but the issuance of warrant-bonds is diminishing over time[1]. Nevertheless, some empirical studies document more larger wealth effects on announcements of warrant-bonds than convertible bonds (Billingsley et al., 1990; Kang et al., 1995; De Roon and Veld, 1998; Gebhardt, 2001) and some studies

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[1]Please refer to Table 3-1 for the details statistic

document the opposite (Long and Sefcik, 1990; Phelps, Moore, and Roenfeldt, 1991; Christensen et al., 1996; Kang and Stulz, 1996). By performing a detailed analysis of results in the literature using meta-analysis, the robust results on the wealth effects of warrant-bonds announcements are hoped to be confirmed.

The meta-analysis approach also allows for analysis across different studies, and also the sub-samples within a specific study. The study presented in Chapter 2 is also motivated by the advantage of using meta-analysis to analyse the significant determinants of market reactions to the announcement of hybrid securities, based on different corporate governance, methods and purpose of offerings, and other factors documented in a set of collected studies.

The main motivation for investigating hybrid securities within an emerging market is that with a different institutional and debt market structure, the wealth effects associated with the announcements of hybrid securities in this market could be different from those developed countries. The second motivation is related to the disappearance of warrant-bonds issuance in Malaysia especially on 2005 onwards as confirmed by statistics from the Central Bank of Malaysia or Bank Negara Malaysia.

The study on market reaction to announcements of convertible bonds issued in the UK (Chapter 4) is motivated by recent findings in the United States (Duca, Dutordoir, Veld, and Verwijmeren, 2012) that the wealth effects associated with the convertible bonds announcement in a later (so called 'arbitrage') period (2000 to 2008) were more than twice as negative as in the earlier (so called 'traditional investors') period (1984 to 1999). Given that prior UK convertible bonds studies stop at 1998 (Abhyankar and Dunning, 1999; Wolfe, Daliakopoulos, and Gwilym, 1999), it is of interest to see if a similar pattern can be observed in the UK market. Duca et al. (2012) also argue that

announcements of convertible bonds in the financial crisis induced more negative abnormal returns in comparison to non-financial crisis period. Motivated with their argument, an investigation into the announcement effects of convertible bonds before and during the financial crisis is performed.

1.2.2   Objectives

Meta-analysis is conducted based on 35 event studies, which includes 84 sub-samples and 6,310 announcements, to investigate the wealth effects associated with announcements of convertible bonds and warrant-bonds to fulfil the first objective of the research presented in Chapter 2. The second objective of this chapter is to find a robust wealth effects associated with announcements of warrant-bonds based on collected literature review. The univariate and multivariate analysis are performed for this objective. The third objective of this chapter is to find determinants of the abnormal returns based on the collection of studies.

By conducting an event study, the first objective of Chapter 3 is to investigate the market response to announcements of hybrid securities in Malaysia from January 1996 to December 2009. The second objective of Chapter 3 is to investigate whether there are any differences between the wealth effects associated with announcements of convertible bonds and warrant-bonds. In light of Field and Mais (1991), and Dann and Mikkelson (1984), this chapter also examines the market reaction to announcements of hybrid securities by method (private placements and rights offerings) and purpose of offerings (i.e., debt restructuring, mergers and acquisitions, and working capital). In the second part, this chapter also investigates factors that influence market reactions to announcements of hybrid security in Malaysia.

The main objective of the study presented in Chapter 4 is to investigate the market response to convertible bonds announcements in the UK market from January 1990 to July 2010. The study period of January 1990 to July 2010 allows for an examination of the effect of economic conditions on convertible bonds announcements. Therefore, the second objective of this chapter is to investigate the announcement effect of convertible bonds issued in the UK during and before the financial crisis period. Similar to study presented in Chapter 3, the third objective of the second part of Chapter 4 is to investigate the determinants of the wealth effects associated with announcements of convertible bonds in the UK market.

1.2.3 Research questions

The thesis seeks to answer five research questions in different settings:

1. What is the wealth effects associated with announcements of hybrid securities, based on a meta-analysis review of studies presented in Chapter 2? What is the wealth effects associated with announcements of hybrid securities issued in Malaysia from January 1996 to December 2009? Finally, what is the wealth effects associated with announcements of convertible bonds issued in the UK from January 1990 to July 2010?

2. Are the announcement effects of warrant-bonds associated with significantly larger abnormal returns than convertible bonds, as has been documented in several studies?

3. What factors influence the wealth effects of the announcement of hybrid securities?

4. What are the announcement effects of hybrid securities by different methods of offerings (i.e., rights offering and private placements) and purpose of offerings

(i.e., debt restructuring, mergers and acquisitions, capital expenditure, and working capital), specifically in Malaysia?

5. Are the announcement effects of convertible bonds issued in the UK during the financial crisis period associated with more negative abnormal returns than those issued before the financial crisis period?

1.3   An overview of sample selection and data

This thesis involves empirical studies and deals with quantitative data. Three different samples are employed as all the studies have investigated different settings and backgrounds (i.e., set in a different country). Two different methods are used, which are meta-analysis as presented in Chapter 2, and event study methods as presented in Chapter 3 and 4.

The meta-analysis study allows for summarising of prior event studies on the announcements of the intention to issue convertible bonds and warrant-bonds. The set of studies investigate in this chapter includes 35 event studies from different financial markets around the world, 30 which were published in academic journals, and 5 in the working papers.

The sample dataset in Chapter 3 is hand collected and includes all announcements of the intention to issue convertible bonds and warrant-bonds by listed firms on the Bursa Malaysia (formerly known as the Kuala Lumpur Security Exchange) from January 1996 to December 2009. The final sample dataset used in this chapter consists of 133 announcements of the intention to issue hybrid securities, in which 105 announcements are for convertible bonds and 28 announcements are for warrant-bonds.

In the study presented in Chapter 4, the sample consists of convertible bonds issue by listed firms on the London Stock Exchange from January 1990 to July 2010. The announcement data is downloaded from the Security Database Computer (SDC), and cross-checked with the Nexus-UK. The final sample dataset in this chapter consists of 121 convertible bond announcements.

The work in this thesis involves different levels of analysis. The meta-analysis study in chapter 2 deals with convertible bonds and warrant bonds in countries or regions (comprising the US, UK, Canada and Australia) while chapter 3 analyses convertible bonds and warrant bonds at the firm level in Malaysia and chapter 4 analyses convertible bonds at the firm level in the UK.

1.4 Major findings and contributions of the thesis

The three interrelated papers which focus on the wealth effects associated with the announcements of the intention to issue hybrid securities in this thesis represent contribution to the literature in several ways. Chapter 2 presents a review of many empirical studies of wealth effects associated with the announcements of hybrid securities using the meta-analysis method. Unlike the traditional literature review methods, this meta-analysis provides the readers with more objective and scientific results through a rigorous statistical method. Glass (1976, pp.1) defines it in simple words: *'Meta-analysis refers to the analysis of the analyses'*.

The results of the review of 35 studies, with 84 sub-samples and 6,310 observations add to the work in the existing literature of the wealth effects of announcements of convertible bonds and warrant-bonds. While empirical research on announcements of warrant-bonds documents mixed results (Billingsley et al., 1990; Kang et al., 1995;

Christensen et al., 1996; Kang and Stulz, 1996; De Roon and Veld, 1998; Gebhardt, 2001), the findings of meta-analysis reveal that announcements of warrant-bond are associated with larger abnormal returns compared to convertible bonds confirming the advantage of warrants as a 'debt sweetener'. Furthermore, strengthening and in line with the results in the existing literature, the results of this thesis also report larger negative abnormal returns from studies that use the US sample, than studies from other countries. In addition, consistent with the 'information-related hypothesis' discussed by Dann and Mikkelson (1984), the announcement of hybrid securities to refund debt is not favoured by market participants.

There is an abundance of empirical research on the wealth effects of hybrid securities in developed countries, to name a few: the US, Japan, Canada, Australia, the Netherlands, and others. Chapter 3 contributes to the literature by focusing on the wealth effects associated with announcements of hybrid securities in an emerging country. The uniqueness of this study is partially on hand collected dataset and also the different setting of the institutional and debt market structure. Malaysia is well known as having a high degree of concentrated family ownership with one controlling owner, government ownership, and affiliated groups that are also controlled by families (Claessens et al., 2000; Claessens et al., 2006). Such characteristics suggest lower information asymmetry, which is likely to lead to relatively positive (or less negative) abnormal returns. That is not found to be the case in Malaysia, as significantly negative abnormal returns of -1.10% are reported on announcements of convertible bonds. However, significantly positive abnormal returns of 2.25% (significant at the 10% level) are observed on announcements of warrant-bonds. While the results of multivariate test do not reveal any significant differences between convertible bonds and warrant-bonds, the univararaite test on Chapter 3 confirms the empirical evidence

of the advantage of warrant-bonds over convertible bonds in spite of the undeniable popularity of the latter securities.

Testing the market timing hypothesis in the UK market the contribution of the work presented in Chapter 4. The finding indicates that managers in the UK announce their intention to issue convertible bonds after stock price run-up, since the event study confirms the evidence of significantly positive abnormal returns on the pre-announcement date. While Duca et al. (2012) find that announcements of convertible bonds during the financial crisis induce more negative abnormal returns; the results in this chapter do not support their finding. In fact, this thesis finds that economic conditions do not influence the negative abnormal returns in the UK market.

Financial companies are often excluded from the financial empirical analysis as this sector has different regulations and capital structures, with financial companies tending to be highly leveraged. As a result, the contribution or impact of this sector is less pronounced in the finance literature. For example, the review of literature on announcement effects of hybrid securities (Chapter 2) reveals that only one study by Janjigian (1987) was found that includes financial companies. Hence, the explicit inclusion of financial companies in both Chapter 3 and Chapter 4 is considered a contribution to the empirical literature in this field specifically in regard of announcement effects of hybrid securities.

1.5   Organization of the thesis

The remainder of this thesis is organized as follows. Chapter 2 presents a meta-analysis review of the wealth effects associated with announcements of convertible bonds and warrant-bonds. Chapter 3 examines the wealth effects associated with announcements

of hybrid securities in an emerging country. In Chapter 4, the market reaction to announcements of convertible bonds in the UK market is examined. Conclusions and suggestions for the future research are presented in Chapter 5.

Chapter 2

Wealth Effects of Convertible Bond Loans Versus Warrant-Bond Loans:

A Meta-Analysis Literature Review

2.1   Introduction

Companies can attract financing from different sources: they can issue equity in the form of shares of common stock or they can choose to attract debt. Another possibility is to attract a form of capital between equity and debt. The best-known alternatives in this area are issues of convertible bond loans and warrant-bond loans. A convertible bond is a hybrid security that combines characteristics of bonds and equity. Convertible bondholders receive income from the bonds in the form of a coupon. In addition they have the right to convert the bonds into a specific number of common stocks within a specific period. While warrants are defined as a derivative security that gives the holder the right to buy a security at a specific price within a given time frame, warrant-bond loans are a combination of straight bonds and separate warrants.

Convertible bonds have become more popular during the financial crisis of 2008-2009. Antoine de Guillenchmidt, Morgan Stanley's head of European equity-linked capital markets states in the Financial Times:

"A lot of investors are seeing the coupon as a way to maintain income if the dividend is cut. They are equity-type investors buying the bond as a way to get upside exposure with income." (Financial Times, 10th May 2009)

According to statistics provided by the Financial Times, the United States has the largest market for convertible bonds with 6.1 billion US $ issued by 17 companies between January and April 2009. In the United Kingdom, the new issues of convertible bonds are dominated by large firms such as Anglo American and Vedanta Resources.

Past empirical studies on warrant-bond loans and convertible bond loans find that convertible bond loans are associated with negative abnormal returns. The verdict on warrant-bond loans in such studies is not completely clear: some studies find that warrant-bonds are also associated with negative abnormal returns, others conclude that warrant-bond loans are a "penalty-free issuance of an equity-like security" (Billingsley, Lamy, and Smith, 1990). In this context, it is remarkable that the resurgence of the market for warrant-bond loans have not been seen. Another observation from previous empirical studies is that US studies have systematically shown negative abnormal returns associated with convertible bond issues, while studies from other countries, such as Japan, Taiwan, and the Netherlands, sometimes show positive returns. If this is a consistent picture, it is remarkable that the resurgence of convertibles has taken place within the US. Given that the empirical literature on convertible bonds and warrant-bonds does not provide consistent results, a meta-analysis of previous papers that study announcement effects associated with convertible bonds and warrant-bond loans is carried out. This meta-analysis will show whether convertible bonds are associated with different abnormal returns than warrant-bond loans. It will also show whether there are any systematic country differences or differences associated with specific issuer characteristics.

The papers that report results on announcement effects of convertible bonds and/or warrant-bond loans in this chapter consist of 35 papers. These papers include a total of

6,310 convertible bonds and/or warrant-bond loans announcements within 84 sub-sample results. These sub-sample results are analysed using meta-analysis in line with previous studies such as Datta, Pinches, and Narayanan (1992) and Veld and Veld-Merkoulova (2009).

The significantly negative mean cumulative abnormal return (CAR) of -1.14% for announcements of convertibles compared with -0.02% for warrant-bonds are observed; the difference in means is statistically significant, confirming a relative advantage for warrant-bonds. In addition the results find that US studies show significantly larger negative abnormal returns than studies outside the US, including those on market-oriented countries (such as the UK, Canada, and Australia); the difference is between -1.0 and -1.5%, on average. Also, issuing hybrid securities to refund debt does not seem to be favoured by investors. Finally, several factors identified as important by theory or in prior research are not significant within our cross-study models, suggesting that more evidence is needed to confirm whether they are robust.

The remainder of this chapter is organized as follows: Section 2.2 briefly reviews the studies on the wealth effects that are associated with announcements of convertible bonds and warrant-bond loans. Section 2.3 includes a discussion of the factors that have the potential to explain these wealth effects. The model for the meta-analysis is included in Section 2.4. Section 2.5 describes the results, and this chapter is concluded in Section 2.6 with a discussion of the implications of the results.

2.2   Wealth effects of convertible bond loans and warrant-bond loans

An extensive set of event studies on announcements of convertible bonds and bonds issued together with warrants have been undertaken. All these studies document abnormal returns associated with the issuance announcement. These studies are reviewed by using a meta-analysis technique based on Datta et al. (1992) and Veld and Veld-Merkoulova (2009) approaches that use meta-analysis to study the wealth effects associated with the announcement of mergers and acquisitions and spin-offs respectively. In the meta-analysis in this chapter the estimates of the abnormal returns associated with announcements of convertible bond loans and warrant-bond loans are used as observations in a multi-factor experiment with the experimental factors corresponding to the factors hypothesized to influence the creation of wealth. Therefore, the abnormal returns are the dependent variable. A multivariate regression analysis is used to assess the impact of each factor on the dependent variable.

The library catalogues, Google, Google Scholar, and the Social Sciences Research Network (SSRN) are used to select all studies that present wealth effect results for announcements of hybrid debt. All studies that are publicly available on August 31, 2010 are included. In some cases, the older papers in our own archives are also included. The papers that are analysed include studies in academic journals and working papers. The search results in 35 studies, of which 30 were published in academic journals and 5 working papers. The papers in academic journals were published from 1984 and the last paper was published in 2008. The dates on the non-published (or not yet accepted for publication) working papers are between 1990 and 2009. As is the case with most topics in finance, the majority of the papers are about the United States. However, there are also quite a few studies on countries outside the

United States, such as studies for Western Europe, Japan, Canada, the Netherlands, and Taiwan. Table 2-1 summarizes the 35 papers and the wealth effects that they report.[2]

The results of these studies vary. The studies on the announcement effects of convertible bonds in Japan reveal significantly positive market reactions in one study (Kang and Stulz, 1996), but a significantly negative reaction in two studies (Mollemans, 2002, and Cheng, Visaltanachoti, and Kesayan, 2005) as well as non-significant reactions in two studies (Kang, Kim, Park, and Stulz, 1995; Christensen, Faria, Kwok, and Bremer, 1996). The study on the Dutch market (De Roon and Veld, 1998) also reveals non-significant positive market reactions associated with the announcement of convertible debt. With one exception, all studies in the United States show negative abnormal returns for the announcement of convertible debt; the exception specifically focuses on private placement of convertible debt (Fields and Mais, 1991). All of the negative abnormal returns the United States studies are statistically significant (though Lewis, Rogalski and Seward (2003) do not report the significance level in their study).

Besides highlighting the mixed results of wealth effects associated with convertible bond loans from countries around the world, Table 2-1 also draws attention to differences in wealth effects between convertible bond loans and warrant-bond loans. However, the results are not robust. Two US studies reveal significantly negative abnormal returns on announcements of warrant-bond loans, but two studies show non-significant abnormal returns. In Japan, one study reports significantly positive abnormal returns for warrant-bond loans but two studies find negative (non-significant) abnormal returns. Finally, separate studies for the Netherlands and Germany highlight more

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[2] The UK study of 24 convertible bonds by Wolfe, Daliakopolous and Gwilym (1999) is not included as the authors do not provide t-statistics and significance levels.

positive abnormal returns to announcements of warrant-bond loans compared to convertible bonds.

2.3   Factors explaining wealth effects of convertible bonds and warrant-bond loans

2.3.1   *Information asymmetry*

Myers and Majluf (1984) develop a model on security issuance that is based on asymmetric information between shareholders and managers. In their model managers have more information than shareholders. Therefore, an equity issue is perceived as bad news according to this model, because the market will assume that managers try to maximize the wealth of their existing shareholders by trying to sell overpriced equity. This model predicts that an equity issue will be associated with a more negative abnormal return than a debt issue. The expected effect of an issue of hybrid debt, such as convertible bonds or warrant-bond loans will be between those of equity and debt. Empirical research in the United States confirms the predictions of the asymmetric information model. For example, an overview paper of Eckbo, Masulis, and Norli (2007) finds that equity issues are associated with an average abnormal return of 2.22%. The average abnormal return is only 0.24% for issues of straight debt, and 1.82% for convertible bond issues.

Table 2-1: Studies of the market reaction towards announcement of the intention to issue convertible bond loans and warrant-bond loans

Study	Country	Research Period	Event Window	Number of observations Convertible Bonds	Number of observations Warrant Bonds	Cumulative abnormal return (%) Convertible Bonds	Cumulative abnormal return (%) Warrant Bonds
Market-oriented country studies							
Dann and Mikkelson (1984)	United States	1970-1979	(-1,0)	129		-2.31***	
Eckbo (1986)	United States	1964-1981	(-1,0)	75		-1.25***	
Mikkelson and Partch (1986)	United States	1972-1982	(-1,0)	33		-1.97***	
Janjigian (1987)	United States	1968-1983	(-1,0)	301		-1.71***	
Billingsley, Lamy, and Smith (1990)	United States	1971-1986	(-1,0)	104	38	-2.04***	-0.33
Hansen and Crutchley (1990)	United States	1975-1982	(-1,0)	67		-1.45***	
Long and Sefcik (1990)	United States	1965-1984	(-1,0)	134	54	-0.61***	-1.59***
Jayamaran, Shastri, and Tandon (1990)	United States	1977-1986	(-1,0)		54		-0.64
Fields and Mais (1991)	United States	1970-1987	(-1,0)	61		1.80**	
Phelps, Moore, and Roenfeldt (1991)	United States	1970-1986	(-1,0)		39		-1.32**
Brennan and Her (1995)	United States	1976-1985	(-1,0)	155		-2.20***	
Asquith (1995)	United States	1980-1982	0	183		-1.03***	
Davidson, Glascock, and Schwarz (1995)	United States	1980-1985	(-1,0)	118		-1.40***	
Jen, Choi, and Lee (1997)	United States	1976-1985	(-1,0)	158		-2.15***	
Lewis, Rogalski, and Seward (2003)	United States	1978-1992	(-1,0)	588		-1.09 [n]	
Arshanapalli et al. (2004)	United States	1993-2001	(-1,0)	85		-3.07***	
Marquardt and Wiedman (2005)	United States	2000-2002	a	207		-5.50***	
Abhyankar and Dunning (1999)	United Kingdom	1986-1996	(0,1)	112		-1.21***	
Loncarski, Ter Horst, and Veld (2008)	Canada	1991-2004	(-1,0)	86		-0.54*	
Suchard (2007)	Australia	1980-2002	(0,1)	58		-0.40	
Fenech (2008)	Australia	1999-2007	(-1,0)	126		0.69	
Arsiraphongphisit (2008)	Australia	1991-2003	(-1,0)	43		-0.61**	

				Number of observations		Cumulative abnormal return (%)	
Study	**Country**	**Research Period**	**Event Window**	**Convertible Bonds**	**Warrant Bonds**	**Convertible Bonds**	**Warrant Bonds**
Network-oriented country studies							
Kang et al. (1995)	Japan	1977-1989	(-1,0)	83	368	-0.22	0.61**
Christensen et al. (1996)	Japan	1984-1991	(-1,0)	35	32	0.60	-0.67
Kang and Stulz (1996)	Japan	1985-1991	(-1,0)	561	19	0.83***	-0.21
Mollemans (2002)	Japan	1992-2002	(0,1)	367		-1.01***	
Cheng, Visaltanachoti, and Kesayan (2005)	Japan	1996-2002	(0,1)	172		-0.92***	
De Roon and Veld (1998)	The Netherlands	1976-1996	(-1,0)	47	19	0.16	0.75
Burlacu (2000)	France	1981-1998	(-1,0)	141		-0.40***	
Gebhardt (2001)	Germany	1980-1994	(-2,1)		69		1.20**
Chang, Chen, and Liu (2004)	Taiwan	1990-1999	(-1,0)	109		0.42	
Ammann, Fehr and Seiz (2006)	Switzerland and Germany	1996-2003	(0,1)	55		-1.36**	
Dutordoir and Van de Gucht (2007)	Western Europe	1990-2002	(-1,0)	188		-1.35***	
Li and Wang (2008)	China	2001-2005	(-1,0)	48		-1.34***	
Mohd Ashhari and Sin-Chun (2009)	Malaysia	1994-2003	(-1,0)	29		-1.51**	

**** significant at the 1% level, ** significant at the 5% level, * significant at the 1% level

n = significance not reported

a = event window is not given

2.3.2 The difference between convertible bond loans and warrant-bond loans

Convertible bond loans and warrant-bond loans are both a combination of a straight bond and a warrant that allows the holder to purchase the underlying common stock. An important difference is the fact that a warrant in a warrant-bond loan can usually be detached from the bond either at the issuance date or very shortly thereafter. This detachability also gives the issuing company the option to set a different maturity for the warrant than for the bond. For convertible bond loans the maturity has to be the same because the bond disappears when the conversion right is exercised. This gives an advantage to the issuer of warrant-bond loans compared to convertible bond loans. There is also an advantage to warrant-bond buyers, since they can separately trade the warrant and the bonds. Jones and Mason (1986) and Finnerty (1986) argue that there are also tax advantages in the US for warrant-bonds compared to convertible bonds.

A number of studies investigate both convertible bond loans and warrant-bond loans and find different wealth effects in response to announcements to raise capital using these securities. However, the empirical evidence is not robust on this issue. Billingsley et al. (1990) document that announcements of warrant-bond loans are associated with less negative abnormal returns than convertible debt. This finding is supported by Kang et al. (1995), De Roon and Veld (1998), and Gebhardt (2001) in different markets. In contrast, Christensen et al. (1996), and Kang and Stulz (1996) find more negative abnormal returns for the announcements of warrant-bond loans than for convertible bond loans.

2.3.3 Equity- versus debt-likeness

Firms can design a convertible bond by specifying security characteristics, such as the coupon rate, maturity date, conversion ratio, and others. For example, convertible bonds that have a longer maturity and a lower coupon rate can be categorized as equity-like convertible bonds. Lewis, Rogalski, and Seward (2003) use the conversion probability as a guideline to sort convertible bonds into three groups. If the probability of conversion into equity is less than 40% the convertible bonds are considered as 'debt-like', between 40% and 60% as 'hedge-like', and greater than 60% as 'equity-like'. They find almost identical negative market reactions, of just over -1%, to announcements for the three groups. Suchard (2007) also finds similar (non-significant) negative returns for announcements of debt-like and equity-like convertibles on the Australian market. On the other hand, Loncarski, Ter Horst, and Veld (2008) find that equity-like convertible bonds are associated with a negative 3-day abnormal return of 3.7%, which is significantly higher than the 0.1% abnormal returns for the announcement of debt-like convertibles. For the French market, Burlacu (2000) argues that equity-like convertible bonds have more negative market reactions associated with their announcements but the results appear less clear-cut.

2.3.4 Differences in corporate governance systems

Since our meta-analysis incorporates studies from around the world, it is necessary to take into account country specific characteristics. Moerland (1995) suggests two categories of corporate systems that may have an impact on economic events: market-oriented systems and network-oriented systems. Market-oriented systems (also called Anglo-Saxon systems) have well-developed financial markets, many firms are listed on the stock exchange, and they have active markets for corporate control. The United

States, United Kingdom, Canada, and Australia are categorized as market-oriented systems. On the other hand, network-oriented systems typically have closely held corporations (e.g., having family ownership structure), group membership of corporations (e.g., having state ownership), high involvement of banks in financing and decision making, and close trading ties. Countries included in the network-oriented systems are Germanic countries (Germany, Switzerland, Austria, and the Netherlands), Latinic countries (Italy, Spain, France, and Belgium), and Japan.

Using Moerland's (1995) approach is more appropriate since the announcement effects of hybrid securities using data from network-oriented systems (i.e., Japan: Kang et al., 1995 and the Netherlands: De Roon and Veld, 1998) reveal contradictory results from studies that use data from market-oriented systems. On the other hand, the approach which is introduced by La Porta et al., (2000) uses anti-director rights and legal systems to differentiate countries. In this approach, Japan, the US and the UK are in the same category, which is not consistent with the results of the empirical study by Kang et al. (1995) that find positive abnormal returns in Japan in response to announcements of warrant-bond loans. They suggest that this may reflect the different financial system during the study period, whereby equity-linked issues are guaranteed by a bank which conveys positive news to investors. Kang and Stulz (1996) also try to justify the differences in shareholder wealth effects between Japan and the US as being mainly due to differences in corporate governance.

In this meta-analysis, we have 22 market-oriented studies and 13 network-oriented studies. Our meta-analysis will investigate whether differences in corporate governance systems are responsible for differences in abnormal returns.

2.3.5 Rights offering

Convertible bonds are sometimes issued in the form of a rights offering. Rights offerings are a puzzle in equity issues. In the United States most companies prefer firm-commitment offerings over rights offerings even though firm commitment offerings are associated with lower abnormal returns (e.g. Eckbo and Masulis, 1992 and Kothare, 1997). Unlike US firms, British firms prefer the use of open offers and placings for their seasoned equity offerings over the use of rights offers (Armitage, 2010). Slovin, Sushka, and Lai (2000) compare abnormal returns in the UK between rights offerings and placings. They define a placing as a form of public offering in which an underwriter purchases new securities offered by the issuing firm at the stated price. The underwriter then sells the shares to institutional investors and other outside shareholders without a commission. In other words, placings are similar to firm commitment offerings in the US. Slovin et al. (2000) find abnormal returns of +3.3% for UK placings compared with -2.9% for rights offerings. Similar results are documented by Armitage and Snell (2001), and Barnes and Walker (2006), though the latter find a smaller difference (+0.53% for placings and -0.72% for rights offerings). Results for the Australian market are similar to those for the UK with abnormal returns of +4.32% for private placements and -2.99% for rights issues (Arsiraphongphisit, 2008). Balachandran, Faff, and Theobald (2008) document an abnormal return of -1.74% (significant at the 1%-level) for all rights issue announcements in Australia. All of the above results relate to straight equity issues.

For convertible bonds, Abhyankar and Dunning (1999) find an abnormal return associated with placing announcements of -1.51% compared with 0.95% for rights issues (both significant at the 1%- level). For open offers they find an abnormal return

of -8.27% (but based on a very small sample of four announcements). These results are remarkable given that, for UK equity issues, rights issues are associated with more negative abnormal returns than placings. Market reactions to announcements of rights offerings of convertible bonds in other countries are: -0.77% (United States: Eckbo, 1986); -0.65% (Germany: Gebhardt, 2001) and -0.4% (not significant) (Australia: Suchard, 2007).

2.3.6 Reasons for offering

There are various reasons why corporations need financing, including to finance capital expenditures, new investments, growth of the company, general funding, or to refinance debt. According to Myers and Majluf (1984) issuing securities for investment opportunities sends a negative signal to the market. In contrast, the 'sequential financing hypothesis' of Mayers (1998) suggests that convertible bonds reduce the issuance costs and also present a solution for the free-cash flow problem. With forced conversion firms can use the funds to take-up positive net present value projects or to fund capital investment. A negative market reaction is predicted to the announcement of convertible bond to refund debt consistent with 'information-related hypothesis' that note reducing leverage will signal bad news to investors (Mikkelson and Partch, 1986).

Studies by Eckbo (1986) and Mikkelson and Partch (1986) reveal that issuing convertible debt for refunding existing debt, to finance capital expenditures, and general refunding is associated with significantly negative abnormal returns. Abhyankar and Dunning (1999) find a positive abnormal return of 1.08% (significant at the 5%-level) to announcements of convertible bonds that are used to pay for capital expenditure but a negative abnormal return of -2.9% (significant at the 10%-level) for debt refinancing.

2.3.7 *Rating of convertible bonds*

Stein (1992, pp. 17) suggests that 'the greater is the potential for costly distress (i.e., the lower the bond rating) the more credible is the convertible as a signal of optimism'. This statement implies that a firm with a lower rating bond, which uses a convertible bond as a method of financing, is optimistic enough that it will be able to force conversion and will eventually not be left with an additional debt burden. Therefore Stein (1992) argues that the announcement of convertible bond should be considered as good news and should be treated with a less negative announcement effect compared to an equity issue of the same size by the same firm.

Empirical studies by Mikkelson and Partch (1986), Kang and Stulz (1996), and Jen, Choi, and Lee (1997) find results that are consistent with the theory of Stein (1992). However, Eckbo (1986) documents contradictory results in the sense that convertible bonds with high Moody's ratings (Aaa-Aa and A) have non-significantly negative abnormal returns while convertible bonds with a low rating (Baa-Caa) have significantly negative abnormal returns during the announcements of these securities. In order to test the Stein's theory we compare abnormal returns between convertible bonds with different ratings in the meta-analysis.

2.3.8 *Size of the firm*

Some studies use firm size as a measure of asymmetric information, arguing that small firms tend to have higher asymmetric information compared to large firms. Larger firms such as listed firms have an obligation to release certain information to the public, while small firms have a tendency and greater opportunity to keep information private. The greater the degree of information release by firms, the smaller the expected absolute

level of market reaction to security issue announcements. Kang and Stulz (1996) report mean abnormal returns of +2.7% and +2.9% for convertible bond issuance announcements of large and small Japanese firms, respectively, with the difference not being significant. Similarly De Roon and Veld (1998) found no significant difference between large and small firm abnormal returns in the Netherlands for convertibles or for warrant-bonds. However, Gebhardt (2001) reports a positive abnormal return (+0.57%) for large German companies that announce issues of warrant-bond loans, but this is significantly lower than for small companies (+3.12%).

2.3.9   Industrial versus non-industrial companies

Smith (1986) notes that utilities tend to issue more external capital than industrial companies. For this reason, the stock price reaction associated with security issues by utilities can be expected to be less negative compared to those of industrial companies. Janjigian (1987) studies the stock price reactions of 234 industrial companies, 32 financial firms, 23 transportation firms, and 12 utilities in the United States that issue convertible bonds. He finds that utilities exhibit a (non-significant) abnormal return of -0.87% as compared to -1.71% for industrial firms (significant at the 1%-level). Similarly, Suchard (2007) finds that convertible bond issues by Australian industrial firms are associated with more negative abnormal returns than resource firms (comprised of minerals and energy sectors). In line with Smith (1986), Janjigian (1987), and Suchard (2007), we expect that industrial companies will exhibit more negative abnormal returns than utilities and similar sectors.

2.3.10 United States versus other countries

A significant proportion ($> 50\%$) of studies of the announcement effects of convertibles and warrant-bond loans are based on the United States. It is important, therefore, to consider whether non-US results might differ, so we include a separate dummy variable for a US study. Further, we split the market-oriented corporate governance variable (Section 2.3.4 above) between the US and other market-oriented countries by adopting a non-US market-oriented dummy variable in some models.

2.3.11 Publication bias

We collect articles from various sources including working papers and articles in top-ranked finance journals. Therefore, there is a possibility that we are facing a publication bias. We include two dummy variables to investigate publication bias (after Veld and Veld-Merkoulova, 2009). The first variable identifies studies published in one of the journals included in the Social Sciences Citation Index (SSCI) journal list. The second identifies studies published in one of the Top-3 finance journals (Journal of Finance, Journal of Financial Economics, and Review of Financial Studies). Table 2-2 lists all the variables, their measurements, and the predicted sign.

Table 2-2: The independent variables, their definition, and predicted sign

Independent Variables	Definition of variable	Predicted sign
Equity-versus debt-likeness		
Debt-like	A dummy variable, 1= issue is defined in the original paper as debt-like. The base variable is Mixed-like.	(+)
Equity-like	A dummy variable, 1= issue is defined in the original paper as equity-like. The base variable is Mixed-like.	(-)
Differences in corporate governance system		
Market-oriented	A dummy variable, 1= the study uses the sample from market-oriented economy (US, UK, Canada, and Australia).	(?)
Non-US Market	A dummy variable, 1= the study uses the sample from market-oriented economy other than US (UK, Canada, and Australia).	(-)
United States	A dummy variable, 1= the study uses the sample from the US.	(-)
Method of offering		
Rights	A dummy variable, 1 = rights issue, 0 = other methods of offerings including unknown methods or not investigated in the original study.	(?)
Reasons for offering		
Refund	A dummy variable, 1 = the reason of offering is for refunding. The base variable is unknown reason including not investigated in the original study.	(-)
Capital expenditure	A dummy variable, 1 = the reason of offering is for capital expenditure. The base variable is unknown reason including not investigated in the original study.	(?)
Other variables		
Convertible bond vs. warrant-bond	A dummy variable, 1= convertible bond, and 0 = warrant-bond.	(-)
Rating	A dummy variable, 1= high debt rating, 'A' or higher bond rating (according to Moody's or Standard and Poor's rating), 0=rated below A or unknown or not investigated in the original study.	(-)
Size	A dummy variable, 1 = large firms , 0 = not large or not investigated in the original study	(+)
Industrial	A dummy variable, 1 = industrial firms, 0 = non-industrial companies.	(+)
SSCI	A dummy variable, 1 = published in a journal that is included in the Social Sciences Citation Index (SSCI) list of 2008, 0 = published in other journals and working papers.	(?)
Top-3	A dummy variable, 1 = study is published in one of the Top-3 finance journals (i.e. Journal of Finance, Journal of Financial Economic, or Review of Financial Studies, 0 = published in other journals and working papers.	(?)

2.4   Methods

  2.4.1   Meta-analysis

We use meta-analysis to review studies on wealth effects of the announcement of convertible bond loans and warrant-bond loans. Meta-analysis is an alternative to narrative literature review and can be defined as (Green and Hall, 1984, pp. 37-38):

'….the use of quantitative methods to summarize and analyse research literature…..which treats the study as the unit of analysis and is entirely based on quantitatively expressed study attributes and outcomes'

Meta-analysis is also known as replication analysis that defines as 'developing generalizations from a set of imperfect replications' Farley, Lehman and Ryan (1981, pp. 598). One of the advantages of using meta-analysis is that we can derive statistically strong conclusions from the collected empirical evidence. In addition, meta-analysis provides more objective results compared to traditional literature reviews. Scholars also highlight advantages of meta-analysis include stressing gaps in the literature, offering new guidelines for research, and identifying ambiguous relationships among variables (Wolf, 1986).

  2.4.2   Model

Wealth effects are typically measured using the 'event study' methodology that analyses stock price reactions associated with announcements of unpredictable events. Event study procedures include estimating abnormal returns using either mean adjusted returns, market adjusted returns, Capital Asset Pricing Model (CAPM) returns, matched or control portfolio returns, and market model returns. Basically, unpredictable events will lead to three possibilities: positive abnormal returns, negative abnormal returns,

and neutral or zero abnormal returns. If the unpredictable event leads to a positive abnormal return, we can state that the event creates value to shareholders or increases shareholders wealth and vice versa.

In this meta-analysis we identify wealth effects of the announcement of convertible bond loan and warrant bond loan issues, using abnormal returns as the dependent variable in a multiple regression model. 'Abnormal returns are used as observations in a multi-factor natural experiment, with the experimental factors corresponding to the factors hypothesized to influence wealth creation' (Datta et al., 1992, p.71). Meanwhile, factors that potentially contribute to wealth creation on announcements of convertible bond loans and warrant-bond loans are independent variables and will be identified based on the sample studies. The relation between dependent and independent variables can be described as:

$$CAR_t = f \text{ (CB vs. WB, Debt-like, Equity-like, Market, Non-US Market, United States, Rights, Refund, Capital Expenditure, Rating, Size, Industrial, SSCI, Top-3)}$$

Where the CAR_t is defined as the short-run cumulative abnormal returns over t days. The independent variables are defined in Table 2-2.

2.5   Results of the meta-analysis

The 35 studies summarized in Table 2-1 provide the data for the meta-analysis. In our main models we use all study sub-samples that report a mean CAR for a two-day event window (typically day -1 to day 0, but depends on announcement day definition) around the hybrid security issuance announcement. To achieve greater study coverage, and provide robustness checks, we also estimate models incorporating studies that report short-run mean CARs over event window periods other than two-days. While we

use the closest period to two days, the inclusion of different periods within the dependent variable is a limitation of these models. Many of the 35 studies present separate sub-samples involving analysis of at least one of the variables mentioned in Section 2.3, leading to 76 (two-day) and 84 (all) observations.

One issue when using CARs in this way is that each observation is accorded equal weight, whereas the reliability of the mean CARs vary quite considerably. Reliability depends on the sample size and variability in observed company CARs within the original study. Sample sizes differ greatly and variability differs across studies in different time periods and countries. The minimum size of firms in the sub-samples is 4 (from a study by Abyhankar and Dunning (1999)) that investigates the announcement effects of convertible bonds for a sub-sample of open offers) and the largest is 452 (from a study by Lewis, Rogalski and Seward (2003) that investigates the announcement effects of convertible bonds for a sub-sample of equity-like convertible bonds).

The lowest CAR is derived from the sub-sample of the announcement of convertible bonds using open offers, which is -8.27% (with n= 4), and the largest CAR is derived from the sub-sample of the announcement of convertible bonds by method of mixed offers which is 2.37% (with n = 8). Both sub-samples are from the study by Abyhankar and Dunning (1999).

An alternative measure that takes reliability into account is the *t*-statistic (or Z-statistic) derived from each study's mean CAR and its standard error. We also use this measure as an alternative proxy for wealth effect using all sub-samples for which the measure can be derived; this reduces the sample size somewhat to 60 (two-day) and 67 (all)

observations. This provides a check that the CAR-based results are not being biased by small-sample studies.

Table 2-3 reports separately the mean and median cumulative abnormal returns (CARs) for 74 sub-sample studies of issuance announcements of convertible bond loans and 10 studies of warrant-bond loans. Overall, the studies include a total of 6,310 company announcements with 5,618 and 692 for convertibles and warrant-bonds, respectively.

For convertibles, the mean CAR across 74 observations is -1.14% (significantly different from zero at the 1%-level). While the range of CARs is quite large (-8.27% to +2.37%), the close proximity between mean and median suggests that outliers are not a major issue in the measure of central tendency. The mean CAR across 10 warrant-bond studies ranges between -1.59% and +1.41% with a non-significant overall mean of -0.02%. The difference between overall means for convertibles and warrant bonds is statistically significant (5% level). In other words, there is univariate evidence confirming a more negative wealth impact for issuing convertibles than for warrant-bonds, consistent with the theoretical arguments in Section 2.3 above.

The multivariate regression results based on mean CAR as dependent variable are shown in Table 2-4.[3] Column 2 in the table identifies the expected sign for the coefficients, based on the discussion in Section 2.3. Models 1 through 4 are based on the two-day event window sub-samples while Models 5 through 8 include all sub-samples incorporating, in addition, periods other than two days. Table 2-5 reports

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[3] We check for multicollinearity using Spearman correlations as well as using variance inflation factors (VIFs). The correlation matrix indicates that the highest correlation is between the Market and US variables, with a value of 0.66. The highest VIF is 2.40, for the Non-US Market variable, while the average VIF is 1.46. These figures indicate that multicollinearity is not an issue.

results for the same models but with the t-statistics of the mean CARs as the dependent variable. The models provide reasonable explanatory power, with adjusted R^2 ranging between 10% and 33%, and averaging 22% across all 16 models.

It is most useful to consider together the pattern of results for both proxies for wealth effects across the two tables. Three variables are statistically significant factors in determining reported wealth effects across all relevant models: Market, US study, and SSCI. The Market dummy variable identifies studies on countries considered to be market-oriented. This can be split between studies on the US market (US) and studies in non-US countries with a market orientation (non-US Market). The coefficients for Market and US are both consistently negative and significant, but are non-significant for non-US Market. Together, these results suggest that the negative wealth effects associated with hybrid security announcements in market-oriented studies (CAR averaging about -1%) are driven primarily by US studies, with little effect observed for non-US market-oriented country studies.

Table 2-3: Cumulative abnormal returns around announcements of convertible bonds and warrant-bond loans

Difference between CAR% for convertibles and for warrant-bonds is significant at the
5% level (*t = 2.11*); *** significant at the 1% level.

	CAR%	
	Convertibles	**Warrant-bonds**
Mean	-1.14 ***	-0.02
(t-stat)	*(-6.07)*	*(-0.07)*
Median	-1.02	-0.27
Standard deviation	1.62	1.09
Minimum	-8.27	-1.59
Maximum	2.37	1.41
Number of studies	74	10
Number of companies within studies	5,618	692

Table 2-4: Meta-analysis of sub-sample mean cumulative abnormal returns with CARs as the dependent variable

Notes:

Models (1) through (4) include studies reporting two-day event window mean CARs; models (5) through (8) include all studies.

The independent variables are: CB vs. WB (= 1 for convertibles; = 0 for warrant-bond loans), Debt-like, Equity-like, Market (studies in US, UK, Canada and Australia), non-US Market (studies in UK, Canada and Australia), United States, Rights (= 1 if rights issue), Refund (= 1 if hybrid used to refund debt), Capital expenditure (= 1 if hybrid used to finance capital expenditure), Rating (= 1 for higher Moody's rating), Size (= 1 for larger companies), Industrial, and SSCI (= 1 if study published in the Social Science Citation Index journal list for 2008).

Table reports coefficients (with *t*-statistics in parentheses)

*** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level (2-tail tests).

Variable	Exp. Sign	2 day event window studies				all studies			
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CB vs. WB	-	-0.64	-0.66	-0.65	-0.65	-0.65	-0.68	**-0.78***	**-0.75***
		(-1.51)	(-1.59)	(-1.61)	(-1.60)	(-1.50)	(-1.65)	*(-1.94)*	*(-1.84)*
Debt-like	+	0.22	0.29	0.08	0.07	0.26	0.36	0.02	0.03
		(0.46)	(0.62)	(0.16)	(0.16)	(0.47)	(0.69)	(0.03)	(0.06)
Equity-like	-	0.10	0.17	-0.05	-0.05	0.13	0.24	-0.11	-0.09
		(0.20)	(0.36)	(-0.10)	(-0.11)	(0.25)	(0.45)	(-0.21)	(-0.18)
Market	-	**-0.78***	**-0.85****			**-1.17****	**-1.25****		
		(-2.55)	**(-2.83)**			**(-3.72)**	**(-4.14)**		
Non-US Market	-				0.05				-0.13
					(0.12)				(-0.29)
United States	-			**-1.09****	**-1.07****			**-1.47****	**-1.51****
				(-3.81)	**(-3.44)**			**(-5.04)**	**(-4.75)**
Rights	?	**0.73***	**0.88****	0.22	0.19	**0.88****	**1.09****	0.22	0.28
		(1.73)	*(2.09)*	(0.56)	(0.42)	*(2.00)*	*(2.55)*	(0.55)	(0.62)
Refund	-	**-1.27***	**-1.43****	**-1.49****	**-1.51****	-1.17	**-1.40***	**-1.49****	**-1.46****
		(-1.93)	*(-2.21)*	*(-2.41)*	*(-2.37)*	(-1.60)	*(-1.99)*	*(-2.19)*	*(-2.09)*
Capital Expenditure	?	0.32	0.16	0.10	0.09	0.42	0.19	0.10	0.14
		(0.49)	(0.25)	(0.17)	(0.14)	(0.58)	(0.27)	(0.15)	(0.20)
Rating (Higher)	-	-0.27	-0.22	-0.25	-0.25	0.03	0.04	0.00	0.01
		(-0.45)	(-0.37)	(-0.44)	(-0.45)	(0.05)	(0.07)	(0.00)	(0.01)
Size (Larger)	+					0.62	0.21	0.59	0.56
						(0.83)	(0.29)	(0.85)	(0.79)
Industrial	-	**-0.56***	**-0.74****	-0.18	-0.17	-0.32	**-0.59****	0.09	0.07
		(-2.03)	**(-2.64)**	(-0.64)	(-0.58)	(-1.12)	**(-2.01)**	(0.31)	(0.23)
SSCI	?		**0.59****				**0.84****		
			(2.10)				**(2.78)**		
Intercept		0.31	0.09	0.23	0.22	0.46	0.14	0.44	0.46
Adjusted R^2		20.9%	24.8%	28.9%	27.8%	23.9%	30.3%	32.9%	32.1%
F		3.18***	3.45***	4.34***	3.85***	3.57***	4.25***	5.03***	4.52***
No. of observations		75	75	75	75	83	83	83	83

Table 2-5: Meta-analysis of sub-sample mean cumulative abnormal returns with t-statistics as the dependent variable

Notes:
Models (1) through (4) include studies reporting two-day event window mean CARs; models (5) through (8) include all studies.

The independent variables are: CB vs. WB (= 1 for convertibles; = 0 for warrant-bond loans), Debt-like, Equity-like, Market (studies in US, UK, Canada and Australia), non-US Market (studies in UK, Canada and Australia), United States, Rights (= 1 if rights issue), Refund (= 1 if hybrid used to refund debt), Capital expenditure (= 1 if hybrid used to finance capital expenditure), Rating (= 1 for higher Moody's rating), Size (= 1 for larger companies), Industrial, and SSCI (= 1 if study published in the Social Science Citation Index journal list for 2008).

Table reports coefficients (with *t*-statistics in parentheses)
*** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level (2-tail tests).

Variable	Exp Sign	2 day event window studies				all studies			
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CB vs. WB	-	-2.33**	-2.47**	-2.47**	-2.40**	-1.67	-1.80*	-1.89*	-1.79*
		(-2.17)	(-2.43)	(-2.37)	(-2.27)	(-1.56)	(-1.76)	(-1.82)	(-1.69)
Debt-like	+	4.37	3.46	2.76	3.12	4.61	3.65	2.38	3.03
		(1.59)	(1.31)	(1.02)	(1.10)	(1.57)	(1.30)	(0.83)	(1.01)
Equity-like	-	1.69	0.78	0.08	0.44	1.93	0.97	-0.30	0.35
		(0.61)	(0.30)	(0.03)	(0.16)	(0.66)	(0.34)	(-0.10)	(0.12)
Market	-	-2.14**	-2.06**			-2.97***	-2.82***		
		(-2.49)	(-2.52)			(-3.48)	(-3.46)		
Non-US Market	-				-0.59				-1.04
					(-0.45)				(-0.75)
United States	-			-2.27***	-2.44***			-2.95***	-3.24***
				(-2.93)	(-2.80)			(-3.90)	(-3.80)
Rights	?	1.83	1.18	1.25	1.41	1.70	1.01	0.87	1.17
		(1.11)	(0.75)	(0.78)	(0.86)	(0.97)	(0.60)	(0.52)	(0.67)
Refund	-	0.67	0.02	0.09	0.25	0.54	-0.15	-0.29	0.01
		(0.41)	(0.01)	(0.05)	(0.15)	(0.31)	(-0.09)	(-0.17)	(0.01)
Capital Expenditure	?	2.48	1.83	1.90	2.06	2.35	1.66	1.52	1.82
		(1.51)	(1.16)	(1.19)	(1.25)	(1.35)	(0.99)	(0.90)	(1.05)
Rating (Higher)	-	1.58	1.57	1.50	1.57	1.73	1.62	1.60	1.67
		(1.05)	(1.11)	(1.03)	(1.07)	(1.21)	(1.19)	(1.15)	(1.19)
Size (Larger)	+					1.30	0.59	1.69	1.41
						(0.72)	(0.34)	(0.98)	(0.80)
Industrial	-	-0.38	-0.77	0.35	0.22	0.18	-0.23	1.03	0.80
		(-0.50)	(-1.07)	(0.45)	(0.27)	(0.23)	(-0.31)	(1.35)	(0.98)
SSCI	?		2.04**				2.10**		
			(2.61)				(2.58)		
Intercept		1.03	-0.04	0.63	0.80	0.97	-0.20	0.44	0.73
Adjusted R²		10.0%	19.4%	13.7%	12.3%	16.7%	24.3%	20.3%	19.6%
F		1.73	2.42**	2.04*	1.83*	2.32**	2.93**	2.68***	2.47**
No. of observations		60	60	60	60	67	67	67	67

Studies published in SSCI journals tend to have a positive wealth effect bias; perhaps more positive issuance announcement effects are considered more interesting given the underlying expectation of a negative effect, leading to publication in relatively prestigious journals.[4]

Two variables are significant in roughly half of the 16 models: CB vs. WB and Refund. The coefficients on CB vs. WB across the CAR-based models suggest that announcements of convertibles suffer a larger negative wealth effect (about -0.7%) than warrant-bonds. The coefficients are significant in 9 models and fairly close to significant in the rest (largest $p = 0.14$). Coefficient significance is typically greater in the t-statistics based models (Table 2-5) suggesting that small sample studies in Table 2-4 may be partially reducing the observed effect. Over all studies, ceteris paribus, there is evidence consistent with theoretical arguments that warrant-bonds have wealth effect advantages over convertibles.

The coefficient on Refund is significantly negative in seven of the eight CAR models, but is non-significant in all t-statistics based models. The CAR results suggest that issuing hybrid securities to repay debt is not favoured by market participants; the effect is about -1.4% on average. Perhaps the market views the non-replacement of debt with further debt as an indication of lack of confidence, or even desperation by managers of the issuing firm. However, given the non-significance of the variable in the t-statistics based models, such evidence must be viewed with some caution as it may be based on small sub-sample studies.

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[4] Interestingly, when we use publication in the Top 3 finance journals as an alternative proxy for publication bias we find (in models not reported in the Tables) no significant effects.

Two further variables exhibit significance in some models: Rights and Industry. Rights is significantly positive in four of the eight CAR based models and remains positive, but not significant, in the *t*-statistics based models. Perhaps surprisingly then, overall there is weak evidence that rights issues of hybrid securities are viewed less negatively by investors than other issuance mechanisms. The negative coefficient on Industry is consistent with the argument that industrial companies tend to raise less capital than some other sectors, so any security issues are viewed more suspiciously (Smith, 1986).

Several factors have non-significant coefficients across all models: the equity-like or debt-like characteristics of convertibles, bond rating, whether funds are used for capital expenditure and company size. This suggests that the evidence from prior research on such issues does not appear to be robust when other factors are taken into account. Absent further, more robust, evidence we must assume that they do not have a major impact on announcement effects; more research is needed.

2.6   Discussion of the results and conclusions

This paper presents the results from a meta-analysis of 6,310 company announcements of convertible bonds and warrant-bond loans, contained in 84 reported sub-samples from 35 studies. The result that stands out in this study is that hybrid debt announcements by US firms are associated with larger negative abnormal returns than those announced by companies in other countries, even market-oriented ones. A possible explanation for this result is that companies in the US are more widely held than those in other countries, where ownership is less dispersed. This difference may lead to US companies facing a larger information asymmetry between managers and investors compared to companies in other

countries. This information asymmetry possibly translates itself in more negative abnormal returns. However, more analysis is needed to confirm whether the difference in abnormal returns is really driven by differences in information asymmetry.

A second interesting result is that we confirm evidence of a significant difference between abnormal returns associated with announcements of convertible bonds and of warrant-bond loans. Both univariate and multivariate analysis suggest that warrant-bond loans show no significant negative wealth effect, on average, in direct contrast to the mean -1.14% for convertibles. This is consistent with theoretical expectations. A company issuing warrant-bonds has more flexibility than a company issuing convertible bonds. With a convertible bond the bond disappears when the conversion right is exercised. This is not necessarily the case with a warrant-bond where it is possible to specify a different maturity for the bond and the warrants. Another potential advantage of warrant-bonds is that investors can separately trade the bonds and the warrants. This creates a benefit for the investor, while there is no obvious disadvantage to the issuing company. In light of this, it is perhaps surprising that, in recent years, warrant-bond issues seem to have virtually disappeared in practice. Here also lies an interesting question for future research.

Third, issuing hybrid securities to refund debt is not favoured by investors, which we speculate might result from a signalling effect. Failure to replace debt with further debt may suggest problems in banking relationships or perhaps even financial distress. Fourth, while the increased negative wealth effect for industrial companies can be rationalised, the announcement effects for rights issues hybrid securities is more challenging. In many of the

CAR model specifications, rights issues show more positive abnormal returns than non-rights issues. Such speculations and challenges warrant further investigation.

Finally, the lack of significant effects for several factors found to be important in prior research also suggests that more evidence is needed before we can claim to understand the wealth effects of hybrid securities. In summary, it appears that we might know less than we think we do about the wealth effects of hybrid securities which is encouraging for future research in the area.

Chapter 3

Wealth Effects Associated with Announcements of Hybrid Securities in an Emerging Country: Evidence from Malaysia

3.1 Introduction

Extensive research has been carried out on the wealth effects of security issues such as debt, equity, and hybrid securities such as convertible bonds. Hybrid securities have been the centre of attention due to these securities being unique in terms of having characteristics of both debt and equity. At an early stage, the study of market reaction towards the announcement of convertible bonds and warrant-bond has been the focus of research in the United States. Later this research was expanded to Japan, the Netherlands, the United Kingdom, France, Western Europe, Canada, Australia, China, Taiwan, and Malaysia. Table 2-1 provides a detailed list of studies of hybrid security announcements around the world.

Almost half of the studies on the announcement effects of hybrid securities focused on the United States, as they are the largest issuers of convertible bonds, followed by Japan. However, relatively few studies have been performed with data from emerging countries. For example, Chang, Chen, and Liu (2004) use sample data from Taiwan, Li and Wang (2008) use data from China, and Mohd Ashhari and Sin-Chun (2009) use data from Malaysia. This study is motivated by the limited literature available in this particular area in emerging countries, specifically Malaysia. A further justification for investigating

Malaysia is the important role that hybrid securities played during the Asian Financial Crisis (1997 to 1999) as well as during the recovery period (until the end of 2001).

The Asian Financial Crisis was no different from other financial crises in other regions except that it was larger in scale and more complex. The complexity of this crisis was illustrated by its large impact on the financial system as well as the large volume of corporate distress (Claessens, Djankov, and Klingebiel, 1999). Despite that, Malaysia was the second earliest country in Asia to recover from the crisis after South Korea (Claessens et al., 1999). It is of great interest to consider how firms in Malaysia survived during the financial crisis. It may be that restructuring strategies by listed firms in Malaysia are different from strategies employed by companies in other countries. An increase in issuance of hybrid securities during the recession and recovery period in comparison to other years is arguably a better strategy or mechanism for restructuring. Table 3-1 details the funds acquired in the capital market by the private sector in Malaysia from 1995 until 2010. The issuance of convertible bonds and warrant-bonds increased significantly during the financial crisis and recovery period (1997 until 2001), especially in 1999, in comparison to other alternative debt and equity. [5]

Chapter 3 contributes to the literature in several ways. Firstly, it adds more empirical literature on the wealth effects of the hybrid securities announcement in emerging countries, specifically in this case, Malaysia. It also highlights the market response towards the purpose of issuing convertible bonds and warrant-bonds, as well as the method of issuing these hybrid securities. Furthermore, the research presented in this chapter

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[5] As indicated in Table 3-1, the issuance of bonds with warrants and convertible bonds constituted 12.17% of the capital market (3.36% and 8.81% respectively) in 1999.

investigates whether or not the wealth effects of these hybrid securities announcements are the same. The work presented in this chapter covers announcements of the intention to issue hybrid securities in Malaysia from January 1996 to December 2009. Although one study of the wealth effects of the intention to issue convertible bonds has been carried out in Malaysia (Mohd Ashhari and Sin-Chun, 2009), the present study expands the previous study sample period and compares the market response between the two similar hybrid securities, namely convertible bonds and warrant-bonds. This chapter also investigates issuer characteristics that might determine the market response to the announcements of hybrid securities in Malaysia.

The results in this chapter document that the wealth effects of the intention to issue convertible bonds in Malaysia induce negative abnormal returns of -1.10% on the event window (-1, 1), whereas the warrant-bonds induce positive abnormal returns of 2.25% on the same event window. There is a significant difference between the mean of these abnormal returns confirming that the market perceived warrant-bonds as more advantageous than convertible bonds. However, when other factors are taken into accounts, there are no significant differences between convertible bonds and warrant-bonds. The announcements of hybrid securities by the method of offerings namely: private placements and rights offering, document non-significant abnormal returns of -0.81% and 0.23%, contradict with the 'certification hypothesis' and 'signalling hypothesis' that will be discussed later in Section 3.3. The results do not support Ross's 'information-signalling model' (1977) as non-significant abnormal returns are observed on the three-day event window of announcements for the purpose of offerings (i.e., debt restructuring, mergers and/or acquisitions, capital investments, and working capital). These results will be

discussed in detail later in this chapter. Lastly, there is no evidence found from the results of multivariate analysis to support the 'risk uncertainty argument', since firms with high standard deviation induce more negative abnormal returns, contradicting with the theory.

The organisation of this chapter is as follows: Section 3.2 briefly discusses private debt securities in Malaysia; Section 3.3 considers various theoretical arguments about the factors that determine market reaction to the announcements of these hybrid securities, and hypotheses construction. Research design and methods are discussed in Section 3.4, with empirical results and analysis presented in Section 3.5. Finally the chapter is concluded in Section 3.6.

Table 3-1: Capital market funds raised by the private sector in Malaysia from 1995 to 2010

Unit is in RM million

PERIOD	1995	%	1996	%	1997	%	1998	%	1999	%	2000	%	2001	%	2002	%
Rights Issues of equity	5240	33.62	5269	23.73	8525	32.31	722	6.08	4347	15.41	3898	14.54	1892	5.59	3271	10.75
Private Placement of equity	1147	7.36	4554	20.51	3234	12.26	320	2.69	519	1.84	912	3.40	1681	4.97	2402	7.90
Straight Bonds	3930	25.21	2675	12.05	4209	15.95	10238	86.22	18182	64.44	12940	48.28	14360	42.43	7763	25.52
Bonds with Warrants	3608	23.15	5564	25.06	2950	11.18	150	1.26	947	3.36	-	0.00	913	2.70	300	0.99
Convertible Bonds	863	5.54	1795	8.08	2215	8.40	99	0.83	2487	8.81	1386	5.17	1493	4.41	2852	9.38
Islamic Bonds	800	5.13	2350	10.58	5250	19.90	345	2.91	1734	6.15	7666	28.60	13501	39.90	13829	45.46
Total	15588	100	22207	100	26383	100	11874	100	28216	100	26802	100	33840	100	30417	100
PERIOD	**2003**	**%**	**2004**	**%**	**2005**	**%**	**2006**	**%**	**2007**	**%**	**2008**	**%**	**2009**	**%**	**2010**	**%**
Rights Issues of equity	2,283	5.29	1,494	7.43	968	5.34	367	2.63	4,341	18.19	3,659	13.97	13,714	47.13	12,250	58.46
Private Placement of equity	707	1.64	838	4.17	-	0	-	0	186	0.78	247	0.94	144	0.49	-	0
Straight Bonds	28,860	66.85	4,313	21.45	3,869	21.35	8,667	62.04	7,008	29.37	13,977	53.35	10,803	37.12	5,286	25.23
Bonds with Warrants	-	0	60	0.30	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Convertible Bonds	3,177	7.36	4,301	21.39	3,745	20.67	156	1.12	197	0.83	846	3.23	655	2.25	190	0.91
Islamic Bonds	8,143	18.86	9,104	45.27	9,537	52.64	4,781	34.22	12,127	50.83	7,468	28.51	3,785	13.01	3,228	15.41
Total	43,170	100	20,110	100	18,119	100	13,971	100	23,859	100	26,197	100	29,101	100	20,954	100

Source: Central Bank of Malaysia/Bank Negara Malaysia web-site

3.2   Private debt securities in Malaysia

As of on August 12, 2011, the process of issuing debenture or private debt securities in Malaysia is stipulated under the Private Debt Securities Guidelines. These guidelines replaced the earlier Guidelines on the Offering of Private Debt Securities that were issued on July 26, 2004. However, the earlier guidelines are more relevant to the sample data discussed in this chapter since all the announcements of the intention to issue convertible bonds and warrant-bonds in this study are taken from the issuance of private debt securities from January 1996 to December 2009. Therefore, the discussion in this section is based on the Guidelines on the Offering of Private Debt Securities that was issued on July 26, 2004.

As defined in these guidelines, private debt securities include "bonds, notes, loan stocks and commercial papers whether convertible into equity or not and whether redeemable or otherwise". Starting from July 1, 2000, the issuer of the private debt securities should obtain approval from the Securities Commission (SC) under section 32 of the Securities Act 1993. Apart from that, they also have to seek approval from other regulatory bodies such as the Controller of Foreign Exchange before submitting their proposal or documentation to the SC. After the submission of the required documents the SC will give approval within 14 working days for issue, offer, or invitation by the private company, and for the non-convertible private debt securities. However, for offer or invitation of convertible securities (including private debt securities together with warrant) the time frame for SC approval varies. According to the Issues Guidelines, the SC's approval will take at least 21 working days for the issuance of equity-linked securities and up to 60 working days for the acquisitions and disposal of assets that changed the business direction

and policy of the issuance company significantly as well as the proposals from the distressed company[6]. Once approved, the issuers have 6 months to implement their proposals. There is flexibility in the case of a debt programme in which the initial payment must be made within 2 years from the date of the SC's approval.

Based on the Guidelines on the offering of Private Debt Securities, it can be expected that the length between the first announcements of the intention to issue hybrid securities and the issuance of these securities can sometimes be long. In relation to our sample data set, the shortest length of first announcement and the issuance date is approximately 3 months, and the average length is approximately 15 months. The announcement of the intention to issue hybrid securities for debt restructuring or programme may take longer than average due to the fact that companies can implement their initial payment within 2 years from the date of the SC's approval.

For example, on November 19, 2001, Pelikan International Corporation Berhad announced their intention to issue convertible bonds for the purpose of restructuring scheme that comprises disposal, acquisitions, private placement, bonus issue, and offer for sale. They expected to submit their application to the SC within 6 months from the announcement date (November 19, 2001). Through AmMerchant Bank, that acted as their principal adviser, on May 17, 2002, they announced that they would defer their submission of the application to the SC and would instead submit 3 months after finalising the terms and conditions of the proposed acquisition. On June 6, 2003, AmMerchant Bank announced the progress of the acquisition which involved a few dates. On January 17, 2003, they received approval from

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[6] Frequently Asked Questions of Guidelines on the Offering of Equity and Equity-Linked Securities (1 February 2008) on www.sc.com.my

the Foreign Investment Committee. Then, on March 20, 2003, they gained approval from Central Bank of Malaysia or Bank Negara Malaysia and, on June 2, 2003, approval was gained from the SC for the acquisition with few conditions. The process continued for some time, and finally on April 8, 2005, convertible bonds were issued approximately 3 years and 5 months after the initial announcement date. This example demonstrates that the issuance of hybrid securities in Malaysia is not always straight forward.

These guidelines also document that the rating of private debt securities is compulsory except for irredeemable convertible loan stocks and private debt securities that are non-transferable and non-tradable which do not required a rating by investors. It is necessary for the issuance of private debt securities to be tendered on the Fully Automated System for Issuing/Tendering (FAST), and they need to be under the settlement system of Real Time Electronic Transfer of Funds and Securities (RENTAS), unless the issuance is listed on Bursa Malaysia. FAST, operated by the Central Bank of Malaysia or Bank Negara Malaysia is an electronic system that facilitates the submission and processing of tenders for scripless securities (including private debt securities) at primary market whereas RENTAS is a system for issuance and settlement of scripless securities.

3.3   Theories and hypotheses construction

3.3.1   *Asymmetry Information Hypothesis*

A theory proposed by Myers and Majluf (1984), based on asymmetric information of notes that external financing signals negative market information to the outside investors. As discussed previously in Chapter 2, investors perceive that announcements of equity may give a negative signal to the market, as investors know that managers have access to private information. Therefore, managers will issue equity when the share price is overvalued. With the existence of asymmetric information, Myers and Majluf (1984) suggest an order in issuing securities; first, use retained earnings, then use less risky assets such as straight debt, and then issue hybrid securities. The final option is to issue external equity. The theory of asymmetric information suggests that issuing securities is likely to have a negative impact on the share price. However, the magnitude of the impact will vary between securities. Eckbo, Masulis and Norli (2007) note that announcements of securities offerings in the United States confirm that there are negative abnormal returns for equity (-2.22%, except for Seasons Equity Offerings by method of private placements, which contribute to significant positive abnormal returns of 2.45%), almost zero or less negative returns for straight debt (-0.24%) whereas convertible bonds are in between (-1.82%).

Empirical results on the short event-window of wealth effects associated with the announcement of convertible bonds in market-oriented countries document negative abnormal returns (Jayamaran, Shastri, and Tandon, 1990; Abhyankar and Dunning, 1999; Marquardt and Wiedman, 2005). However, studies that contribute to contrary results are using sample data set from network-oriented countries (i.e., Japan: Christensen et al., 1996;

Kang and Stulz, 1996; the Netherlands: De Roon and Veld, 1998; Taiwan: Chang et al., 2004). These countries have characteristics such as high family ownership structure, high government or state ownership as well as high involvement of banks in their financing decision. The findings in the meta-analysis study discussed in Chapter 2 indicate that market-oriented studies contribute to significant larger (or more) negative abnormal returns towards the announcement of hybrid securities, compared to network-oriented studies. This result is significantly driven by studies using data from the United States, possibly due to companies in the United States being more dispersed and having a greater degree of asymmetric information.

In a similar fashion to other firms in emerging countries in Asia, Malaysian listed firms tend to have high concentrated family ownership with one controlling owner, government or state ownership[7] as well as affiliated groups that are also controlled by families (Claessens, Djankov and Lang, 2000; Claessens, Fan, and Lang, 2006). These characteristics are different from developed countries such as Japan which tend to be controlled by banks or financial institutions. The institutional background of Malaysian firms is very similar to network-oriented countries in terms of concentration of ownership (family and group affiliation), except for the control aspect. Concentrated ownership suggests lower information asymmetry, leading to positive (or less negative) abnormal returns. Based on this argument, announcements of the intention to issue hybrid securities in Malaysia are hypothesized to be associated with positive abnormal returns.

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[7]According to GLC Transformation Programme Progress Review 2011, as on 1st April 2011, Government-link companies constitute RM353 billion (approximately £70.60 billion) of the total market capitalization or 36% of the Bursa Malaysia.

Hypothesis 1: Announcements of the intention to issue hybrid securities in Malaysia are associated with positive abnormal returns.

3.3.2 Risk Uncertainty Hypothesis

The 'risk uncertainty hypothesis' is first discussed by Brennan and Schwartz (1988). The basic idea of this hypothesis is that convertible bonds are suitable for a firm that have a risk uncertainty or disagreement about risk between investors and shareholders. According to this hypothesis, companies that issue convertible debt have the largest risk uncertainty in which issuing straight debt can be very costly. While the value of the straight debt in a convertible bond might be low, this low values is offset by the increased value of the conversion. In other words, if investors perceive that the risk of affirm is high but firms perceive the risk is low, the value of the straight bond will decline, but the value of the 'option' or the conversion value will increase. Based on the risk uncertainty argument, the second hypothesis is:

Hypothesis 2: Announcements of the intention to issue hybrid securities in Malaysia by firms with high risk uncertainty are associated with more positive abnormal returns than by firms with less risk uncertainty.

3.3.3 Method of offering

The 'certification hypothesis' of Hertzel and Smith (1993) suggests that private placement investors have an opportunity to assess the firm's value as well as the investment opportunities, thereby alleviating the asymmetric information in issuing securities suggested by Myers and Majluf (1984). According to Hertzel and Smith (1993) this

'certification hypothesis' is in agreement with the 'ownership hypothesis' that private placement improves managerial performance due to increased monitoring by the block-holders. Heinkel and Schwartz (1986) in their 'signalling hypothesis' suggest that rights offering of equity convey more favourable information than non-rights equity offering, so will lead to a less negative stock price response during the announcement of security. Based on the 'signalling hypothesis' of Heinkel and Schwartz (1986) and the 'certification hypothesis' of Hertzel and Smith (1993) above, the rights issue and private placements of hybrid securities in Malaysia are expected to be associated with positive (or less negative) abnormal returns.

Hypothesis 3: Announcements of the intention to issue hybrid securities in Malaysia by method of private placements are associated with positive abnormal returns.

Hypothesis 4: Announcements of the intention to issue hybrid securities in Malaysia by method of rights offering are associated with positive abnormal returns.

3.3.4   Purpose of offering

According to Dann and Mikkelson (1984), the use of proceeds from convertible debt offerings in leverage-increasing activities such as new financing is associated with more favourable abnormal returns than in leverage-decreasing activities such as refinancing existing debt. The argument is in line with Ross's 'information-signalling model' (1977) that suggests the increase in leverage will increase the market's perception of firm value. The notion of this approach is that managers have insider information which outsiders do not have. Thus, the decision of managers to increase leverage signals to outsiders that the

value of firms is increasing. In agreement with the 'information-signalling model', the announcement of hybrid securities for the purpose of debt restructuring, refinancing or settlement (leverage-decreasing) are hypothesized to be associated with more negative abnormal returns than for capital investment and working capital (leverage-increasing). The same direction is expected for the announcement of the intention to issue hybrid securities for the purpose of mergers and/or acquisitions which are leverage-increasing activities.

Hypothesis 5: Announcements of the intention to issue hybrid securities in Malaysia for the purpose of debt restructuring/refinancing/settlement are associated with negative abnormal returns.

Hypothesis 6: Announcements of the intention to issue hybrid securities in Malaysia for the purpose of capital investment and working capital are associated with positive abnormal returns.

Hypothesis 7: Announcements of the intention to issue hybrid securities in Malaysia for the purpose of mergers and acquisition are associated with positive abnormal returns.

3.3.5   *Control variables[8]*

3.3.5.1   *Convertible bonds versus warrant-bonds*

Both convertible bonds and warrant-bonds are categorized as hybrid securities that have a combination of equity and debt characteristics. Despite that, they are different in a number of ways. In Chapter 2, we discussed differences between both securities in detail. As with

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[8] The distress firms are not included in the control variable since this variable has high correlation with standard deviation of firm equity (variable for the risk uncertainty hypothesis).

the case in Malaysia, Table 3-1 indicates that the issuance of convertible bonds increased gradually during certain periods while the issuance of warrant-bonds reduced and slowly disappeared over time.

Regardless of popularity and flexibility, empirical studies on the wealth effects of warrant-bonds announcements indicate positive or less negative abnormal returns than for convertible bonds announcement. Three studies from different countries: Japan, the Netherlands, and Germany (Kang et al., 1995; Kang and Stulz, 1996; De Roon and Veld, 1998; Gebhardt, 2001) reveal positive abnormal returns on the announcements of the intention to issue warrant-bonds and two studies from the United States also document less negative abnormal returns compared to convertible bonds (Billingsley, Lamy, and Smith, 1990; Jayamaran et al., 1990). The meta-analysis study presented in Chapter 2 also finds that the mean cumulative abnormal return for 74 sub-samples of convertible bonds and 10 sub-samples of warrant-bonds are -1.14% and -0.02% respectively, and the difference between them is statistically significant. Building on the points presented above, announcements of the intention to issue warrant-bonds are expected to be associated with less negative abnormal returns than convertible bonds.

3.3.5.2   *Economic condition*

The economic condition is constructed as a control variable in this chapter because the study period includes the periods both during and after the Asian financial crisis. There is a possibility that the wealth effects of announcements of the intention to issue hybrid securities during financial crisis are different from other economic conditions.

3.3.5.3   Clean sample

The clean sample control variable is constructed to distinguish between abnormal returns from the two types of announcements in the data set. The first type is the clean sample that includes announcements without any other corporate announcements, i.e., earnings or dividend announcements. The second type of announcement is the contaminated sample, which includes package announcements or the announcement of the intention to issue hybrid securities along with other corporate announcements.

3.4   Research design and methodology

3.4.1   Event study methodology

To investigate the wealth effects of the announcement of the intention to issue hybrid securities, the standard event-study methodology is conducted as proposed by Brown and Warner (1985). The announcement dates are taken from two sources namely: the Investors' Digest for the announcements from 1996 to 1999, and the Bursa Malaysia website for announcements from 2000 to 2009. The announcement date recorded in Investors' Digest is the date that Kuala Lumpur Stock Exchange (currently known as Bursa Malaysia) receives the announcement from listed companies. Therefore, this date is treated as the event date, day 0. Announcements on the Bursa Malaysia website are received directly from public listed companies, merchant banks, or companies' secretary through the Listing Information Network (LINK). Listed companies, merchant banks, or companies' secretaries made the announcement and then transfer it electronically to Bursa Malaysia to verify. After verification, the announcement will be disseminated to the public. Again, the date that announcements are published on the website are treated as the event date (day 0).

The estimation period for market model is 171 days, starting at day 180 until day 10 before the announcement date (-180, -10). The test period is from 5 days before the announcement until 15 days after the announcement (-5, 15). The returns index (RI) series of the securities that are already adjusted for dividend are downloaded from Datastream. Logarithmic returns are computed as $ln\ (P_{i,\ t}) - ln\ (P_{i,\ t-1})$. The logarithmic returns are used because they are more normally distributed than the discrete returns (Strong, 1992). The market model as defined below is used to find the expected return.

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it}$$

Where:

R_{it} = return of security i in period t;

R_{mt} = return of the market

α_i = alpha or the intercept of the security i

β_i = beta or the slope of the security i

e_{it} = the error term of security i in period t

Before August 2009, public listed companies on Bursa Malaysia were segregated based on their market capitalization, namely: the Main Board (at least RM60 million market capitalization) and the Second Board (at least 40 million market capitalizations). On August 3, 2009, the Main Board and the Second Board were merged to form Bursa Malaysia Main Market. This revamp required to use more than one benchmark of market index. Two benchmarks of the market index are used according to their listing board for announcements before August 2009. For example, Golden Land Berhad is listed on the Second Board on the date of announcements (November 16, 1999), so the Second Board

Index is used as the market index. Southern Steel Berhad is listed on the Main Board on the date of announcement (April 11, 2002), so the Exchange Main Board All Shares Index (EMAS) is used as the market index. For announcements after August 2009, FTSE Bursa Malaysia EMAS index is used as the benchmark if the announcements are from the main market and ACE Index if the company is from the Access Certainty Efficiency (ACE) market, previously known as MESDAQ market. FTSE Bursa Malaysia KLCI is not chosen as the benchmark because it consists only of the 30 largest companies on the FTSE Bursa Malaysia EMAS. This approach has been used by Ahmad-Zaluki, Campbell, and Goodacre (2007) in their Malaysian IPOs study in which they use the market index according to the listed companies' board. All the indices are based on the market-capitalization or a value-weighted index as it is available from Datastream.

Calculating the abnormal return is straight forward. Initially, the return on a security is regressed against the market index to get the beta as well as the alpha. Then, to find the abnormal or excess return, the difference between the actual return on the security (as computed with the natural log) and expected return from the market model is computed as defined below:

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$$

The Beta is adjusted according to Scholes and Williams (1977) for thin trading purpose. The average abnormal return is computed by dividing the abnormal return by the number of sample or announcements as follows:

$$AAR = 1/n \sum AR_{it}$$

The *t*-statistic presented by Brown and Warner (1985, pp. 7) is used to test the significance of the average abnormal return. The calculation of *t*-statistic for time t is as follows:

$$t\text{-stat} = AAR/ SD\ (AAR)$$

Where AAR represents average abnormal return across securities in the sample. SD (AAR) is the standard deviation for average abnormal return for all securities in the sample calculated during the estimation period. The *t*-statistic for cumulative average abnormal return (CAR) is a slightly different from the above. It is calculated by dividing CAR over the square root of the number of days in the event window multiplied by the estimated standard deviation. For example,the *t*-statistic for two-day event window of (-1,0) is:

$$t\text{-statistic} = CAR_{(-1,0)} / \sqrt{2} * SD\ (AAR)$$

In addition, a non-parametric test, namely the generalised sign test, modified by Cowan (1992), is also computed. Corrado and Truong (2008) note that using non-parametric tests (a rank test or a sign test) with Asia-pacific security market data reduced misspecification that is experienced by using the *t*-statistics. They suggest using the equal weighted index together with the non-parametric test for Asian-pacific security market data. Following the work of Corrado and Truong (2008), the study presented in this chapter also tests the significance of abnormal returns with a generalised sign test proposed by Cowan (1992) with the value-weighted market index (chosen due to its availability in Datastream). According to Cowan (1992, pp.1), the generalised sign test is a test that 'compares the proportion of positive abnormal returns around an event to the proportion from a period unaffected by the event'. Using this method does not require the abnormal return

distribution to be normalised, and is less sensitive to outliers than the parametric tests described previously. The calculation of the generalised sign test is:

$$Z_g = w \text{-} n\grave{p} \,/\, [n\grave{p} \,(1\text{-} \,\grave{p})]^{\,1/2}$$

Where:

Z_g= generalised sign test

w = the number of positive stock in the event window

n = number of stock in the sample

$\grave{p}$ = the fraction of positive abnormal returns for all the sample in the estimation period

3.4.2   Sample selection

The chosen sample consists of listed firms on Bursa Malaysia (formerly known as the Kuala Lumpur Security Exchange or KLSE) from 1996 to 2009. The list of convertible bonds and warrant-bonds issues is downloaded from Datastream, Fully Automated System and Tendering (FAST), and Security Commission websites. From the list, announcements of hybrid securities were tracked back from Investors' Digest for the time period of 1996 to 1999. For the time period of 2000 to 2009 announcements are collected from Bursa Malaysia's website. The information about method and purpose of offerings is available on the Investors' Digest, Bursa Malaysia's website, the prospectus of offerings, and Annual Reports.

Initially, the dataset consists of 136 company announcements of the intention to issue convertible bonds and 34 company announcements of warrant-bonds, giving a total of 170 announcements altogether. The final sample of convertible bonds consists of 105 announcements after eliminating 13 announcements due to unavailability of the

announcement date, 12 announcements with unavailable or a static share price, 3announcements that announce the issuance of warrant-bonds simultaneously with convertible bonds, and 3 announcements in which the issuance process takes more than 5years. The final sample for warrant-bonds include 28 announcements after excluding 1 announcement due to the unavailability of the announcement date, 2 announcements with unavailable or static share prices, and 3 announcements that also announce the issuance of convertible bonds. The total sample comprises of 133 announcements of hybrid securities altogether.

Most corporate announcements in Malaysia are packaged with other announcements. For instance, Fountain View Development Berhad announced a restructuring of their firm in 1999. In this restructuring, the company announced their intention to issue convertible bonds, acquisitions, disposal of certain assets as well as capital reduction, which they called a 'proposed restructuring scheme'. In this chapter, the package and the announcement that related to earnings and dividends either actual or forecast in single day before and after the announcements of the hybrid securities (or in a three-day trading period) are considered as contaminated sample data. Therefore, the analysis is divided into 'full sample announcements' and 'clean sample announcements'. There are 105 'full sample announcements' and 22 'clean sample announcements' of convertible bonds, and 28 'full sample announcements' and 7 'clean sample announcements' of warrant-bonds.

In the second part of this chapter, the determinants of the abnormal returns of hybrid securities in Malaysia are investigated using multivariate analysis. The sample dataset for this analysis consists of 117 announcements, including announcements from financial

companies which have characteristic data available from Datastream. The descriptive statistics shown in Table 3-3 use the same sample data.

3.4.3 Variables and measurement

The variables and measurement section is based on the hypotheses construction previously discussed in Section 3.2. The variables used in this study are divided into two categories: dependent and explanatory variables.

3.4.3.1 Dependent variable

The three-day cumulative abnormal returns of the event window (-1, 1) is used in this work as the dependent variable. While the event date or announcement date is defined as t=0, taking a day before and after the announcement date allows for any possibility of a news leakage or delay.

3.4.3.2 Explanatory variables

Asymmetric Information Hypothesis

Company size is measured as a proxy of asymmetric information. As discussed before, listed firms in Malaysia are highly concentrated; family ownership with one controlling owner, government or state ownership, and affiliated groups that are also controlled by families (Claessens et al., 2000; Claessens, et al., 2006). Although this nature suggests firms with lower asymmetric information, the listed firms still have to disclose or report their earnings, investments, and their activities to the public in the Annual Report as one of the compulsory requirements of Securities Commissions.

Larger firms generally have lower asymmetric information than smaller firms. So, company size is hypothesized to have a positive relationship with abnormal returns. The proxy that is used to measure company size in this chapter is market value, defined as the market price at the fiscal year-end prior to the announcement multiplied by number of common shares outstanding at that time. This variable is taken from Datastream (Datastream code: MV).

Risk Uncertainty Hypothesis

To test the 'risk uncertainty hypothesis', the standard deviation of firm equity return is employed. Firms with a higher standard deviation are hypothesized to have higher risk uncertainty. The standard deviation of firm's equity return is calculated based on the raw return of the issuer over the window (-80, -6) (Lewis, Rogalski, and Seward, 2003; Dutordoir and Van de Gucht, 2007). This variable is expected to have a positive coefficient with the dependent variable.

Method of offering

The Dummy rights variable is equal to 1 if the hybrid securities are offered by the method of rights offerings, and 0 if not offered by method of rights offerings, and the Dummy placements variable is equal to 1 if the hybrid securities are offered by the method of private placements, and 0 otherwise are constructed. The omitted or based variable is the combination of 3 mixed announcements (a combination of private placement and rights offerings) and another 7 of unidentified announcements.

Purpose of offering

To distinguish between the purposes of offering hybrid securities, a Dummy restructuring variable equal to 1 is constructed if the purpose of the offering is for debt restructuring, refinancing or debt settlement, and 0 otherwise. A Dummy capital investment and/or working capital variable is equal to 1 if the purpose of the offering is for capital investment and/or working capital, and 0 otherwise, and a Dummy mergers and/or acquisition variable is equal to 1 if the purpose of offering is for mergers and/or acquisition, and 0 otherwise. Dummy mixed and unidentified variable is the based or omitted variable. Based on the 'information-related hypothesis' discussed by Dann and Mikkelson (1984) and 'information-signalling model' explained by Ross (1977), the leverage-increasing activity/leverage-decreasing activity should signal positively/negatively to the market. Therefore, Dummy restructuring is hypothesized to have a negative coefficient with the abnormal returns, whereas Dummy capital investment and/or working capital variable and Dummy mergers and/or acquisitions variable are hypothesized to have positive coefficient with the abnormal returns.

Control variables

To test the previous discussed hypothesis of whether there is a different relationship between convertible bonds and warrant-bonds with regard to abnormal returns, a Dummy CB and WB is equal to 1 if the security is a convertible bond and 0 if the security is a warrant-bond is employed. In order to differentiate between the clean and contaminated sample, a Dummy clean is equal to 1 if the announcement of hybrid securities is clean from any corporate event and 0 otherwise is constructed. A Dummy economy variable is also employed to test whether the economic crisis drives the abnormal returns. Table 3-2 lists all hypotheses, their measurements as well as the predicted sign.

Table 3-2: Hypotheses, definition of variables, and predicted sign

Hypotheses / Independent Variables	Definition of variable	Predicted sign
Asymmetric Information Hypotheses		
Market value	Market price at the end of the year times number of common shares outstanding (DataStream code: MV). The value is measured at the fiscal year-end prior to the announcement. All the values are taken from DataStream.	(+)
Total assets	The book value of total asset taken from Datastream (Worldscope item: WC02999). The value is measured at the fiscal year-end prior to the announcement.	
Risk Uncertainty Hypotheses		
Standard deviation	Standard deviation of the issuer's stock return on the event window of (-80, -6).	(+)
Method of offering		
Rights	A dummy variable, 1 = rights issue, 0 = otherwise. The based variable is 'Dummy Mixed Offerings'.	(+)
Private Placements	A dummy variable, 1 = private placements, 0 = otherwise. The based variable is 'Dummy Mixed Offerings'.	(+)
Purpose of issue		
Debt restructuring/refinancing/settlement	A dummy variable, 1 = the purpose of issue is for restructure debt/refinancing and settlement, 0 = otherwise. The based variable is 'Dummy Mixed and Unidentified'.	(-)
Capital investment and working capital	A dummy variable, 1 = the purpose of issue is for capital investment and working capital, 0 = otherwise. The based variable is 'Dummy Mixed and Unidentified'.	(+)
Mergers and/or acquisition	A dummy variable, 1 = the purpose of issue is for mergers and/or acquisition, 0 = otherwise. The based variable is 'Dummy Mixed and Unidentified'.	(+)
Control variables		
Dummy CB and WB	A dummy variable, 1= convertible bond, 0 = warrant-bond	(-)
Dummy clean	A dummy variable, 1= clean sample, 0=contaminated sample	(?)
Dummy economy	A dummy variable, 1 = financial crisis, 0 = non-financial crisis	(?)

3.5   Empirical results and analysis

The analysis and discussion of the empirical results of the study performed in this chapter is divided into three sub-sections. The first sub-section discusses the descriptive statistics of the firms that announce the intention to issue hybrid securities in Malaysia. The second sub-section contains the analysis of the market response towards the announcements of the intention to issue hybrid securities, and also focuses on the sub-samples based on method and purpose of offerings. Finally, the determinants of the abnormal returns are discussed on the third sub-section.

3.5.1   Descriptive statistics

Table 3-3 and Table 3-4 contain descriptive statistics for announcements of the intention to issue hybrid securities, and the characteristics of the issuance of hybrid securities in Malaysia. From Table 3-3, the highest numbers of announcements of hybrid securities in Malaysia were made in 1999 and 2000 with 22 announcements in each year. One possible factor that caused the higher numbers of hybrid securities announcements in these years was because at that time Malaysia was in recovery from the Asian Financial Crisis that started in 1997 and ended at the end of 1999. During this crisis, the Kuala Lumpur Composite Index (KLCI) dropped from 1,271 in February 1997 to 897.25 on August 12, and deteriorated to a minimum level of 262 points on the 1st September 1998 (Lee and Tham, 2007). Companies were forced to restructure in order to survive. There were 27 companies that announced their intention to issue hybrid securities during the financial crisis, and four of them were distressed companies. Four more companies were distressed in 2000, three in 2001, four companies in 2002, and one in 2004, 2005, 2007, and 2008

respectively, making 19 distressed companies in total. The distressed companies were identified as they underwent the Scheme of Arrangement under Section 176 of the Company Act of Malaysia, 1965, or were listed in Practice Note 4 or Practice Note 17 of the Bursa Malaysia.

Private placements and rights issue are the preferable method of offering hybrid securities in Malaysia. During the study period, 33% of the announcements (44 announcements) used the rights issues and 59% (79 announcements) used private placements as their method of the offerings. The method of offerings is not able to be identified for 7 announcements, and 3 announcements used both rights and placements. The descriptive statistics depict that 34% of hybrid security announcements (44 announcements) are used for debt restructuring, 12.03% (16 announcements) for merger and acquisition, 6.02% (8 announcements) for capital investments, and 5.26% (7 announcements) for fund raising and working capital. There were 9 announcements that the purpose of offering was impossible to identify, and the other 36.09% or 49 announcements were for mixed purposes.

Table 3-4 presents the descriptive statistics for characteristics of the firms that issued hybrid securities during the study period in Malaysia. The sample consists of 92 announcements of convertible bonds and 25 announcements of warrant-bonds including announcements from financial companies (the full sample consists of 105 announcements of convertible bonds and 28 announcements of warrant-bonds and the sample in this table is reduced due to unavailable characteristics data in Datastream).The outliers are eliminated in this sample to test the differences in mean for market value, total assets, and the ratio of debt to total assets. Outliers are identified as those that are outside lower and upper limits

based on quartiles and the interquartile range using Excel, a fairly standard method which is itself robust to outliers. The lower (upper) limit is calculated by deducting (adding) eight times the interquartile range from the lower (upper) quartile. The multiplier of eight, based on judgement, ensures that any outliers are indeed quite extreme, and is more conservative than the multiplier of 3 sometimes used (e.g. in Minitab).

The first and third column in Table 3-4 report the number of announcements that have been taken into account in the descriptive statistics after eliminating outliers. This elimination of outliers reduces the number of announcements or observations based on the characteristics mentioned above. For example in the case of Market Value, 90 announcements are taken into account for the descriptive statistics analysis and another 2 announcements are considered as outliers (the market values of these announcements are not within the range of the lower and higher interquartile values). All the characteristic data are taken at the fiscal year-end prior to the announcements, unless stated otherwise. The tests of differences in means for each characteristic are conducted using the independent sample t-test and the Mann-Whitney test.

In general, the average market value (measured by market price at the end of the year multiplied by the number of common shares outstanding) of the issuers of convertible bonds in Malaysia is RM438.68 million (approximately £87.74 million as the exchange rate at the point of writing is £1.00 is equivalent to RM5.00), which is lower than the value of warrant bonds issuers, RM1,158.87 million (approximately £231.77 million). The differences in means of market value between both securities are statistically significant, suggesting that on average, firms that issue warrant-bonds are larger in market value than

firms that issue convertible bonds. The median of market value for convertible bonds issuers is RM177.52 million (approximately £35.50 million), and RM648.41 million (approximately £129.68) for warrant-bonds issuers.

The average book value of total assets for convertible bonds issuers is RM1,625.90 million (approximately £325.18 million), which is also lower than the value of warrant-bonds issuers, RM2,082.47 million (approximately £416.49). The differences in means of total assets between both securities are not statistically significant. The median of the book value of total assets for convertible bonds issuers is RM642.80 million (approximately £128.56 million) while for the warrant-bonds issuers is RM1,113.90 million (approximately £222.78 million).

In terms of the leverage, issuers of convertible bonds have a statistically significant higher ratio of total debt to total assets, 37.16%, compared to issuers of warrant-bonds (27.57%), implying that issuer of convertible bonds have a higher risk than the issuers of warrant-bonds. Firms that issue convertible bonds in Malaysia have a statistically significant higher average standard deviation of stock returns, 3.80% than warrant-bonds, which is 2.50%. The median of standard deviation of stock returns for convertible bonds issuers is 3.40% and 2.46% for warrant-bonds issuers.

Table 3-3: Descriptive statistics for announcements of the intention to issue hybrid securities in Malaysia

The sample consists of 133 announcements of the intention to issue hybrid securities by listed firms on Bursa Malaysia (formerly known as the Kuala Lumpur Security Exchange or KLSE) from 1996 to 2009. CB is convertible bonds, WB is warrant-bonds, RI is the rights offering, and PP is the private placements.

Year of announcement	Securities		Total announcements per year	Announcements by distress firms	Method of offering				Purpose of offering					
	CB	WB			RI	PP	Mixed	Data not available	Debt Restructuring	Merger & Acquisition	Capital Investment /Expansion	Working Capital/Funding	Mixed	Unknown
2009	7	1	8	0	4	4	0	0	1	0	1	1	5	0
2008	3	0	3	1	3	0	0	0	0	0	0	0	3	0
2007	3	4	7	1	1	6	0	0	2	0	0	0	5	0
2006	4	0	4	0	2	2	0	0	0	2	0	0	2	0
2005	6	0	6	1	3	3	0	0	2	0	1	0	3	0
2004	5	0	5	1	2	3	0	0	2	0	0	1	2	0
2003	10	0	10	0	0	9	1	0	4	5	0	1	0	0
2002	15	2	17	4	3	12	2	0	10	1	1	1	4	0
2001	11	0	11	3	5	6	0	0	4	4	0	1	2	0
2000	15	7	22	4	6	16	0	0	11	1	2	0	8	0
1999	16	6	22	4	5	17	0	0	7	2	2	2	9	0
1998	5	0	5	0	5	0	0	0	0	0	0	0	5	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	5	8	13	0	5	1	0	7	1	1	1	0	1	9
Total	105	28	133	19	44	79	3	7	44	16	8	7	49	9
Total (%)	78.95	21.05	100	14.29	33.08	59.40	2.26	5.26	33.08	12.03	6.02	5.26	36.84	6.77

Table 3-4: Descriptive statistics of characteristics of firms that announce the intention to issue hybrid securities in Malaysia.

The number of announcements varies in each characteristic due to the elimination of outliers. The independent *t*-test and Mann-Whitney test are conducted to test differences in means. Market value is the market price multiplied by number of common shares outstanding (DataStream code: MV). Total assets are based on the book value (Worldscope item: WC02999). Total debt to total assets is total of long-term debt + short-term debt (Worldscope item: WC03255) over total assets (Worldscope item: WC02999). Standard deviation is based on the issuer's stock return on the event window of (-80, -6). All the variables are measured at the fiscal year-end prior to the hybrid security announcements and available from Datastream.
** is significant at the 5% level *** is significant at the 1% level. The significance test is based on the two-tail test.

	No of observations	Outliers	Convertible bonds			No of observations	Outliers	Warrant-bonds			Test statistic for differences in mean
			Mean	Median	Standard deviation			Mean	Median	Standard deviation	
Market Value (million)	90	2	438.68	177.52	752.57	23	2	1158.87	648.41	1344.63	t-test: p = 0.02** Mann-Whitney: p = 0.00***
Total Assets (million)	89	3	1625.90	642.80	752.57	22	3	2082.47	1113.90	2705.83	t-test: p = 0.47 Mann-Whitney: p = 0.15
Total Debt/Total Assets (%)	91	1	37.16	37.12	21.78	24	1	27.57	25.72	15.58	t-test: p = 0.05** Mann-Whitney: p = 0.04**
Standard Deviation (-80, -6) (%)	92	0	3.80	3.40	1.97	25	0	2.50	2.46	1.04	t-test: p = 0.00*** Mann-Whitney: p = 0.00***

3.5.2 *Market reaction to announcements of the intention to issue hybrid securities*

As discussed previously in methodology section, one advantage of using the non-parametric test is the test is less sensitive to the outliers (McWilliams and Siegel, 1997). Therefore, this sub-section discusses the significance of non-parametric test, namely Generalised Z-sign test in more detail, although the parametric test (t-test) results are also provided.

Table 3-5 depicts average abnormal returns, t-statistics, the percentage of positive average abnormal returns, as well as the generalised z-statistics for the full and clean samples across the 5 days before and 15 days after the announcement of the intention to issue convertible bonds. For the full sample, a significant positive excess return of 0.98% (significant at the 5% level) three-day before the announcement ($t=$ -3) is documented, suggesting that companies announce their intention to issue convertible bonds after a positive stock run-up. A non-significant positive abnormal return of 0.77% is revealed on the announcement day of the full sample, whereas a non-significant negative abnormal return of -0.31% is observed for the clean sample.

The cumulative average abnormal returns (CAR) for the two-day event window for both samples are 0.23% and -0.11% respectively; both abnormal returns are statistically non-significant. For the full sample, the CAR for the three-day event window is -1.10%, significant at the 10% level, whereas non-significant positive CAR of 0.91% is documented for the clean sample. Based on these results, it can be concluded that on the three-day event window of (-1, 1) for the full sample, announcements of the intention to issue convertible

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bonds in Malaysia are associated with significantly negative cumulative average abnormal returns of -1.10%. This result contradicts with Hypothesis 1 that the announcement of the intention to issue hybrid securities in Malaysia is associated with positive (or less negative) abnormal returns. However, this result is consistent with empirical studies carried out using data from other countries that observe negative effects from the announcement of convertible bonds (Hansen and Crutchley, 1990; Davidson, Glascock, and Schwarz, 1995; Burlacu, 2000; Suchard, 2007; Mohd Ashhari and Sin-Chun, 2009).

Table 3-6 documents average abnormal returns, *t*-statistics, the percentage of positive average abnormal returns, as well as the generalised z-statistics for the full and clean samples across 5 days before and 15 days after announcements of the intention to issue warrant-bonds. On the announcement day, non-significant positive abnormal returns of 0.18% and 1.98% are observed for full and clean sample respectively. Non-significant positive CARs of 0.59% and 1.13% are observed on two-day event window for the full and clean sample respectively. The CAR for the three-day event window of (-1, 1) for the full sample is 2.25% and statistically significant at the 10% level, while a non-significant CAR of 1.58% is documented on the same event window for the clean sample. Based on these results, the announcement of the intention to issue warrant-bonds in Malaysia on the three-day event window of (-1, 1) is associated with significantly positive CAR of 2.25%.

Table 3-7 presents a descriptive statistics of the differences in means and medians of cumulative average abnormal returns (CARs) on a selective event window between convertible bonds and warrant-bonds. The independent sample *t*-test, Mann-Whitney test, and the independent sample median test are conducted to test the hypothesis presented

earlier in this chapter that the announcement of warrant-bonds issued in Malaysia is associated with more positive or larger abnormal returns compared to convertible bonds. The tests are conducted based on the full sample of convertible bonds and warrant-bonds, which consists of 105 announcements of convertible bonds and 28 announcements of warrant- bonds.

Table 3-7 shows the skewness of the CARs' distribution for two and three-day event windows. The distributions of CARs for announcements of convertible bonds over two and three day event windows are negatively skewed (-0.01 and -0.69 respectively) while the distributions of CARs for announcements of warrant-bonds over the same event windows are positively skewed (0.61 and 0.80 respectively). However, the skewness of CARs for both announcements are close to 'zero', suggesting normal distributions of CARs.

On the other hand, the distributions of CARs for announcements of convertible bonds over both event windows has a kurtosis value that is positive and departs further from zero (6.21 and 7.78 respectively) suggesting a leptokurtic distribution (or a tall distribution). This is not the case for the distribution of CARs for announcements of warrant-bonds as the kurtosis values for both event windows are close to 'zero' (-0.49 and 0.56 respectively). The kurtosis statistics for convertible bond announcements suggests a non-normal distribution of CARs.

The range of minimum and maximum values for convertible bonds announcements is relatively wide. The minimum values for CARs of convertible bonds announcements over two and three-day event window are -31.07% and -58.17% respectively, while the maximum values are 22.37% and 39.97%, respectively. These minimum values in both

event windows are attributable to the financially distressed firms, Idris Hydraulic Malaysia and VTI Vintage. As discussed earlier, these distressed firms were the firms that either underwent the Scheme of Arrangement under Section 176 of the Company Act of Malaysia, 1965, or were listed in Practice Note 4 or Practice Note 17 of the Bursa Malaysia. The share price of Idris Hydraulic and VTI Vintage reduced significantly on the day of the announcement and the day after the announcement. The maximum values for both event windows are attributable to I-Berhad (not a distressed firm) that shows a significantly increase in the share price on the announcement and a day after the announcement of the intention to issue convertible bonds.

The range of minimum and maximum values for warrant-bond announcements over the two and three-day event windows are not very wide as compared to convertible bond announcements. One possible reason for the lower range of minimum and maximum values for these announcements is that none of the firms that announced their intention to issue warrant-bonds were financially distressed. Overall, the skewness and kurtosis statistics and the wide range of minimum and maximum values for convertible bond announcements suggest a non-normal distribution of CARs.

This table also indicates that the one-tail test of differences in mean between the CAR of convertible bonds and warrant-bonds on the event window of (-1, 1) is significant at the 10% level (t =-1.44). The equivalent non-parametric test (Wilcoxon rank-sum/Mann-Whitney) also confirms that the distributions of the means of convertible bonds and warrant-bonds on the same event window differ significantly ($p = 0.01$). However, the one-

tail test of differences in median on selective event-window does not show any significance.

The significant difference in mean on event window (-1, 1) confirms that the announcement of the intention to issue warrant-bonds is associated with larger abnormal returns than convertible bonds, which is in line with other empirical studies such as those presented by Billingsley et al. (1990), and Jayamaran et al. (1990), Kang et al. (1995), De Roon and Veld (1998) and Gebhardt (2001).

Table 3-5: Average abnormal returns around announcements of the intention to issue convertible bonds in Malaysia

The full/clean sample consists of 105/22 announcements of the intention to issue convertible bonds by listed firms on Bursa Malaysia (formerly known as the Kuala Lumpur Security Exchange or KLSE) from 1996 to 2009. The full sample includes all convertible bonds announcement, while the clean sample includes 'uncontaminated' convertible bonds announcement. The AAR is calculated based on the market model.
* is significant at the 10% level, ** is significant at the 5% level and *** is significant at the 1% level. The significance is based on the two-tail test.

| | Convertible bond - Full sample (105) | | | | Convertible bond - Clean sample (22) | | | |
| | AAR | | % Positive | Z_G (sign | AAR | | % Positive | Z_G (sign |
Event Day	%	T-test	AR	test)	%	T-test	AR	test)
-5	0.00	0.00	50.48	0.28	0.49	0.69	54.55	0.44
-4	0.63	1.65	48.57	-0.12	0.49	0.69	27.27	-2.11**
-3	0.98	2.58**	59.05	2.03**	0.36	0.51	45.45	-0.41
-2	0.48	1.28	56.19	1.45	0.61	0.86	68.18	1.72*
-1	-0.54	-1.44	40.95	-1.68*	0.20	0.28	50.00	0.02
0	0.77	2.05**	46.67	-0.51	-0.31	-0.44	45.45	-0.41
1	-1.34	-3.53***	50.48	0.28	1.02	1.43	50.00	0.02
2	-0.62	-1.63	45.71	-0.70	0.98	1.37	50.00	0.02
3	-0.50	-1.33	44.76	-0.90	0.42	0.59	59.09	0.87
4	0.14	0.37	46.67	-0.51	0.48	0.68	36.36	-1.26
5	-0.02	-0.06	52.38	0.67	-1.13	-1.58	45.45	-0.41
6	0.18	0.48	48.57	-0.12	0.83	1.17	50.00	0.02
7	-1.45	-3.84***	41.90	-1.48	-0.44	-0.62	50.00	0.02
8	0.45	1.20	52.38	0.67	1.47	2.07*	54.55	0.44
9	0.38	1.00	53.33	0.86	-1.35	-1.89*	36.36	-1.26
10	0.36	0.94	47.62	-0.31	1.09	1.53	59.09	0.87
11	-0.36	-0.95	37.14	-2.46**	0.43	0.60	36.36	-1.26
12	-0.11	-0.30	53.33	0.86	-0.08	-0.12	72.73	2.15**
13	0.91	2.39**	59.05	2.03**	2.16	3.03***	63.64	1.30
14	0.24	0.64	55.24	1.25	0.10	0.14	45.45	-0.41
15	0.29	0.76	51.43	0.47	0.93	1.30	68.18	1.72
CAR(-1,0)	0.23	0.44	42.86	-1.29	-0.11	-0.11	45.45	-0.41
CAR(-1,1)	-1.10	-1.67*	40.00	-1.87*	0.91	0.73	45.45	-0.41

Table 3-6: Average abnormal returns around announcements of the intention to issue warrant-bonds in Malaysia

The full/clean sample consists of 28/7 announcements of the intention to issue warrant-bonds by listed firms on Bursa Malaysia (formerly known as the Kuala Lumpur Security Exchange or KLSE) from 1996 to 2009. The full sample includes all warrant-bonds announcement, while the clean sample includes 'uncontaminated' warrant-bonds announcement. The AAR is calculated based on the market model.
* is significant at the 10% level, ** is significant at the 5% level and *** is significant at the 1% level. The significance is based on the two-tail test.

	Warrant-bond - Full sample (28)				Warrant-bond - Clean sample (7)			
Event Day	AAR %	T-test	% Positive AR	Z_G (sign test)	AAR %	T-test	% Positive AR	Z_G (sign test)
-5	0.06	0.13	35.71	-0.93	0.09	0.11	57.14	0.64
-4	0.33	0.67	57.14	1.35	0.64	0.76	71.43	1.40
-3	-0.14	-0.29	35.71	-0.93	1.63	1.92	42.86	-0.12
-2	-0.09	-0.19	39.29	-0.55	2.26	2.66**	85.71	2.16*
-1	0.41	0.83	39.29	-0.55	-0.85	-1.00	14.29	-1.63
0	0.18	0.36	42.86	-0.17	1.98	2.33**	57.14	0.64
1	1.66	3.34***	57.14	1.35	0.45	0.52	57.14	0.64
2	-0.24	-0.47	35.71	-0.93	-0.84	-0.98	42.86	-0.12
3	-0.57	-1.13	42.86	-0.17	-0.40	-0.47	57.14	0.64
4	-0.41	-0.82	39.29	-0.55	-0.24	-0.28	28.57	-0.88
5	-1.12	-2.25**	32.14	-1.31	-1.60	-1.88	14.29	-1.63
6	0.38	0.77	42.86	-0.17	1.27	1.50	42.86	-0.12
7	-0.92	-1.85*	28.57	-1.69	-0.67	-0.79	28.57	-0.88
8	0.64	1.28	50.00	0.59	0.12	0.14	57.14	0.64
9	0.39	0.78	53.57	0.97	0.54	0.64	42.86	-0.12
10	0.56	1.12	50.00	0.59	0.44	0.52	42.86	-0.12
11	0.01	0.03	39.29	-0.55	-0.99	-1.17	28.57	-0.88
12	2.54	5.10***	50.00	0.59	-0.39	-0.45	42.86	-0.12
13	0.35	0.70	53.57	0.97	0.73	0.86	71.43	1.40
14	-0.21	-0.43	35.71	-0.93	-0.21	-0.25	42.86	-0.12
15	-0.30	-0.61	42.86	-0.17	-0.17	-0.20	71.43	1.40
CAR(-1,0)	0.59	0.84	42.86	-0.17	1.13	0.94	42.86	-0.12
CAR(-1,1)	2.25	2.61**	60.71	1.73*	1.58	1.07	42.86	-0.12

Table 3-7: Cumulative abnormal returns for selective event windows around announcements of convertible bonds and warrant-bonds in Malaysia

The full sample of the announcement of the intention to issue convertible bonds (CB) consists of 105 announcements, and 28 announcements for the full sample of warrant-bonds. The one-tail test of differences between mean of convertible bonds and warrants confirms that the mean CAR (-1, 1) for convertible bonds is significantly lower (more negative) than for warrant-bonds, at 10% level ($t = -1.44$). The equivalent non-parametric test (Wilcoxon rank-sum/Mann-Whitney) confirms that the distributions of the mean CAR (-1, 1) of convertible bond and warrant-bond differ significantly ($p = 0.01$). The one-tail test of differences between medians reveals that there are no significant differences between medians of convertible bonds and warrant-bonds in selective event window.
*is significant at the 10% level ** is significant at the 5% level and *** is significant at the 1% level.

		Mean	Test statistic for differences in mean	Median	Std. Deviation	Skewness	Kurtosis	Minimum	Maximum
CAR (-1,0)	CB	0.23	*t*-test: $p = 0.39$	-0.36	6.74	-0.01	6.21	-31.07	22.37
	WB	0.59	Mann-Whitney: $p = 0.39$	-0.28	3.28	0.61	-0.49	-4.36	8.52
CAR (-1,1)	CB	-1.11	*t*-test: $p = 0.08$	-0.83	12.05	-0.69	7.78	-58.17	39.97
	WB	2.25	Mann-Whitney: $p = 0.01$	2.28	4.76	0.80	0.56	-4.85	15.02

Table 3-8 documents average abnormal returns, *t*-statistics, the percentage of positive average abnormal returns, as well as the generalised z-statistics across 5 days before and 15 days after the announcement of the intention to issue hybrid securities by method of offerings, namely private placements and rights offerings[9]. On the day of the announcement, the announcement of hybrid securities by means of private placements and rights issue reveals non-significant positive abnormal returns of 0.55% and 1.34% respectively. The cumulative average abnormal returns on selective event window do not reveal any significant CARs; therefore Hypothesis 3 and Hypothesis 4, that announcements of the intention to issue hybrid securities in Malaysia by private placements and rights offerings are associated with positive abnormal returns are both rejected. The results contradict with a study by Field and Mais (1991) who find significant positive abnormal returns of 1.80% on the two-day event window of (-1, 0) for announcements of convertible bonds by method of private placements in the United States. The results of rights offerings of hybrid security are also inconsistent with the findings in a study by Abyhankar and Dunning (1999) that find significant abnormal returns of -0.95% for rights offerings of convertible bonds in the UK.

Table 3-9 documents average abnormal returns, *t*-statistics, and the percentage of positive average abnormal returns, as well as the generalised z-statistics across 5 days before and 15 days after the announcement of the intention to issue hybrid securities by purposed of offerings. The purpose of offering hybrid securities in Malaysia includes: debt restructuring and settlement (44 announcements), mergers and/or acquisitions (16 announcements),

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[9] The event study for the announcements of the intention to issue hybrid securities for the mixed offerings (3 announcements) and the 'unknown offerings' (7 announcements) are not performed.

capital investments (8 announcements), working capital (7 announcements), as well as mixed purposes (49 announcements)[10].

For announcements of hybrid securities for the purpose of debt restructuring, on the announcement day, a non-significant abnormal return of 1.07% is observed. The CARs on the two-day and three-day event window are 0.57% and -3.45% respectively, and both are not statistically significant. For this reason, Hypothesis 5 that announcements of hybrid security for the purpose of debt restructuring are associated with negative abnormal returns is rejected. These findings are inconsistent in comparison to studies by Eckbo (1986), and Mikkelson and Partch (1986) that document significantly negative abnormal returns for announcements of convertible bonds to refund or restructure existing debt.

For announcements of hybrid securities for the purpose of merger and acquisition, capital investment, and for working capital, based on the non-parametric significance test, non-significant abnormal returns are observed on the day of the announcements. The CARs on the selective event window for these purposes are also non-significant; rejecting Hypotheses 6 and 7, that announcement for the purpose of capital investment and working capital, or mergers and/or acquisitions (leverage-increasing activities) induces positive abnormal returns. This result of hybrid securities announcement for the purpose of capital expenditure is inconsistent with findings in by Abyhankar and Dunning (1999) that report significantly positive abnormal returns of 1.08% for the announcement of hybrid securities for the purpose of capital expenditure.

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[10] The 'unknown purpose' sample which consists of 9 announcements is not investigated.

Table 3-8 : Average abnormal returns around announcements of the intention to issue hybrid securities in Malaysia for sub-samples method of offerings

The announcement of the intention to issue hybrid securities by listed firms on Bursa Malaysia (formerly known as the Kuala Lumpur Security Exchange or KLSE) from 1996 to 2009 for sub-samples method of offerings consist of 79 announcements of private placements and 44 announcements of rights offerings. The event study for sub-samples of mix offerings (3 announcements) and unknown offerings (7 announcements) are not performed. The AAR is calculated based on the market model.
* is significant at the 10% level, ** is significant at the 5% level and *** is significant at the 1% level. The significance is based on the two-tail test.

Event Day	Private Placements(79)				Rights Offerings(44)			
	AAR %	T-test	% Positive AR	Z_G (sign test)	AAR %	T-test	% Positive AR	Z_G (sign test)
-5	-0.39	-0.98	45.57	-0.47	0.99	1.71*	56.82	1.15
-4	0.75	1.89*	59.49	2.01**	-0.07	-0.11	29.55	-2.47**
-3	0.75	1.87*	51.90	0.66	0.74	1.27	56.82	1.15
-2	0.64	1.62	53.16	0.88	0.21	0.37	59.09	1.45
-1	-0.48	-1.21	39.24	-1.60	-0.41	-0.70	40.91	-0.96
0	0.55	1.39	45.57	-0.47	1.34	2.31**	45.45	-0.36
1	-0.88	-2.21**	55.70	1.33	-0.69	-1.19	47.73	-0.06
2	-0.07	-0.17	45.57	-0.47	-1.37	-2.37**	45.45	-0.36
3	-1.31	-3.28***	40.51	-1.37	0.57	0.98	45.45	-0.36
4	0.01	0.02	46.84	-0.24	0.05	0.08	40.91	-0.96
5	0.26	0.65	53.16	0.88	-1.20	-2.06**	40.91	-0.96
6	0.21	0.52	43.04	-0.92	0.08	0.14	47.73	-0.06
7	-1.18	-2.95***	43.04	-0.92	-1.77	-3.05***	34.09	-1.87*
8	0.19	0.47	49.37	0.21	1.15	1.98	54.55	0.85
9	0.72	1.81*	62.03	2.46**	-0.29	-0.50	43.18	-0.66
10	0.42	1.04	46.84	-0.24	0.00	0.00	47.73	-0.06
11	-0.33	-0.83	40.51	-1.37	0.00	0.00	36.36	-1.57
12	0.53	1.32	45.57	-0.47	0.57	0.99	70.45	2.96***
13	0.76	1.90*	60.76	2.23**	1.03	1.78*	56.82	1.15
14	0.38	0.96	54.43	1.11	-0.22	-0.37	50.00	0.24
15	-0.36	-0.90	43.04	-0.92	0.97	1.68*	63.64	2.05**
CAR(-1,0)	0.07	0.13	41.77	-1.15	0.93	1.14	43.18	-0.66
CAR(-1,1)	-0.81	-1.17	45.57	-0.47	0.23	0.23	40.91	-0.96

Table 3-9 : Average abnormal returns around announcements of the intention to issue hybrid securities in Malaysia for sub-samples purpose of offerings

The announcement of the intention to issue hybrid securities by listed firms on Bursa Malaysia (formerly known as the Kuala Lumpur Security Exchange or KLSE) from 1996 to 2009 for sub-sample purpose of offerings consists of 45 announcements for debt restructurings/refinancing/settlement, 16 announcements for mergers and/or acquisitions, 8 announcements for capital investments, 7 announcements for working capital, and 48 announcements for mixed purposes. The event study for the sub-sample of unknown purpose (9 announcements) is not performed. The AAR is calculated based on the market model.
* is significant at the 10% level, ** is significant at the 5% level and *** is significant at the 1% level. The significance is based on the two-tail test.

	Debt restructuring/settlement (44)				Mergers and/or Acquisition (16)			
Event Day	AAR %	T-test	% Positive AR	Z_G (sign test)	AAR %	T-test	% Positive AR	Z_G (sign test)
-5	0.12	0.19	45.45	-0.58	-1.67	-2.10**	43.75	-0.41
-4	1.92	3.04***	65.91	2.13**	1.25	1.57	68.75	1.59
-3	1.07	1.70*	56.82	0.93	0.44	0.55	56.25	0.59
-2	0.65	1.02	54.55	0.63	-0.99	-1.25	43.75	-0.41
-1	-0.50	-0.79	36.36	-1.79*	0.07	0.09	31.25	-1.41
0	1.07	1.69	56.82	0.93	1.68	2.11*	43.75	-0.41
1	-4.02	-6.36***	45.45	-0.58	0.64	0.81	50.00	0.09
2	-2.17	-3.44***	31.82	-2.39**	2.29	2.87**	56.25	0.59
3	0.14	0.22	47.73	-0.28	-0.68	-0.86	37.50	-0.91
4	0.07	0.11	52.27	0.32	-1.10	-1.38	43.75	-0.41
5	0.68	1.08	59.09	1.23	0.27	0.34	43.75	-0.41
6	-0.42	-0.67	45.45	-0.58	-1.48	-1.86*	37.50	-0.91
7	-2.17	-3.43***	36.36	-1.79*	0.32	0.41	62.50	1.09
8	0.55	0.88	61.36	1.53	-0.69	-0.87	31.25	-1.41
9	0.39	0.62	59.09	1.23	0.24	0.31	50.00	0.09
10	1.32	2.09**	61.36	1.53	0.16	0.20	43.75	-0.41
11	-1.33	-2.10**	22.73	-3.60***	1.04	1.31	50.00	0.09
12	1.66	2.63**	47.73	-0.28	-0.56	-0.70	43.75	-0.41
13	0.34	0.54	54.55	0.63	-0.01	-0.01	50.00	0.09
14	-0.08	-0.13	54.55	0.63	1.58	1.99*	68.75	1.59
15	-0.22	-0.35	50.00	0.02	-0.32	-0.40	43.75	-0.41
CAR(-1,0)	0.57	0.64	47.73	-0.28	1.78	1.58	37.50	-0.91
CAR(-1,1)	-3.45	-3.15***	40.91	-1.18	2.49	1.81*	43.75	-0.41

Continued…

Average abnormal returns around announcements of the intention to issue hybrid securities in Malaysia for sub-samples purpose of offerings

The announcement of the intention to issue hybrid securities by listed firms on Bursa Malaysia (formerly known as the Kuala Lumpur Security Exchange or KLSE) from 1996 to 2009 for sub-samples purpose of offerings consists of 45 announcements for debt restructurings/refinancing/settlement, 16 announcements for mergers and/or acquisitions, 8 announcements for capital investments, 7 announcements for working capital, and 48 announcements for mixed purposes. The event study for the sub-sample of unknown purpose (9 announcements) is not performed. The AAR is calculated based on the market model.

* is significant at the 10% level, ** is significant at the 5% level and *** is significant at the 1% level. The significance is based on the two-tail test.

	Capital investment (8)				Working capital (7)				Mixed (49)			
Event Day	AAR %	T-test	% Positive AR	Z_G (sign test)	AAR %	T-test	% Positive AR	Z_G (sign test)	AAR %	T-test	% Positive AR	Z_G (sign test)
-5	0.66	0.76	37.50	-0.54	0.55	0.41	57.14	0.50	0.13	0.24	46.94	-0.09
-4	1.30	1.50	50.00	0.17	-0.60	-0.44	42.86	-0.25	-0.80	-1.51	34.69	-1.80*
-3	1.29	1.48	50.00	0.17	-1.61	-1.20	28.57	-1.01	0.92	1.76*	55.10	1.06
-2	-0.83	-0.95	37.50	-0.54	0.45	0.33	71.43	1.26	0.89	1.69	57.14	1.34
-1	0.35	0.40	50.00	0.17	-0.86	-0.64	28.57	-1.01	-0.53	-1.01	46.94	-0.09
0	-0.30	-0.34	50.00	0.17	-0.36	-0.27	28.57	-1.01	0.30	0.58	38.78	-1.23
1	2.70	3.10***	62.50	0.87	1.11	0.82	71.43	1.26	1.07	2.03	59.18	1.63
2	-0.21	-0.25	37.50	-0.54	1.03	0.77	57.14	0.50	-0.13	-0.24	53.06	0.77
3	0.05	0.05	62.50	0.87	-1.19	-0.88	14.29	-1.77	-1.29	-2.45	38.78	-1.23
4	-1.23	-1.41	12.50	-1.96*	-1.31	-0.97	28.57	-1.01	0.83	1.58	46.94	-0.09
5	-1.06	-1.21	50.00	0.17	-2.69	-2.00*	14.29	-1.77	-0.78	-1.49	42.86	-0.66
6	-0.26	-0.30	25.00	-1.25	-0.03	-0.02	57.14	0.50	1.14	2.16	48.98	0.20
7	0.05	0.06	50.00	0.17	-2.07	-1.54	14.29	-1.77	-1.45	-2.76**	32.65	-2.09**
8	0.23	0.27	50.00	0.17	0.23	0.17	28.57	-1.01	0.41	0.78	51.02	0.49
9	-0.19	-0.22	62.50	0.87	0.93	0.69	57.14	0.50	0.79	1.49	55.10	1.06
10	0.16	0.18	62.50	0.87	-0.61	-0.46	42.86	-0.25	-0.06	-0.12	36.73	-1.52
11	2.52	2.89***	75.00	1.58	-0.32	-0.23	57.14	0.50	-0.25	-0.48	38.78	-1.23
12	0.03	0.03	75.00	1.58	0.61	0.46	71.43	1.26	-0.25	-0.47	51.02	0.49
13	0.44	0.51	75.00	1.58	1.03	0.76	57.14	0.50	1.60	3.04***	63.27	2.20**
14	-1.16	-1.34	37.50	-0.54	-0.06	-0.04	57.14	0.50	-0.10	-0.19	48.98	0.20
15	-0.05	-0.06	37.50	-0.54	2.16	1.60	71.43	1.26	0.52	0.99	53.06	0.77
CAR(-1,0)	0.05	0.04	50.00	0.17	-1.22	-0.64	28.57	-1.01	-0.23	-0.31	40.82	-0.94
CAR(-1,1)	2.75	1.82*	62.50	0.87	-0.11	-0.05	28.57	-1.01	0.83	0.91	46.94	-0.09

3.5.3   Cross-sectional regression results and discussion

Table 3-10 is an Ordinary Least Square (OLS) regression between cumulative abnormal returns for the three-day event window of (-1, +1) for a total of 117 sample of hybrid securities issued in Malaysia. 'Heteroskedasticity' is corrected using the 'Breusch-Pagan/ Cook-Weisberg' test. The variance inflation factors (VIF) for each variable are less than 10 indicating the absence of a multicollinearity problem.[11] The dependent variable is the three-day abnormal returns of hybrid security announcements while the independent variables were discussed in Section 3.3 and are listed in Table 3-2. Below is the formula for the Multiple Regression:

CAR (-1,+1) = α + β_1(Log Market value) + β_2 (Standard deviation)+ β_3 (Rights offering) + β_4 (Private placements) +β_5 (Debt restructuring) + β_6 (Capital investment and/or working capital) + β_7 (Mergers and/or acquisitions)+ β_8 (Dummy CB and WB) + β_9 (Dummy clean) + β_{10} (Dummy economy) + e_{it}

The significance of the results is based on the robust standard error. The Log Market value is not statistically significant in explaining or determining cumulative abnormal returns on event window (-1, 1). The insignificance of firm size is consistent with the findings of Kang and Stulz (1996) and Abhyankar and Dunning (1999).

The Standard deviation of stock returns, a proxy for the 'risk uncertainty hypothesis', indicates a significant negative relationship with abnormal returns which contradicts with

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[11] The highest VIF is 4.74, for the Rights offering variable, and the average VIF is 1.98.

Hypothesis 2. The coefficient for this variable is -1.36 (significant at the 5% level), suggesting that announcements of the intention to issue hybrid securities by high risk uncertainty companies are associated with -1.36% lower abnormal returns, contradicting with the 'risk uncertainty' theory. The possible reason for having significant but contradictory result is that the standard deviation might capture the effect of the financial crisis. The result is also in line with findings Dutordoir and Van de Gucht (2007), that find a significant negative relationship between standard deviation and the abnormal returns in both hot and non-hot market issues of convertible bonds although the result is more pronounced in non-hot market issues.

Contrary to Hypothesis 3, announcements of the hybrid securities that are issued through rights offerings report a non-significant negative coefficient of -0.20 with abnormal returns. The results contradict with the 'signalling-hypothesis' of Heinkel and Schwartz (1986), that rights issues convey more information, reducing asymmetric information. Although the direction of the coefficient for announcements by method of private placements is positive, as predicted in the theory; it is not statistically significant. Thus, Hypothesis 4 that the announcement of hybrid securities by the method of private placements induces positive abnormal returns, is rejected.

The announcement of hybrid securities for the purpose of debt restructuring result in a non-significant negative coefficient of -3.62 with abnormal returns, rejecting Hypothesis 5, that leverage-decreasing activity induces negative abnormal returns. Likewise, announcements of hybrid securities for the purpose of capital investment and working capital, and mergers and/or acquisitions are not significantly different from zero, implying that these variables

fail to explain the 'information-related hypothesis' and 'information-signalling model'. For that reason, Hypotheses 6 and 7 are rejected.

With regard to the relationship with abnormal returns, the Dummy CB and WB variable reports a non-significant negative coefficient of -0.62. This result suggests that convertible bonds or warrant-bonds are not the determinants of abnormal returns. The coefficient of Dummy clean is positive but not statistically significant, suggesting that this dummy variable does not influence abnormal returns. A non-significant positive coefficient of economic conditions is observed, implying that announcements during the financial crisis do not influence abnormal returns. The R^2 for the model is13.02%, while the F-test is 1.39.

Table 3-10 : OLS regression for the determinants of abnormal returns

The sample consists of 117 announcements (all announcements that have available data in Datastream including financial companies) of the intention to issue hybrid securities by listed firms on Bursa Malaysia (formerly known as the Kuala Lumpur Security Exchange or KLSE) from 1996 to 2009. The dependent variable is a cumulative abnormal return for three-day event window (-1, +1) and the independent variables are defined in Table 3-2. The figures in the parenthesis are the t-statistic based on the robust standard error. ** is significant at the 5% level. The significance is based on the two-tail test

Independent variables	Predicted sign	Coefficient/T-statistic
Constant		10.75
Asymmetric Information Hypothesis		
Log Market value	(+)	-2.63 (-1.35)
Risk Uncertainty Hypothesis		
Standard deviation on (-80, -6)	(+)	-1.36 (-2.20)**
Method of offering		
Rights issue	(+)	-0.20 (-0.05)
Private placements	(+)	0.50 (0.31)
Purpose of offering		
Debt restructuring	(-)	-3.62 (-1.05)
Capital investment/working capital	(+)	-0.60 (-0.33)
Mergers and/or acquisitions	(+)	2.20 (0.62)
Other Variable		
Dummy CB and WB	(-)	-0.62 (-0.34)
Dummy clean	(?)	3.47 (1.63)
Dummy economy	(?)	1.65 (0.74)
R^2 (%)		13.02
F-test		1.39

3.6   Conclusions

This chapter investigates the market reaction towards announcements of convertible bonds and warrant-bonds between the periods of 1996 to 2009 in an emerging country, Malaysia. In addition, the announcement effects for sub-samples method and purpose of offerings of hybrid securities are also investigated in this market. Hypotheses that are tested in this chapter include: 'information asymmetric hypothesis' of Myers and Majluf (1984), 'risk uncertainty hypothesis' of Brennan and Schwartz (1988), 'certification hypothesis' of Hertzel and Smith (1993), 'signaling hypothesis' of Heinkel and Schwartz (1986) and 'information-signaling hypothesis' of Ross (1977).

There are several conclusions that can be drawn from the findings of the study presented in the chapter. Firstly, using the standard event-study methodology, announcements of the intention to issue convertible bonds in Malaysia are associated with significantly negative abnormal returns of -1.10% (significant at the 10% level) on the event window of (-1, 1). This result is consistent with other studies, to name a few: in United States the abnormal return of convertible bonds is between -0.61% (Jayamaran et al., 1990) and -3.07% (Arshanapalli et al., 2004). Suchard (2007) and Arsiraphongphisit (2008) also document cumulative average abnormal returns of -0.40% and -0.61% in Australian market.

Secondly, announcements of the intention to issue warrant-bonds document significantly positive abnormal returns of 2.25% (significant at the 10% level) on the same event window. One finding that is of particular interest in this study is the finding of a significant difference between mean CAR of convertible bonds and warrant-bonds on event window

(-1, 1) (Table 3-7). This result confirms that announcements of warrant-bonds in Malaysia are associated with more positive abnormal returns than convertible bonds announcements.

The final point builds on the results from the multivariate analysis presented in this chapter. There is no significant relationship between Dummy CB and WB and abnormal returns, indicating that convertible bonds and warrant-bonds are not statistically different when other factors are taken into consideration. The findings also indicate that announcements by high risk uncertainty companies are associated with negative abnormal returns. This result contradicts with the risk uncertainty hypothesis discussed in Section 3.3. One possible reason for this result is that the standard deviation, a proxy for the 'risk uncertainty hypothesis', may capture the effect of the Asian financial crisis that occurred between 1997 until 1999.

The limitation of the results presented in this chapter is related to the data collection process, due to the data being hand collected. Firstly, the difficulty with this process is the identification of the correct and precise announcement date for announcements of the intention to issue convertible bonds and warrant-bonds. Using various sources (i.e., Investors' Digest and Bursa Malaysia website), the announcement date provided in this chapter represent the closest and most accurate announcement date to the best ability of the author. Secondly, in Malaysia, the length of time between the initial announcement of the intention to issue hybrid security and the issuance announcement can often be fairly lengths. This long process creates 'noise' or outliers in the analysis presented in this chapter. As a result, several companies that took more than five years to issue the hybrid security are eliminated from the analysis.

In a consistent manner to the findings reported in Chapter 2, this chapter also leaves a gap for future research into the disappearance of warrant-bonds in Malaysia. Another potential research topic with regard to convertible bonds and warrant-bonds specifically in the Malaysia market is to compare the announcement effects of these hybrid securities with Islamic bonds or 'Sukuk' that accompanied with warrants. This combination of 'Sukuk' and warrants is permissible in Islamic jurisprudence (or 'Shariah' law), as warrants itself are permissible security under one condition; the underlying security or the shares involved must be 'Shariah' approved.[12] As with the case in Malaysia, the underlying shares must be listed in 'Shariah Index'.

The institutional setting in Malaysia, which is different from other developed countries such as the UK and the US, also suggests interesting avenues for future research. The characteristics of Malaysian firms that have been discussed earlier suggest that Malaysian firms face lower asymmetric information compared to other developed countries. Further, the debt market allows a lengthy time to elapse from the announcement of hybrid securities issues to the actual issuance of these securities, which alleviates the adverse selection costs between firms and investors.

The unique institutional setting in Malaysia might present a window of opportunity. As defined by Bayless and Chaplinsky (1996) a window of opportunity is a condition in which adverse selection costs may be reduced if the discrepancy between firms and investors about firms' private information is low. There is a possibility that securities issuances are no longer informative if investors know the firms' private information. Therefore, it may not be difficult for Malaysian firms to time their issuance of hybrid securities. Testing the

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[12] Resolutions of the Securities Commission Shariah Advisory Council at www.sc.com.my

window of opportunity, or market timing hypothesis, based on the institutional setting in

Malaysian is an interesting issue to be explored in future research.

Chapter 4

Market Reaction to Announcements of Convertible Bonds Issue in the United Kingdom

4.1 Introduction

'Yields high enough to make you a convert….' (Stevenson, 2012)

This article in The Financial Times, March 16, 2012, draws the attention of potential investors in the United Kingdom to the attraction of convertible bonds, highlighting that convertible securities give a 'higher yield than equity and a better risk-adjusted return'. The author also notes that over the past year, the investment trust sector in the United Kingdom issued approximately £130 million new stocks on the conversion of convertible securities and expects to issue more in the future. These numbers also indicate that convertible securities are becoming more popular in the UK.

There have been two prior studies carried out into the announcement effects of the intention to issue convertible bonds in the UK. Firstly, Abhyankar and Dunning (1999) highlight the market response to announcements of convertible bonds over the period 1986-1996, and also analyse sub-samples by the method as well as the purpose of the offerings. Secondly, Wolfe, Daliakopoulos, and Gwilym (1999) concentrate on the wealth effects of both announcements of the intention to issue and of the actual issuance of convertible bonds, covering the period 1980-1998. The work presented in this chapter covers

announcements of the intention to issue convertible bonds from January 1990 to July 2010, extending both earlier studies' period and including the recent financial crisis. The study period allows for the investigation of the impact of changing economic conditions on the wealth effects of convertible bonds announcements. An examination of the factors that determine the issuance of convertible bonds in the UK market is performed and the 'market timing hypothesis', which has not previously been investigated on UK data, is tested.

This chapter is motivated by the fact that to the best knowledge of the author, there is no other study that has been conducted in the UK market after the year 2000. Recently published literature in the US market by Duca, Dutordoir, Veld, and Verwijmeren (2012), notes that the abnormal returns on the announcements of convertible bonds during a recent period (2000 to 2008) were twice as negative in comparison to earlier periods (1984 to 1999). They attribute this finding to arbitrage-induced short selling that causes downward price pressure in the US market. Under Rule 144A, it is possible for firms in the US market to announce their intention to issue convertible bonds today and to issue the convertible bonds on the next day. In other words, the rule allows a speedy placement of convertible bonds. This naturally provides arbitrageurs; normally hedge fund or institutional investors, with the opportunity to purchase the convertible bond from a company and short sell the stock of the same company, thus reducing the share price of the stock. Therefore, the negative abnormal returns on the convertible bonds announcements are not 'pure' but a result of temporary price pressure of arbitrageur trading. An investigation of whether the same pattern can be observed in the UK market is of interest with regard to this thesis.

The results of event study in this chapter find that the wealth effects associated with announcements of intention to issue convertible bonds in the UK on the two-day event window during the study period between January 1990 and July 2010 is -1.75%, statistically significant at the 1% level. This finding is consistent with similar studies in other countries, for example: studies using the U.S sample; Mikkelson and Partch (1986), Arshanapalli et al., (2004), and a study using the data from Switzerland and Germany: Ammann, Fehr, and Seiz (2006). The results are also similar to previous studies in the UK; Abhyankar and Dunning, 1999 (-1.21%); Wolfe, et al., 1999 (-2.32% for sample of 24 convertible bonds, and -1.59% for sample of 44 convertible bonds). The univariate results indicate that there are no significant differences between the sub-samples during and before the financial crisis. This finding suggests that economic conditions do not influence the wealth effects of the intention to issue convertible bonds in the UK. The results also highlight significantly positive abnormal returns of 0.50%, 0.29%, and 0.37% on the fifth, fourth and third day before the announcement, suggesting a possibility that firms announce their intention to issue convertible bond after positive pre-announcement abnormal returns or the stock run-up, in line with the 'market timing hypothesis'.

The remainder of this chapter is organized as follows. In Section 4.2, a discussion of the relevant theories and hypotheses construction is presented. In Section 4.3, the methodology that discusses event study, sample selection, and variable measurement is documented. An analysis of descriptive statistics, market reaction to announcements of intention to issue convertible bonds and their determinants is carried out in Section 4.4. In Section 4.5 the chapter is concluded.

4.2 Theories and hypotheses construction

4.2.1 Asymmetric Information Hypothesis

Based on a summary of empirical studies, Smith (1986) finds in general that issuance announcements for risky securities are associated with negative abnormal returns. One argument for this negative announcement effect is that market participants perceive that managers have more information than the public, and that these managers will only issue securities if they are overvalued. The theory that discusses in detail the asymmetric information hypothesis between managers and public investors is known as the 'pecking order theory' by Myers and Majluf (1984). As discussed in Chapter 2, this theory suggests that the issuance of any external securities will induce a decrease in share price. The effect of this asymmetric information between managers and the market towards the issuance of securities is well documented in prior empirical studies on equity offerings (e.g., Eckbo and Masulis, 1992; Kabir and Roosenboom, 2003; Barnes and Walker, 2006) as well as hybrid securities offerings (e.g., Dann and Mikkelson, 1984; Eckbo, 1986; Loncarski, Ter Horst, and Veld, 2008; Duca et al., 2012). Based on asymmetric information documented by Myers and Majluf (1984), the first hypothesis to be tested in this chapter is:

Hypothesis 1: Announcements of the intention to issue convertible bonds in the UK are associated with negative abnormal returns.

Duca et al. (2012) find that announcements of convertible bonds induce more negative abnormal returns during the financial crisis in the US. One of the reasons for their event study results is due to the offering under-pricing, which is more severe during the financial crisis, meaning that issuing the under-priced convertible bonds is the only option for firms

during this period. In agreement with Duca et al. (2012), the second hypothesis to be examined is:

Hypothesis 2: Announcements of the intention to issue convertible bonds in the UK during a period of financial crisis are associated with more negative abnormal returns than during a non-financial crisis period.

4.2.2   Market Timing Hypothesis

In equity issuance, 'market timing' suggests that firms issue their equity when the share price is high and repurchase equity when the price is relatively low (Baker and Wurgler, 2002). To the best knowledge of the author, the first study regarding market timing on capital structure in the UK is carried out by Marsh (1982). He conducts a model of choosing between issuing equity and debt. Although the study does not take into account convertible debt or any equity-link securities, the results indicate that in the UK market, timing and market condition are significant variables in choosing between equity and debt. Marsh (1982) explains that managers time their issuance according to past performance because they perceive the past performance as an indicator of future performance. According to Marsh, the pre-issue market adjusted share price performance is a variable that could capture issuer specific timing considerations, i.e., that manager tends to issue equity after high pre-issue stock price performance. During this time, the securities are overvalued and issuing overvalued securities gives a negative signal to the market. Later, Billingsley, Lamy and Thompson (1988) incorporate convertible bonds into Marsh's model and find that the pre-issue residual returns or abnormal returns influence the issuance decision of convertible bonds in the US. Applying the 'market timing hypothesis', a

negative coefficient is anticipated between the higher pre-announcement stock run-up (positive pre-announcement abnormal returns) and abnormal returns. Hence, the third hypothesis is:

Hypothesis 3: Announcements of the intention to issue convertible bonds in the UK after higher pre-announcement stock run-up are associated with lower abnormal returns than after lower pre-announcement stock run-up.

Research by De Jong, Duca, and Dutordoir (2010) find that firms that issue convertible bonds are firms that tend to have high cost to access traditional financing, i.e., equity and straight debt. According to Choi, Getmansky, Henderson, and Tookes (2010), these firms are defined as financially constrained firms, one of the demand-side of convertible bonds financing. Although neither of these studies provides evidence of the wealth effects associated with announcements of convertible bonds by financially constrained firms, it is believed that the market reacted positively when financially constrained firms announce their intention to issue convertible bonds. This assumption is based on the 'market timing hypothesis' that states that if firms 'time' their announcements, it gives a negative signal to the market that the securities are overvalued, consequently inducing negative abnormal returns on announcement day. However, Karojczyk and Levy (2003) find that financially constrained firms, defined as firms that have insufficient cash to undertake valuable projects and difficulty gaining to access financial markets, do not take into consideration the 'timing' effect. This finding is in line with their hypothesis that with equity issuance, financially constrained firms will demonstrate a different behaviour in terms of adopting their capital structure. Therefore, building on the argument of Karojczyk and Levy (2003)

and the 'market timing hypothesis', the fourth hypothesis to be investigated in this chapter is:

Hypothesis 4: Announcements of the intention to issue convertible bonds in the UK by financially constrained firms are associated with less negative abnormal returns than announcements by non-financially constrained firms.

4.2.3   Risk Uncertainty Hypothesis

As previously discussed in Chapter 3, Brennan and Schwartz (1988) argue that convertible bonds are suitable for a firm that have a risk uncertainty or disagreement about risk between investors and shareholders. To summarise, if investors perceive that the risk of the firm is high but firms perceive the risk is low, the value of the straight bond will decline, but the value of the 'option' or the conversion value will increase. Based on the risk uncertainty hypothesis, the next hypothesis is:

Hypothesis 5: Announcements of the intention to issue convertible bonds in the UK by firms with a high risk uncertainty are associated with positive or less negative abnormal returns than by firms with a lower risk uncertainty.

4.3   Methodology

4.3.1   Event study methodology

The standard event study methodology suggested by Brown and Warner (1985) is employed in this study. The announcement date is denoted as t=0. The estimation period for the market model is 171 days, starting at day 180 and continuing until day 10 before the

announcements (-180, -10). The test period is between 5 days before the announcement and 15 days after the announcements (-5, 15). The return index data adjusted for dividends (RI) is downloaded from Datastream. Logarithmic returns are used as these returns are more normally distributed than discrete returns (Strong, 1992). As discussed in Chapter 3, the abnormal return is calculated based on the market model as below:

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$$

AR_{it} is denoted as the abnormal return, R_{it} is defined as the return of security i in period t, R_{mt} is the return of the market, α_i is the alpha or the intercept of the security i, β_i is the beta or the slope of the security i. The FTSE All Share value weighted index is used as the benchmark or market index. Since the chosen sample includes all companies in the UK that issued convertible bonds (i.e., FTSE 100 companies or FTSE 250 companies) the possibility of thin trading is accounted for by adjusting the betas according to the method of Scholes and Williams (1977). An examination of the data finds that abnormal returns with beta-adjustments are not significantly different to abnormal returns without beta-adjustments.[13] Therefore, we focus our research on the abnormal returns without the beta-adjustments.

The significance of the abnormal return is tested with two measurements: parametric testing using the *t*-statistic (Brown and Warner, 1985) and non-parametric testing using the generalised sign test (Cowan, 1992). The *t*-statistic is calculated as:

$$t\text{-}stat = AAR / SD (AAR)$$

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[13] The results of paired samples t-tests reveal there are no significant differences between the CARs with beta-adjustment and the CARs without beta-adjustment for the event windows (-1, 0) and (-1, 1).

AAR is the average abnormal return across all securities in the sample. SD (AAR) is the standard deviation for average abnormal return for all securities in the sample calculated during the estimation period. t-statistic for cumulative average abnormal return (CAR) is slightly different manner:

$$t\text{-stat} = CAR_{K,T}/ \hat{S}(AAR_t) \sqrt{n}$$

Where n is the number of periods over the even window of KT which the cumulative abnormal return or CAR is calculated.

The generalised sign test (as defined by Cowan, 1992, pp.1) is a test that 'compares the proportion of positive abnormal returns around an event to the proportion from a period unaffected by the event'. This test is discussed in details in Chapter 3. This test does not require normality of the abnormal return distribution and is less sensitive to outliers than the parametric tests. The generalised sign test is defined as:

$$Z_g = w\text{-}n`p / [n`p (1\text{-} `p)]^{\frac{1}{2}}$$

Where Z_g represent the generalised sign test, w is the number of returns in the event window that is positive, n is the number of returns in the sample and `p = the fraction of positive abnormal returns for all the sample in the estimation period.

4.3.2   Sample selection

In this study a sample of convertible bond issues on the London Stock Exchange from January 1990 until July 2010 is used. Announcement dates are downloaded from the Securities Database Company (SDC Database). The final sample for the analysis of wealth

effects associated with announcements of the intention to issue convertible bonds consists of 121 announcements of convertible bonds by companies (including financial companies) listed on the London Stock Exchange[14]. The number of convertible bond announcements in this chapter is smaller compared to studies that use datasets from the US and Japan (i.e., Cheng et al., 2005; Duca et al., 2012). A report by the Financial Services Authority in 2002 explains that "market sources and the new issue pages on Bloomberg and Reuters indicate that currently in the UK the vast majority of such issues are exchangeable bonds. This is because few UK companies currently choose to raise capital through the issuance of convertible bonds" (p.8, Financial Services Authority, 2002).[15] Masters in *The Financial Times* (2009) also highlights two factors that discourage UK companies from issuing convertible bonds. The first one is that the pre-emption rights of the shareholders of UK companies are at odds with the issuance of convertible bonds. The second one is that hedge funds, normally the main buyer of convertible bonds as part of a strategy to short sell the shares of the same company, now play a smaller role.

The SDC file contains 207 announcements of convertible bonds during the study period. A number of these announcements are not considered to be relevant to the study reported in this chapter, and are removed from the dataset. This elimination include 15 announcements for exchangeable bonds (which were originally reported within SDC as convertible bonds), 5 announcements of preferred stocks, 3 announcements of mandatory convertible notes, 1 announcement of a pre-IPO convertible bond, 1 announcement of an IPO convertible bond,

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[14] Seven announcements by companies that announce more than one issuance of convertible bond in a year are eliminated. The final sample includes the earliest announcements from these companies.
[15] Exchangeable bonds are issued by a company or firm and are usually convertible into a third party's shares. In this case, the issuer normally has a long position in the underlying shares and is disposing of a substantial shareholding or cross shareholding (p.8, Financial Services Authority, 2002).

and 44 announcements that are not confirmed or mentioned by Nexus-UK and/or the annual report of the company. In addition to the above, 4 companies with a static share price or no changes of share price during the test period are removed; e.g., Allied Lyons Financial Services did not have any changes in their stock price from 144 days before to 60 days after their announcements. Finally 6 announcements with unavailable share prices in Datastream are also eliminated from the sample.

The remaining sample is divided between a full and a clean sample. The clean sample excludes any announcements with confounding effects such as corporate announcements (including announcements of earnings and dividends), one day before and one day after the announcement (i.e., within the event-window (-1, 1)). The remaining clean sample contains 91 announcements. To investigate the market reactions towards the convertible bond announcements during the financial crisis, the sample data is split into two periods, announcements made before the financial crisis, and those made during the financial crisis. The financial crisis has been defined in this chapter as starting on the 9th August 2007 (Elliott, 2011) based on the timeline of global financial crisis provided by The Guardian. Therefore, sample data during the financial crisis consists of 27 announcements of the intention to issue convertible bonds after 9th August 2007 to the end of the study period. The sample before the financial crisis contains 94 announcements from January 1990 to 8th August 2007.

For the descriptive statistics of the firms' characteristics that announce the intention to issue convertible bonds, the sample consists of all announcements from non-missing firms' characteristics data (that are retrieved from Datastream) which are the market value, total

assets, sales, and the ratio of fixed assets to total assets. Therefore, the descriptive statistics of firms' characteristics consist of 111 announcements (from 121 announcements, 10 announcements are eliminated in which 3 announcements are from the financial companies). The standard deviation and the pre-announcements stock run-up are based on the event study sample which consists of 121 announcements. Lastly, the KZ index and its components are based on announcements for non-financial companies, in total 79 announcements.

The second part of the analysis performed in this chapter is the determinants of market response to announcements of the intention to issue convertible bonds in the UK. In this analysis, two models of regressions are presented; Model 1 and Model 2. Model 1 consists of 111 announcements and includes all announcements from non-missing firms' characteristic data, including from financial companies, while Model 2 consists of 79 announcements that include all announcements from non-missing firms' characteristic data, excluding financial companies (10 missing data and 32 announcements from financial companies are removed from 121 announcements).

4.3.3   *Variable and measurement*

This section is based on the hypotheses construction discussed in Section 4.2. The variables used in this study are divided into two categories: dependent and explanatory variables.

4.3.3.1 Dependent variable

The three-day cumulative abnormal returns of (-1, 1) is used as the dependent variable. As t=0 is defined as the announcement date downloaded from SDC, taking a day before and after the announcement date allows any possibility of a news leakage or delay.

4.3.3.2 Explanatory variables

Asymmetric Information Hypothesis

Size of the firm is used as a proxy of asymmetric information hypothesis. Larger firms tend to have lower asymmetric information since they are more likely to disclose the company information to the public than smaller firms. As an alternative measurement of asymmetric information fixed assets or tangible assets is used. Likewise, firms that have high proportion of fixed assets tend to have lower asymmetric information. Fixed assets or tangible assets represent commitment that would increase the firms' value in the future especially during the default state. This commitment not only reduces the asymmetric information, but also increases the capability of the firms to gain external finance (Ameida and Campello, 2007). Both variables are hypothesized to have a positive coefficient with the abnormal returns. The log of market value is used as proxy of firms' size and the ratio of book value of fixed assets (property, plant, and equipment) over book value of total assets in line with e.g., Dutordoir and Van de Gucht (2007). All measurements are taken at the fiscal year-end prior to the announcement date.

Market Timing Hypothesis

One variable that is used to proxy for 'market timing' is abnormal or residual returns (Marsh, 1982; Billingsley et al., 1988). Stockholders expect managers to issue overvalued securities that in return can benefit them. Issuing securities during high pre-issue share price performance will signal negatively to the market that the securities are over-valued and induce low abnormal returns on the announcement day. Thus, this variable is hypothesized to have negative coefficient with the abnormal returns. Abnormal returns adjusted for market (market model) over the event window (-75,-1) is used to measure pre-announcement stock run-up.

Following Dong, Loncarski, Ter Horst, and Veld (2012), the Kaplan-Zingales (KZ) index that has been adjusted to measure financial constrained firms is used. While this index was originally derived for US firms, it has also been used in studies outside US. For example, Chen, Huang, and Chen (2009) apply the KZ index to proxy financially constrained firms in nine East Asian countries, and Dong et al. (2012) use the KZ index for Canadian firms. To the best knowledge of the author, no study on UK data has used the KZ index as a financial constraint variable. The KZ index that developed by Kaplan and Zingales (1997) estimates ordered 'logit' models of the probability that a firm is categorized in one of the five categories, with not financially constrained being the lowest level, and financially constrained being the highest level. Originally, this index has five components, but the fifth component of the index which is the Q-ratio (calculated by market value of equity plus assets minus the book value of equity and divided by book value of assets) is dropped because the high Q-ratio represents overvaluation, and reduces the ability of the KZ index

as a measurement of financial constraint (Dong et al., 2012). The financially constrained firms will have lower cash flow from operations, higher leverage, lower or no dividend pay-out and lower cash. Thus the higher KZ index indicates firms that are more financially constrained. The adjusted KZ index based on Baker, Stein, and Wurgler (2003) is used. This adjusted KZ index that has four components and is calculated as:

$$KZ_{it} = -1.002 \ x \ CF_{it}/ \ TA_{it-1} + 3.319 \ x \ LEV_{it} - 39.368 \ x \ DIV_{it}/ \ TA_{it-1} - 1.315 \ x \ CASH_{it}/ \ TA_{it-1}$$

KZ is denoted as KZ index, CF is the sum of the net income and depreciation, TA represents the total asset, LEV is long term debt over lagged total assets, DIV is cash dividend paid, and $CASH$ is cash and short-term investments.

Risk Uncertainty Hypothesis

Standard deviation of firms' equity return is used to test the risk uncertainty hypothesis. Firms with high standard deviation are hypothesized to have higher risk uncertainty. The standard deviation of firm's equity return is calculated on the raw return of the issuer over the window (-75, -1) (Lewis et al., 2003), and is expected to have positive coefficient with the dependent variable.

Control variables

The control variable that is used in this study is a Dummy clean, which distinguishes abnormal returns between the clean and confounding sample. It is defined as dummy equal to 1 if the announcement is clean (or there are no corporate announcements during three-day event window (-1, 1)), and a dummy equal to 0 if the announcements overlap with

other corporate announcements (confounding effects). The Dummy economy variable is also constructed in order to test the relationship between abnormal returns and the financial crisis. The dummy is defined as equal to 1 if the date of the announcements is after 9th August 2007 (during the financial crisis) and dummy equal to 0 if the date of announcements before 9th August 2007 (before the financial crisis). Table 4-1 lists all hypotheses, their measurements, and the predicted sign.

Table 4-1: Hypotheses, definition of variables, and predicted sign

Hypotheses/ Variables	Proxies	Predicted sign
Asymmetric Information Hypothesis		
Market value	Market price at the end of the year multiplied by number of common shares outstanding (Datastreamcode: MV).	(+)
Total assets	The book value of total assets (Worldscope: WC02999). The value is taken at the fiscal year-end prior to the announcement date.	(+)
Sales	The book value of net sales (Worldscope: WC01001). The value is taken at the fiscal year-end prior to the announcement date.	(+)
Fixed assets/Total assets	The book value of property, plant and equipment (Worldscope: WC02501) over the book value of total assets (Worldscope: WC02999). The values are taken at the fiscal year-end prior to the announcement date.	(+)
Market Timing Hypothesis		
Pre-announcement stock run-up	The pre-announcement stock run-up is measure based on the abnormal returns adjusted for market model over the window (-75, -1)	(-)
Financially constrained firms	KZ_{it} *index= -1.002 x CF_{it}/ TA_{it-1} + 3.319 x LEV_{it}* *- 39.368 x DIV_{it}/ TA_{it-1} – 1.315 x $CASH_{it}$/ TA_{it-1}* CF_{it}/ $TA_{it-1}$is the CF is the sum of the net income (Worldscope item: WC01751) and depreciation (Worldscope: WC04049) at the fiscal year-end of the year of announcement over lagged book value of total asset (Worldscope: WC02999). *LEV* is long term debt (Worldscope: WC03251) at the fiscal year-end of the year of announcement over lagged book value of total asset (Worldscope: WC02999). *DIV* is cash dividends (Worldscope: WC04551) at the fiscal year-end of the year of announcement over lagged book value of total asset (Worldscope: WC02999). *CASH* is cash and short-term investments (Worldscope: WC02001) at the fiscal year-end of the year of announcement over lagged book value of total asset (Worldscope: WC02999). All variables are taken from the Datastream.	(+)
Risk Uncertainty		
Standard deviation	Standard deviation is a measure based on the issuer's raw return over the window (-75, -1).	(+)
Control variables		
Dummy Clean	A dummy variable, 1= clean sample, and 0 = contaminated sample.	(?)
Dummy Economic	A dummy variable, 1= announcement date during the financial crisis, and 0 = announcement date before the financial crisis.	(?)

4.4   Empirical results and analysis

The analysis and discussion of the results of the study performed in this chapter is divided into three sub-sections. The first sub-section discusses the descriptive statistics of firms that announce the intention to issue convertible bonds in the UK, and the distribution of announcements according to the year of announcement. The second sub-section contains the analysis of market response towards announcements of the intention to issue convertible bonds, and also focuses on the sub-samples before and during the financial crisis. The determinants of the abnormal returns are discussed on the third sub-section.

4.4.1   Descriptive analysis

Table 4-2 presents the descriptive statistics for the characteristics of the companies that announced the intention to issue convertible bonds. The samples of the firms in this table are based on the availability of data. The market value, total assets, sales, and the ratio of fixed asset to total assets are based on 111 announcements (after eliminating the missing data from 10 announcements). The standard deviation of the issuer's return and pre-announcement abnormal returns are based on the full sample of 121 announcements. The KZ index and its components are based on 79 announcements, as this variable is only suitable for non-financial companies (the dataset contains 42 announcements from financial companies). The definition of the variables is listed in Table 4-1. All variables are taken at the fiscal year-end prior to the announcement date, unless otherwise stated.

The average market value for the firms that announced their intention to issue convertible bonds during this period is £3,263.98 million, with a median of £1,227.50 million, which is

very similar to the median presented by Abyhankar and Dunning (£1,225.8 million). The mean of total assets for the firms is £14,225.88 million, with a median of £2,033.40 million. The average net sale is £3,503.86 million and the average of fixed assets to total assets is 39.15%. The mean and median for the standard deviation of firms' equity are 2.43% and 1.82% respectively. The average pre-announcement abnormal returns is 1.64%, indicating that on average, firms in the UK announce their intention to issue convertible bonds during a positive pre-announcement stock run-up. The components of the KZ index are also presented in this table. The average cash flow to lag of total assets is 3.73%. The average leverage for non-financial firms that announce the intention to issue convertible bonds in the UK is 31.94%. The average cash dividend to lag of total assets is 2.09%, and the means of cash and the short-term investment is 17.29%. The average KZ index for non-financial firms in the UK is -0.08, suggesting that, on average firms that announce their intention to issue convertible bonds in the UK do not suffer from financial constraints.

Table 4-3 includes the yearly distribution of the announcements of the intention to issue convertible bonds in the UK over the period of January 1990 to July 2010. The highest number of announcements is during the financial crisis in 2009. During the early stages of the financial crisis in 2007, the number of announcements was high (11 announcements), and then relatively low in 2008 (4 announcements). In 2009, the demand on convertible bonds was bounced back with 14 announcements in this year. The number of announcements in 1993 is 13 announcements, while 10 announcements in 2003. The lowest number of announcements was made in 2000, with only 2 announcements that year.

Table 4-2: Descriptive statistics of firms that announced the intention to issue convertible bonds in the UK from January 1990 to July 2010.

The market value, total assets, sales, and the ratio of fixed assets to total assets are based on 111 announcements, includes all firms that announce the intention to issue convertible bonds in United Kingdom, excluding 10 announcements with company characteristics data unavailable in Datastream. The standard deviation and the pre-announcements abnormal returns are based on the full sample of 121 announcements, while the KZ-index and its components are based on non-financial company announcements (79 announcements). The variables are defined in Table 4-1.

	N	Mean	Median	Std. Deviation
Market value (£ million)	111	3263.98	1227.50	6453.92
Total assets (£ million)	111	14225.88	2033.40	68052.72
Sales (£ million)	111	3503.86	875.00	7988.28
Fixed assets/Total assets (%)	111	39.15	34.30	33.20
Standard deviation on (-75,-1) (%)	121	2.43	1.82	1.89
Pre-announcement stock run-upon (-75,-1) (%)	121	1.64	0.95	22.20
Cash flow/lag total assets (%)	79	3.73	7.30	16.60
Long term debt/lag total assets (%)	79	31.94	26.60	23.72
Cash dividend/lag total assets (%)	79	2.09	1.10	3.63
Cash and short term investment/lag total assets (%)	79	17.29	10.20	19.11
KZ index	79	-0.08	0.02	1.55

Table 4-3 : Yearly distribution of announcements of the intention to issue convertible bonds in the UK

The total number of announcements is 121 over the period covering January 1990 to July 2010.The announcements are taken from the SDC database.

Year	Number of announcements	% announcements
1990	8	6.61
1991	3	2.48
1992	3	2.48
1993	13	10.74
1994	5	4.13
1995	3	2.48
1996	4	3.31
1997	4	3.31
1998	6	4.96
1999	3	2.48
2000	2	1.65
2001	6	4.96
2002	5	4.13
2003	10	8.26
2004	3	2.48
2005	4	3.31
2006	5	4.13
2007	11	9.09
2008	4	3.31
2009	14	11.57
2010	5	4.13
Total announcements	**121**	**100%**

4.4.2 Market reaction to announcements of the intention to issue convertible bond

This section focuses primarily on discussing the full sample results because the results for both samples (full and clean) are similar. Two tests of significance are presented, a parametric test (*t*-test) and non-parametric test (generalised z-sign test). One of the advantages in using the non-parametric test as a test of significance in the event study is that this test is less sensitive to outliers (McWilliams and Siegel, 1997). The results also reveal that the significance of the z-sign test is stronger than the significance provided by the *t*-test; therefore this section discusses the significance of the z-sign test in more detail, although the *t*-test results are also provided.

Table 4-4 documents average abnormal returns, the *t*-statistic, percentage of positive abnormal returns, and z-statistic 10 days before and 15 days after the announcement of convertible bonds for both the full and clean samples. The abnormal returns are negative and not significant from 10 days until 6 days before the announcement date. On the fifth until the third days before the announcement, significantly positive abnormal returns (significant at the 5% level) ranging between 0.29% and 0.50% are observed, suggesting that firms in the UK announce the intention to issue convertible bonds after higher pre-announcements abnormal returns. On the announcement date, the abnormal return is -1.91% and statistically significant at the 1% level. The cumulative abnormal returns or CARs for the two-day and three-day event window document strong significant negative abnormal returns of -1.75% and -1.88% (significant at the 1% level), respectively. These

results confirm Hypothesis 1, that announcements of convertible bond issued in the UK are associated with negative abnormal returns.

The significant negative CARs on the two-day and three-day event window (-1.75% and -1.88%) confirm previous results of UK convertible bonds studied by Abhyankar and Dunning (1999) that observe CAR of -1.21% (significant at the 1% level), and Wolfe et al. (1999) that find CARs of -2.32% and -1.59% (significant at the 1% level). The results presented in Table 4-4 are also in line with many empirical studies for data from the U.S and other countries (Burlacu, 2000; Cheng et al., 2005; Dutordoir and Van de Gucht, 2007; Suchard, 2007; Loncarski et al., 2008; Duca et al., 2012). The significantly positive abnormal returns prior to the announcement date and the CAR on the event window of (-5, -1) also support Hypothesis 3, suggesting that managers or firms issuing convertible bonds in UK may have timed their announcements. They will announce their intention to issue convertible debt after the high pre-announcement stock price performance. This result is also consistent with the interview findings of Dong et al. (2011) that managers timed their issuing of convertible bonds.

Table 4-5 documents average abnormal returns, t-statistic, percentage of positive abnormal returns, and z-statistics 10 days before and 15 days after the announcements of convertible bonds for sub-samples before the financial crisis (January 1990-July 2007) and during the financial crisis (August 2007-July 2010). On the fifth, fourth, and third days before announcements, significantly positive abnormal returns of 0.33%, 0.43%, and 0.57% (significant at the 1% level) are observed for the sub-samples before the financial crisis, implying that firms announce their intention to issue convertible bonds after higher pre-

announcement abnormal returns. On the other hand, the abnormal returns on the equivalent days for sub-samples during the financial crisis do not indicate the same results. The abnormal returns for the sub-sample during the financial crisis in the fifth day before the announcement are large (1.11%), but not significant probably due to the small sample size. The event window of (-5, -1) reveals strong significant positive CAR of 1.53% (significant at the 1% level) for the sub-sample before the financial crisis, but this is not the case for the sub-sample recorded during the financial crisis. These results seem to suggest that during the financial crisis, firms may not time their announcement to issue convertible bonds. On the announcement day, significant negative abnormal returns of -1.86% (significant at the 1% level) and -2.09% (significant at the 10% level) are reported for both sub-samples. The selective event window of (-1, 0) and (-1, 1) also indicate significantly negative abnormal returns of -1.89% and -2.03% (significant at the 1% level) for the sub-sample before the financial crisis. Significant negative abnormal return of -1.23% (significant at the 10% level) and non-significant negative abnormal return of -1.36% are observed for the sub-sample during the financial crisis on the same event window. To confirm the second hypothesis, announcements of the intention to issue convertible bonds in the UK during a period of financial crisis are associated with more negative abnormal returns than during a non-financial crisis period; a test of significant differences between means is conducted.

Table 4-6 depicts the mean, median, and standard deviation for the sub-samples before and during the financial crisis. The results of two-sample t-test do not find a significant differences between means abnormal returns on the announcement day ($p= 0.85$), two-day event window ($p=0.60$), three-day event window ($p=0.70$), and five-day event window ($p=0.81$), before and during the financial crisis. The equivalent non-parametric test

(Wilcoxon rank-sum/Mann-Whitney) also confirms that the distributions of mean for selective event window do not differ significantly ($p=0.53$ on the announcement day, $p=0.81$ on two-day event window, $p=0.85$ on three-day event window, and $p=0.77$ on five-day event window). The test of significant differences between medians also indicates that the medians for these event windows are the same across the sub-samples before and during the financial crisis. The results presented here do not support the second hypothesis. In other words, the second hypothesis, that the announcement of intention to issue convertible bonds in the UK during the financial crisis induces more negative abnormal returns than during a non-financial crisis period is rejected.

These results contradict with the findings of Duca et al. (2012) who find that during the financial crisis in the US, convertible bond announcements induce more negative abnormal returns. The differences in findings between Duca et al. (2012) and this work also may speculates that there is a difference between the US and UK convertible bond markets, with the US market having more issues with underpricing during the crisis-period, that induces more negative abnormal returns than during the non-crisis period.

Table 4-4 : Average abnormal returns around announcements of the intention to issue convertible bonds in the UK

The full sample contains all announcements of intention to issue convertible bonds in the UK. The clean sample does not contain the confounding effects. The AAR is calculated based on the market model.
* is significant at the 10% level, ** is significant at the 5% level and *** is significant at the 1% level. The significance is based on the two-tail test.

Event Day	Full sample (121)				Clean sample (91)			
	AAR %	T-test	% Positive AR	Z_G (sign test)	AAR %	T-test	% Positive AR	Z_G (sign test)
-10	-0.24	-0.48	51.24	0.76	-0.34	-1.06	51.65	0.78
-9	-0.36	-0.73	45.45	-0.52	-0.38	-1.16	42.86	-0.90
-8	-0.49	-0.98	42.98	-1.06	-0.39	-1.18	42.86	-0.90
-7	-0.42	-0.83	42.98	-1.06	-0.57	-1.76*	42.86	-0.90
-6	-0.01	-0.01	44.63	-0.70	-0.11	-0.33	42.86	-0.90
-5	0.50	1.01	57.02	2.03**	0.59	1.79*	59.34	2.25**
-4	0.29	0.58	57.02	2.03**	0.45	1.39	59.34	2.25**
-3	0.37	0.74	58.68	2.39**	0.16	0.49	58.24	2.04**
-2	0.10	0.21	51.24	0.76	0.03	0.09	49.45	0.36
-1	0.17	0.33	49.59	0.39	0.17	0.52	49.45	0.36
0	-1.91	-3.82***	24.79	-5.07***	-1.74	-5.34***	24.18	-4.47***
1	-0.13	-0.27	49.59	0.39	0.25	0.76	54.95	1.41
2	-0.19	-0.37	47.11	-0.15	-0.15	-0.46	49.45	0.36
3	-0.24	-0.48	48.76	0.21	-0.36	-1.12	43.96	-0.69
4	-0.22	-0.43	48.76	0.21	-0.31	-0.94	46.15	-0.27
5	0.15	0.30	47.11	-0.15	0.06	0.18	45.05	-0.48
6	-0.34	-0.69	47.93	0.03	-0.34	-1.06	48.35	0.15
7	0.11	0.23	47.93	0.03	0.24	0.73	51.65	0.78
8	0.16	0.32	47.93	0.03	0.23	0.71	47.25	-0.06
9	-0.06	-0.12	52.89	1.12	-0.01	-0.04	51.65	0.78
10	-0.07	-0.15	51.24	0.76	-0.06	-0.18	51.65	0.78
11	-0.16	-0.32	48.76	0.21	-0.06	-0.19	53.85	1.20
12	-0.27	-0.55	37.19	-2.34**	-0.26	-0.79	35.16	-2.37**
13	-0.08	-0.17	42.98	-1.06	-0.09	-0.28	45.05	-0.48
14	0.02	0.03	52.07	0.94	0.00	0.01	50.55	0.57
15	-0.15	-0.31	43.80	-0.88	-0.13	-0.40	42.86	-0.90
CAR(-1,0)	-1.75	-2.47**	27.27	-4.52***	-1.57	-3.40***	27.47	-3.84***
CAR(-1,1)	-1.88	-2.17**	30.58	-3.79***	-1.32	-2.34**	34.07	-2.58**
CAR(-5,-1)	1.43	1.28	64.46	3.67***	1.40	1.92*	63.74	3.09***

Table 4-5 : Average abnormal returns around announcements of the intention to issue convertible bonds in the UK for sub-samples before and during financial crisis.

Announcements of the intention to issue convertible bonds for these sub-samples are based on the full sample (121 announcements). The AAR is calculated based on the market model.
* is significant at the 10% level, ** is significant at the 5% level and *** is significant at the 1% level. The significance is based on the two-tail test.

	Before financial crisis (94)				During financial crisis (27)			
Event Day	AAR %	T-test	% Positive AR	Z_G (sign test)	AAR %	T-test	% Positive AR	Z_G (sign test)
-10	-0.22	-0.44	51.06	0.75	-0.32	-0.47	51.85	0.21
-9	-0.43	-0.86	44.68	-0.49	-0.15	-0.22	48.15	-0.17
-8	-0.12	-0.24	43.62	-0.70	-1.78	-2.62	40.74	-0.94
-7	-0.08	-0.17	43.62	-0.70	-1.57	-2.32	40.74	-0.94
-6	-0.09	-0.18	44.68	-0.49	0.28	0.42	44.44	-0.56
-5	0.33	0.67	57.45	1.99**	1.11	1.63	55.56	0.60
-4	0.43	0.88	59.57	2.40**	-0.21	-0.31	48.15	-0.17
-3	0.57	1.16	58.51	2.19**	-0.33	-0.49	59.26	0.98
-2	0.22	0.45	52.13	0.95	-0.32	-0.47	48.15	-0.17
-1	-0.03	-0.07	48.94	0.33	0.86	1.27	51.85	0.21
0	-1.86	-3.76***	22.34	-4.83***	-2.09	-3.08***	33.33	-1.71*
1	-0.13	-0.27	51.06	0.75	-0.13	-0.20	44.44	-0.56
2	-0.21	-0.43	46.81	-0.08	-0.09	-0.13	48.15	-0.17
3	-0.31	-0.63	44.68	-0.49	0.00	0.00	62.96	1.37
4	-0.18	-0.36	51.06	0.75	-0.35	-0.51	40.74	-0.94
5	0.00	-0.01	45.74	-0.29	0.68	1.01	51.85	0.21
6	-0.25	-0.51	47.87	0.13	-0.67	-0.99	48.15	-0.17
7	0.10	0.20	52.13	0.95	0.18	0.26	33.33	-1.71
8	0.03	0.07	47.87	0.13	0.61	0.90	48.15	-0.17
9	0.10	0.21	53.19	1.16	-0.63	-0.92	51.85	0.21
10	-0.22	-0.45	50.00	0.54	0.45	0.66	55.56	0.60
11	0.05	0.11	52.13	0.95	-0.90	-1.33	37.04	-1.33
12	-0.43	-0.87	36.17	-2.15**	0.26	0.39	40.74	-0.94
13	-0.09	-0.18	42.55	-0.91	-0.07	-0.10	44.44	-0.56
14	0.00	-0.01	51.06	0.75	0.08	0.12	55.56	0.60
15	-0.15	-0.30	45.74	-0.29	-0.18	-0.26	37.04	-1.33
CAR(-1,0)	-1.89	-2.71***	25.53	-4.21***	-1.23	-1.28	33.33	-1.71*
CAR(-1,1)	-2.03	-2.37**	28.72	-3.59***	-1.36	-1.16	37.04	-1.33
CAR(-5,-1)	1.53	1.38	64.89	3.43***	1.11	0.73	62.96	1.37

Table 4-6 : Mean, median, and standard deviation for selective event windows for sub-samples before and during financial crisis.

The number of announcements for the sub-sample during the financial crisis (FC) is 27, with 94 announcements for the sub-sample before the financial crisis (BFC). The tests of differences between means on selective event windows for the sub-samples before and during financial crisis are not statistically significant. The equivalent non-parametric test (Wilcoxon rank-sum/Mann-Whitney) also confirms that the distributions of means for the sub-samples before and during financial crisis do not differ significantly. The test of differences between median reveals that there are no significant differences between medians for the sub-samples before and during the financial crisis.

		Mean	Test statistic for differences in mean	Median	Std. Deviation	Minimum	Maximum
t=0	BFC	-1.86	t-test: p=0.85	-1.75	3.15	-18.26	9.04
	FC	-2.09	Mann-Whitney: p=0.53	-1.71	6.06	-14.05	16.69
CAR(-1,0)	BFC	-1.89	t-test: p =0.60	-1.43	3.62	-18.24	9.18
	FC	-1.23	Mann-Whitney: p=0.81	-1.87	6.33	-11.09	15.78
CAR(-1,1)	BFC	-2.03	t-test: p=0.70	-1.37	4.33	-18.20	11.08
	FC	-1.36	Mann-Whitney: p=0.85	-2.26	8.60	-13.43	25.47
CAR(-5,-1)	BFC	1.53	t-test: p=0.81	1.51	5.72	-14.70	28.62
	FC	1.11	Mann-Whitney: p=0.77	1.96	8.43	-25.24	20.45

4.4.3 Cross-sectional regression results and discussion

In this section, an analysis of the factors that determine the wealth effects associated with announcements of the intention to issue convertible bonds is performed. The dependent variable is the cumulative abnormal return for the three-day event window. The independent variables are variables that were discussed in the variable and measurement section (Section 4.4.4), as well as Table 4-1. Multiple regression analysis is employed to determine factors that contribute to the wealth effects associated with announcements of the intention to issue convertible bonds in the UK. The equation is defined as below:

$$\text{CAR } (-1,+1) = \alpha + \beta_1(\text{Log Market value}) + \beta_2 (\text{Fixed assets/total assets}) + \beta_3 (\text{KZ index}) + \beta_4 (\text{Pre-announcement stock run-up }) + \beta_5 (\text{Standard deviation}) + \beta_6 (\text{Dummy economy}) + \beta_7 (\text{Dummy clean}) + e_{it}$$

Table 4-7 depicts the results from multiple regression analysis between the three-day cumulative abnormal returns and the independent variables. The variance inflation factors (VIF) for each variable in this work are less than 10, suggesting the absence of any multicollinearity problem.[16] 'Heteroskedasticity' is also corrected using the 'Breusch-Pagan/ Cook-Weisberg' test (in STATA). Two regression models are discussed in this section: Model 1 is the regression with 111 announcements, including announcements from financial companies, but excluding firms with unavailable information of their characteristics (10 announcements). Model 2 is the regression with 79 announcements, excluding announcements from financial companies (32 announcements), as well as firms with unavailable information of their characteristics (10 announcements).

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[16] The highest VIF is 1.41, for the Standard deviation variable, and the average VIF is 1.25

In Model 1, the Log of Market value and the ratio of Fixed assets to total assets do not indicate any significant relation with the abnormal returns, suggesting that asymmetric information does not contribute to the negative cumulative average abnormal returns. The coefficient for both variables is also not in line with the asymmetric information hypothesis, thus Hypothesis 1 is rejected. The non-significant negative relationship between size of the firms and the abnormal returns is also documented in De Roon and Veld (1998), Chang, Chen, and Liu (2004), and Li and Wang (2008).

The 'market timing' variable measured by the pre-announcement abnormal returns (or stock run-up) based on the market model and using the event window of (-75, -1) is the only variable which is significant in Model 1. This variable is significant at the 1% level with a coefficient of -0.08. To assess the economic significance of the effect of market timing on the announcement of the intention to issue convertible bonds, the effect of a one standard deviation change in pre-announcement return is measured. The standard deviation of pre-announcement stock run-up for the 111 firms in the regressions is 16.63% (based on the descriptive statistics and equivalent to the 22.20% standard deviation reported for all 121 firms in Table 4.2). Thus, in response to a one standard deviation positive stock run-up in the pre-announcement period, the abnormal return effect of an announcement to issue convertible bonds would be approximately -1.33%[17] lower than the mean of the CARs on the three-day event window (-1, 1) of -1.9% (foot of Table 4.4). Therefore, Hypothesis 3 is accepted; firms in the UK announce their intention to issue convertible bonds after high pre-announcement stock run-up, which according to the asymmetric information

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[17] The effect on the CAR is calculated as:
$$= \beta \times \text{Pre-announcement stock run-up}$$
$$= -0.08 \times 16.63\%$$
$$= -1.33\%$$

hypothesis, induces negative or lower abnormal returns. The significant negative relationship between the Pre-announcement stock run-up variable and the abnormal returns is consistent with an earlier US empirical study (Lewis et al., 2003). The KZ index is not included in this model as the components of this variable cannot be tested on financial companies.

The standard deviation of firm equity within the event window (-75, -1) reveals non-significant relations with the abnormal returns, with negative coefficient (-0.05). This result contradicts with the risk uncertainty argument. Thus, Hypothesis 5 that the announcement of convertible bonds issue in the UK by firms with high risk uncertainty is associated with positive or less negative abnormal returns than firms with less risk uncertainty, is rejected. Jen, Choi, and Lee (1997) also find a similar result of non-significant positive relationship between Standard deviation and abnormal returns.

The Dummy economy and Dummy clean variables also do not indicate any significant relationship with the cumulative abnormal returns, suggesting that the financial crisis period and clean sample do not influence the market reaction to announcements of the intention to issue convertible bonds. The R^2 of the model is 16.44%, indicating that the model can be explained by 16.44%. The F-test is 3.35, significant at the 5% level.

The results in Model 2 do not show any changes in terms of the significance of variables. Similarly to Model 1, the Pre-announcement stock run-up on the event window of (-75, -1) is the only variable which is significant at the 1% level of significance. The result strengthens the acceptance of Hypothesis 3, that firms announce their intention to issue convertible bonds after high pre-announcement stock run-up.

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The Log of market value and ratio of Fixed assets to total assets variables are not significant with negative coefficient, which contradicts with the 'asymmetric information theory'. Based on the Model 1 and 2, it can be concluded that 'asymmetric information' is not a factor that determines the abnormal returns of the announcements of intention to issue convertible bonds.

The model also reports a non-significant relationship between the KZ index and the abnormal returns. The coefficient of the KZ index is in line with the hypothesis, suggesting that financially constrained firms contribute to higher or more positive abnormal returns compared to non-constrained firms. The non-significant relationship between the KZ index and abnormal returns could arguably be because of the use of this measurement for financial constraint in the UK market. The KZ index is adapted from the US market, thus the coefficient in the equation may not be suited for producing relevant results with data from the UK environment.

The inclusion of financial companies in Model 2 indicates the non-significant positive coefficient of the Standard deviation of firm equity. The results in Model 2 strengthening the result in Model 1, that there are no significant relationship between the Dummy economy and Dummy clean variables with abnormal returns. The inclusion of financial companies in Model 2 increases the R^2 to 19.60%, indicating that this model can be explained by 19.60%. The F-test is 2.47 and statistically significant at the 5% level.

Table 4-7 : OLS regression for the determinants of the abnormal returns

The sample data includes firms that announce the intention to issue convertible bonds in the UK from January 1990 to July 2010. Model 1 is the regression with 111 announcements (including financial companies) which exclude firms without characteristics data. Model 2 is the regression, with 79 announcements which excludes financial companies and firms without characteristics data. The dependent variable is the cumulative average abnormal returns on the three-day event window (-1, 1), and the independent variables are: Log of market value, the ratio of Fixed assets to total assets, the KZ index, Pre-announcements stock run-up on the event window of (-75, -1), Standard deviation, Dummy economy, and Dummy clean. The variables are defined in Table 4-1. The figures in the parenthesis are the *t*-statistic based on the robust standard error.
* is significant at the 10% level, ** is significant at the 5% level and *** is significant at the 1% level. The statistical significance is based on the two-tail test.

Independent variables	Predicted sign	Model 1 Coefficient/T-stat	Model 2 Coefficient/T-stat
Constant		-0.40	-0.82
Asymmetric Information Hypothesis			
Log market value	(+)	-0.38 (-1.03)	-0.40 (-0.64)
Fixed assets/Total assets	(+)	-0.02 (-1.30)	-0.01 (-0.69)
Market Timing Hypothesis			
Pre-announcements stock run-up	(-)	-0.08 (2.77)***	-0.08 (-2.75)***
KZ index	(+)		0.28 (0.60)
Risk Uncertainty Hypothesis			
Standard Deviation	(+)	-0.05 (-0.11)	0.09 (0.15)
Other Variables			
Dummy economy	(?)	-1.51 (-1.24)	-2.12 (-1.45)
Dummy clean	(?)	1.18 (1.15)	1.34 (1.11)
R^2 (%)		16.44	19.60
F-stat		3.35**	2.45**
Number of sample		111	79

4.5   Conclusions

This chapter focuses on the wealth effects associated with announcements of the intention to issue convertible bonds in the UK from January 1990 until July 2010. The wealth effects associated with announcements of the intention to issue convertible bonds during the financial crisis (9th August 2007 to the end of the study period, July 2010), and before financial crisis (January 1990 to 8th August 2007) are also investigated. In addition, factors that determine the abnormal returns during the study period are also examined.

The study presented in this chapter highlights few interesting findings. Firstly, the results reveal significantly negative abnormal returns of -1.75% on the two-day event window, which is consistent with studies performed in other countries (US, Canada, France, Australia, Western Europe and others). The result also confirms previous UK studies of Abhyankar and Dunning (1999) and Wolfe et al. (1999).

Secondly, the results of sub-samples before and during the financial crisis contradicts with the findings documented by Duca et al. (2012), that state the announcement of convertible bonds during the financial crisis induces more negative abnormal returns than before the financial crisis. The result suggests a difference in the convertible market between the US and UK. In the US market, the issuance method of convertible bonds is dominated by Rule 144A, which allows a speedy placement. As a result, the issuance date for the firms that use Rule 144A offerings may be the same as the announcement date, or a single day after the announcement, increasing the short-selling activities. According to Duca et al. (2012) one of the reasons of the larger negative abnormal returns during the financial crisis in the US is attributable to short-selling price pressure.

Thirdly, the results of the event study (as shown in Table 4-4) and multivariate analysis are in agreement with the hypothesis that firms announce their intention to issue convertible bond in the UK may have timed their announcements. The results of the event study indicate that these firms announce their intention to issue convertible bonds after high pre-announcement stock run-up, consistent with 'market timing hypothesis', and Model 1 and Model 2 in the OLS regression confirm the result of the event study.

The limitation of this chapter is partly due to the inability to conduct a comparison between the announcement effects of convertible bonds and warrant-bonds as presented in Chapter 3. This limitation is due to the unsuitability and limited availability of the dataset of announcements of the intention to issue warrant-bonds. With this reason, this chapter only focus on the announcement effects of convertible bonds in the UK market.

The consistency of the results of the event study and the multivariate analysis with regard to the 'market timing hypothesis' leaves an interesting topic for potential future investigation. While there are extensive studies in the literature into announcement effects and securities market timing in other countries (Lucas and McDonald, 1990; Choe, Masulis, and Nanda, 1993; Lewis at al., 2003; Dutordoir and Van de Gucht, 2007), the research specifically on hybrid securities and market timing has received less attention with regard to the UK market. For example, the model of Marsh (1982) that studies a choice between equity and debt in the UK market does not taking into account hybrid securities. It would be of interest to investigate a state of the art model of market timing that also incorporates hybrid securities in the UK market, as conducted by Billingsley et al. (1988) in the US market.

Chapter 5

Conclusions and Future Research

5.1   Overall summary

This thesis presents three different studies of wealth effects associated with announcements of hybrid securities. Chapter 1 is the Introduction, where convertible bonds and warrant-bonds are defined along with a brief theory of these hybrid securities. The motivations, objectives, research questions, and an overview of the research method are also described in this chapter. The major findings and contributions of this thesis are also briefly summarised in this chapter.

Chapter 2 presents a detailed review of relevant literature on announcements of hybrid securities (convertible bonds and warrant-bonds) using meta-analysis or replication analysis. Using 35 papers, which include 84 sub-samples and 6,310 announcements in total, multivariate analysis, is conducted. The abnormal returns data collected from the studies serve as the dependent variable, and the factors that influenced the abnormal returns, based on the collection of the studies, serve as independent variables. The results of the study indicate that the wealth effects associated with announcements of hybrid securities issued in the US are significantly more negative than found for other countries. The results of univariate and multivariate analysis confirm the relative advantage of warrant-bonds in comparison to convertible bonds. The findings of this study also do not

support the 'information-related hypothesis' discussed by Dann and Mikkelson (1984) as issuing hybrid securities to refund old debt does not seem to be favoured by investors.

After the initial investigation of meta-analysis literature review, it was felt intrigue to explore the wealth effects associated with announcements of hybrid securities in an emerging country in more depth. Therefore, Chapter 3 focuses on exploring the announcement effects of hybrid securities in Malaysia. An event study was conducted and the results were found to be consistent with findings in other countries (such as the US and Canada), the wealth effects of convertible bonds announcements are associated with significantly negative abnormal returns of -1.10% on the three-day event window. The significantly positive abnormal return of 2.25% is also reported for the announcement of warrant-bonds on the same event window, confirming the findings reported in Chapter 2. The research presented in Chapter 3 also found that the event study and multivariate analysis do not support the 'certification hypothesis' and 'signalling hypothesis' for announcements of hybrid securities by method of offerings. The findings also do not support the 'information-signalling' hypothesis for announcements of the purpose of hybrid securities offerings (i.e., debt restructuring, mergers and acquisitions, capital expenditure, and working capital).

Finally, in Chapter 4, the research on the wealth effects of convertible bonds is extended to examine effects in a developed country, the United Kingdom, over a period from January 1990 until July 2010. The results in this chapter report a significantly negative abnormal return of -1.75% on the two-day event window, confirming previous UK studies in the literature (Abyhankar and Dunning, 1999, and Wolf et al., 1999) and also in line with

studies in other countries including the US, Canada, and Australia. There are no significant differences between the results for the sub-samples before and during the financial crisis, suggesting that the economic conditions do not influence market response. Both event study and multivariate analysis are in agreement with the 'market timing hypothesis', implying that managers in the UK announce their intention to issue convertible bonds after a period of good stock price performance.

5.2   Answers to the research questions

In conclusion, the thesis offers answers to the research questions discussed in Chapter 1:

1. What is the wealth effects associated with announcements of hybrid securities, based on a meta-analysis review of studies presented in Chapter 2? What is the wealth effects associated with announcements of hybrid securities issued in Malaysia from January 1996 to December 2009? Finally, what is the wealth effects associated with announcements of convertible bonds issued in the UK from January 1990 to July 2010?

   The results of meta-analysis indicate that the mean cumulative abnormal returns are -1.14% for convertible bonds and -0.02% for warrant-bonds. Based on the collected literature review, the results also document that hybrid securities issued in the US are significantly more negative abnormal returns than found in other countries. In an emerging country, Malaysia, the event study analysis reports that announcements of convertible bonds are associated with significantly negative abnormal returns of -1.10% on the three-day event window. However,

announcements of warrant-bonds indicate significantly positive abnormal returns of 2.25% on the same event window. In the developed country, UK, the announcement effects of convertible bonds reveal significantly negative abnormal returns of -1.75% on the two-day event window.

2. Are the announcement effects of warrant-bonds associated with significant larger abnormal returns than convertible bonds, as has been documented in several studies?

There is evidence in the meta-analysis study presented in Chapter 2, where both univariate and multivariate analysis confirm the relative advantage of warrant-bonds compared to convertible bonds. Additionally, strengthening the results of meta-analysis, the univariate results of Malaysian study presented in Chapter 3 also confirms announcements effect of warrant-bonds are associated with larger (i.e., more positive) than convertible bonds. However, in multivariate contexts, there is no significant relationship between the abnormal returns and hybrid securities issued in Malaysia. It is not possible to fully answer this question in the context of the UK market (presented in Chapter 4). This is because it was not possible to conduct an event study of warrant-bond announcements due to limited data availability.

3. What factors influence the wealth effects of the announcement of hybrid securities?

Based on the set of collected studies, the results in Chapter 2 indicate that there is evidence that announcements of hybrid securities for the purpose of refunding old

debt are perceived negatively by investors. The findings in Chapter 3 do not support the 'risk uncertainty argument', as Malaysian firms with high risk uncertainty (measured by standard deviation of equity returns) are associated with more negative abnormal returns than firms with less risk uncertainty. There is significant evident to support 'market timing hypothesis' in the UK market as both the event study and multivariate analysis confirm that firms in the UK market announce their intention to issue convertible bonds after high pre-announcement stock run-up.

4. What is the announcement effects of hybrid securities by different method of offerings (i.e., rights offering and private placements) and purpose of offerings (i.e., debt restructuring, mergers and acquisitions, capital expenditure, and working capital), specifically in Malaysia?

The thesis confirms that in the Malaysian setting, announcements of hybrid securities by method and purpose of offering do not indicate any significant abnormal returns.

5. Are the announcement effects of convertible bonds issued in the UK during the financial crisis period associated with more negative abnormal returns than those issued before the financial crisis period?

No evidence is found in the UK market data to support the findings of Duca at al. (2012) that in the US market, announcements of convertible bonds during the financial crisis induce more negative abnormal returns than non-crisis periods. The

univariate and multivariate analyses confirms that the economic conditions do not influence market reaction to announcements of convertible bonds in the UK.

5.3   Proposed future research directions

While the meta-analysis presented in Chapter 2 is able to present a strong statistical conclusion from a set of collected studies, it is not flawless. Capon, Farley, and Hoenig (1990) highlight some limitations of meta-analysis including publication bias, and the lack of homogeneous measures. In the work presented in this thesis, a dummy Social Science Citation Index (SSCI) is included to investigate one element of publication bias. Regressions with t-statistics rather than cumulative abnormal returns are conducted in recognition of the limitation of lacking homogeneous measures. Another bias the author acknowledges in this chapter is the problem of overlapping observations that may bias the results. This issue occurs since some of the studies reviewed test different hypotheses using the same data, and also more than half of the studies use the finite set of hybrid securities in the US.

The Malaysian study presented in Chapter 3 involves hand collected data. Although this hand collected data is unique in that this collected sample is not publicly available, it is very difficult to identify accurate and precise announcement dates. The announcement dates in this chapter are the closest possible dates that the researcher could provide. One key difference in the Malaysian debt market that may also produce limitation with this work is that the length of time between the initial announcements and issuance of hybrid securities is sometimes quite long, generating 'noise' or outliers in the sample. For example, three announcements of firms that took more than five years to issue the hybrid

securities are eliminated for the purpose of the study presented in Chapter 3.Thus, the non-parametric significance test (generalized sign test) is also used as this test is less sensitive to outliers than the parametric test (*t*-statistics).

The inability to provide a continuous analysis of wealth effects of convertible bonds and warrant-bonds as presented in the previous chapters, Chapter 2 and Chapter 3, is a limitation present in Chapter 4. Further research on Nexus-UK and The Financial Times documents less encouraging results, as the accurate and detailed information about the issuance of warrant-bonds in the UK market is very hard to find. Therefore, due to the limited availability of data, this chapter was unable to analyse the wealth effects associated with announcements of warrant-bonds and compare the wealth effects between both types of hybrid securities.

On the whole, the findings in Chapter 2 and 3 are consistent. There is evidence that the wealth effects of announcements of warrant-bonds are associated with more positive abnormal returns than convertible bonds, regardless of the fact that the warrant-bonds securities are not easily marketable (Dong et al., 2011) and less popular than the convertibles. These results leave potential for future research into the disappearance of warrant-bonds. Chapter 2 also highlights that there are several significant factors in the previous collected research which are not significant in the meta-analysis. These results suggest that more studies are needed in the meta-analysis to generalise and conclude the significant determinants of the announcement effects of hybrid securities.

The figures provided by Central Bank of Malaysia or Bank Negara Malaysia (Table 3-1) highlight that the demand of Islamic bond in Malaysia is increasing in line with the

government mission to develop Malaysia as an International Islamic Financial Centre (MIFC). In this regard, it would be of interest to compare the wealth effects of hybrid securities announcements with Islamic bond or 'Sukuk' that accompanied with warrants, which is permissible in Islamic jurisprudence (or 'Shariah' law). The uniqueness of the institutional setting in Malaysia also warrants interesting future research to test the market timing hypothesis.

Finally, the results in Chapter 4 also identify additional potential research with regard to hybrid securities, including extending the research on the 'market timing hypothesis' specifically in the UK market. For example, the model of Marsh (1992) that studies a choice between equity and debt in the UK market does not take into account hybrid securities. It would be of interest to see the latest model of market timing that also incorporates hybrid securities in the UK market in similar manner as conducted by Billingsley et al. (1988) in the US market.

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