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Hot debt market - Adverse selection costs as a debt issue driver

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Abstract
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HOT DEBT MARKET – ADVERSE SELECTION COSTS AS A DEBT ISSUE DRIVER

PURPOSE OF THE STUDY

The purpose of this thesis is to examine the role of adverse selection costs in times of high debt issue volume, or the hot debt market. Following the pecking order theory of capital structure, I hypothesize that high information asymmetry between investors and managers hinders companies from issuing equity and, instead, prompts firms to time their debt issues to that point of time. I also examine whether the phenomenon is more pronounced for the private debt market and whether evidence of timing attempt can be found in the issue size and use of proceeds of hot debt issues.

DATA

The empirical analysis conducted in this study is based on comprehensive data of debt issues by listed non-financial companies in the U.S. market in 1999-2009. The data are collected from SDC Platinum. The final sample of debt issues consists of 1,527 public debt issues, 814 private debt issues and 4,408 issues of syndicated loans. I also utilize Thomson ONE Banker for issuers' financial and stock price data, I/B/E/S for analyst forecast data and DataStream for macroeconomic variables.

RESULTS

The results from the empirical analysis, based on ordinary least squares regressions method, lead to a conclusion that, in aggregate, adverse selection costs are one factor behind the hot debt market. I also find that the three examined debt markets have behaved in a remarkably divergent way, and while high adverse selection costs are found to drive the debt issue waves of syndicated loans, information asymmetry appears to reduce private debt issuance. Based on larger issue size and changes in balance sheet items of hot debt issuers, I conclude that the behavior of hot debt issuers shows some evidence of market timing. However, the impact of adverse selection costs in issue size and use of proceeds is varying and in many cases statistically weak.

KEYWORDS

Debt issuance, market timing, information asymmetry, capital structure, syndicated loans

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Pro gradu -tutkielma
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KUUMA VELKAMARKKINA – HAITALLISESTA VALIKOITUMISESTA JOHTUVAT KUSTANNUKSET VELKAEMISSION AJURINA

TUTKIELMAN TAVOITTEET

Tämän pro gradu -tutkielman tarkoituksena on selvittää haitallisesta valikoitumisesta johtuvien kustannusten vaikutusta suuren velkaemissiovolyymin eli ”kuuman” velkaemissiomarkkinan syntymiseen. Tutkin pecking order -teorian mukaisesti, ajoittavatko yritykset velkaemissionsa aikaan, jolloin vallitsee korkea asymmetrinen informaatio sijoittajien ja yrityksen johdon välillä, ja onko tämä ilmiö voimakkaampi yksityisten velkaemissioiden suhteen. Yhtenä tutkielman tavoitteena on myös osoittaa, että yritysten velkaemissiopäätöksen takana ei ole todellinen pääoman tarve, vaan pyrkimys hyödyntää suotuisaa ajoitusikkunaa.

LÄHDEAINEISTO

Tutkielman empiirinen aineisto perustuu kattavaan velkaemissioaineistoon julkisten, rahoitusalan ulkopuolisten yritysten velkaemissioista Yhdysvalloissa vuosina 1999-2009. Aineisto on kerätty SDC Platinum -tietokannasta ja koostuu 1 527 julkisesta velkaemissiosta, 814 yksityisestä velkaemissiosta ja 4 408 syndikaattilaina-annista. Aineisto yritysten tilinpäätös- ja osakekurssi-informaatiosta on kerätty Thomson ONE Banker -tietokannasta, analyytikkoennusteet I/B/E/S-tietokannasta ja aineisto makrotaloudellisia muuttujia varten DataStream-tietokannasta.

TULOKSET

Tutkielman tulokset osoittavat, että haitallisesta valikoitumisesta johtuvat kustannukset vaikuttavat positiivisesti kuuman velkaemissiomarkkinan syntymiseen. Tulosten mukaan eri velkatyypin markkinat ovat kuitenkin käyttäytyneet voimakkaasti toisistaan poikkeavalla tavalla vuosina 1999-2009; asymmetrinen informaatio näyttäisi ajavan syndikaattilaina-anteja, mutta vähentävän yksityisiä velkaemissioita. Kuumien velkaemissioiden suhteellisesti suurempi koko sekä muutokset kuumia emissioita tekevien yritysten taseessa viittaavat markkina-ajoituspyrkimyksiin, mutta näiden suhde asymmetriseen informaatioon osoittautuu vaihtelevaksi ja usein tilastolliselta merkitsevyydeltään heikoksi.

AVAINSANAT

Velkaemissio, markkina-ajoitus, asymmetrinen informaatio, pääomarakenne, syndikaattilainat

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1. Introduction

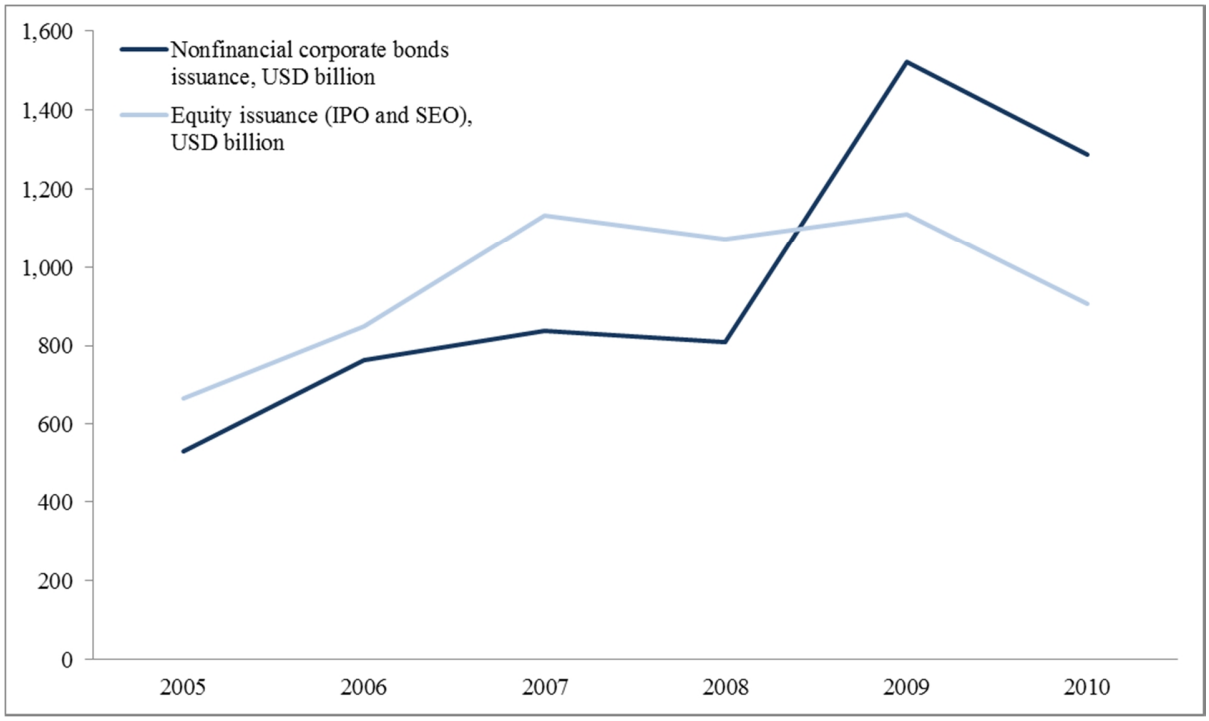
Often less in the spotlight of business news, debt financing is of an undisputable importance in the global financial market. In 2010, global nonfinancial corporate bond issuance amounted to USD 1.3 trillion (McKinsey Global Institute, 2011). Despite the lower media hype than equity financing with all the listing news, debt issuance market actually covers a substantial part of all the capital raisings globally as can be seen in Figure 1. This is even after excluding the debt issues by financial firms that dominate the bond market; in 2010 bonds outstanding of financial institutions accounted for 80% of the total corporate bonds (McKinsey Global Institute, 2011). Naturally, a part of debt issue volume can be explained by the "recurring nature" of debt issuance as companies roll over bonds and the easiness of arranging a debt issue relative to equity issue, among other reasons. All in all, from an academic point of view much is still left in this massive market to explore. In particular, the academia still lacks evidence of the determinants of the timing of debt issues.

A bulk of studies can be found on when and why *equity* is issued in the market. To name a few of the vast number of papers, Taggart (1977), Korajczyk et al. (1991) and Bayless and Chaplinsky (1996) examine seasoned equity offerings, Alti (2005) and Baker and Wurgler (2002) take the timing of initial public offerings under a loop. However, in addition to the massive global volume of the debt financing, there also are other reasons speaking for research on debt issuance. First is the larger and more representative sample. While firms typically conduct an equity issue in the growth phase of their life cycle (initial public offering) and more rarely also later (seasoned equity offering), debt issues scatter more equally on a company's life time. The second advantage of debt issuance research is the focus on purely financing decisions. On the contrary, along with a target to raise public funds, an IPO entails a decision to become a publicly traded company including considerations on the related costs (e.g. administration). The third benefit is the different investor base. Equity issues, larger listing decisions in particular, typically require a profound analysis of the complex investor sentiment and overall market environment. The debt investor base, in turn, is often made of sophisticated institutional investors, insurance companies, pension funds and banks. This allows no information advantage on the firm side, and similarly

the motives and investment behavior of corporate debt buyers can be more straightforward to interpret and predict.

Figure 1. Global securities issuance in 2005-2010

This figure presents the development of equity issues and nonfinancial corporate bond volume in 2005-2010 in billions of U.S. dollars.



On the less plentiful research on debt market timing, studies tend to concentrate on the timing of debt to macroeconomic conditions (e.g. Faulkender, 2005; Barry et al., 2009). Even though interest rates, which more or less determine bond prices, could intuitively be a reasonable driver for the debt issue decision, managers' ability to predict future changes in the interest rate levels can be questioned. Thus, for example the findings by Baker et al. (2003) and Barry et al. (2009) on managers' successful forward-looking debt timing should be taken critically – not only because the corporate debt investors primarily are professional, institutional investors that are unlikely to do naïve investment decisions. Actually, evidence can be found that managers fail to successfully time debt issuance to fluctuations in the yield curve (Butler et al., 2006). To sum, it is of interest to try to find other than controversial interest rate-based factors for the debt issue timing decision.

Further motivation for the study comes from the real life. Two-thirds of CFOs of the largest U.S. companies surveyed by Graham and Harvey (2001) tell that timing concerns play an important role in their financing decisions. Another finding by Graham and Harvey (2001) is that firms are reluctant to issue equity when they see it undervalued i.e. when information asymmetry exists between the managers and investors. Bancel and Mittoo (2004) provide European evidence on the timing consideration of CFOs by reporting that for the majority of their respondents, equity under- or overvaluation plays an important role in an equity issue decision. A question arises whether in these times of high information asymmetry firms end up issuing debt instead?

1.1. Research problem and objective

As earlier explained, space for research exists in the motives for a debt issue decision. In more detail, my interest lies in the debt issue clusters or in the "hot" debt issue market and the determinants behind this phenomenon. Following the pecking order theory of capital structure which argues that companies prefer less information-sensitive forms of capital (internal earnings, bank loans) to equity, I hypothesize that the decision between equity and debt is driven by the level of the asymmetric information between managers and investors. In particular, my research questions are as follows:

What drives debt issue waves? Moreover, do the time-varying adverse selection costs explain clustering of debt issues?

Is this phenomenon more pronounced for private debt issue clusters?

Is there evidence of that hot debt issuing is mainly driven by timing e.g. more debt issued than needed or debt not raised for financing investments?

To answer to these questions I utilize a comprehensive data set of public, private and SEC Rule 144A non-convertible debt issues as well as issues of syndicated loans of listed non-financial U.S. companies in years 1999-2009 collected from SDC Platinum data base as well as supporting

data from I/B/E/S (analysts' earnings estimates), Thomson ONE Banker (companies' balance sheet and stock price data) and DataStream (macroeconomic data).

1.2. Contribution

Relatively little research can be found on the timing of debt issues and only marginally on the timing from other than macroeconomic point of view. This serves as my main motivation to concentrate on this issue and also enables me to contribute to this still less explored area of research.

To my knowledge to date only one study, published in January 2011, focuses on the role of adverse selection costs in debt issue waves. My study continues this work by Doukas et al. (2011) in filling the void in this field of research. I also complement the pioneering study by Doukas et al. (2011) with more sophisticated measures of adverse selection costs and a more comprehensive data sample. The article by Doukas et al. (2011), which acts as my most important reference study, uses U.S. debt issue data covering years from 1970 to 2006. However, Doukas et al. (2011) include only public debt issues in their sample while I collect information on also private placements of debt, debt issues under SEC Rule 144A and syndicated loans. By including also these other debt securities in my research, I am able to dig deeper in the underlying pecking order theory and extend the research area.

In particular, my study gives a more comprehensive understanding about syndicated loans. As I found in this study, this debt type has been of unparalleled importance as a source of financing for companies in the beginning of the 21st century. Yet, only few researchers (e.g. Esho et al., 2001; Altunbas et al., 2010) have committed to exploring motives for issuing a syndicated loan in particular. Studies on this kind of private debt typically have bilateral bank financing in focus (e.g. Boot and Thakor, 2000) and prior research distinguishing syndicated loans as a debt type of its own (e.g. Dennis and Mullineaux, 2000; Altunbas et al., 2005) concentrates on the lender not the borrower. Even though these branches of literature touch the area of syndicated loans, they still clearly have a different angle.

In a broader context my study gives new insight into the classic pecking order theory developed by Myers (1984) and Myers and Majluf (1984). This capital structure theory states that companies decide on the financing alternatives based on their adverse selection costs, internal financing being the most preferred option and equity issue the least suitable. My study adds to this traditional capital structure theory by examining whether the time-varying adverse selection costs not only affect the firm capital structure in the long run but also are the main determinant in the debt issuance timing. In this sense, I also contribute to the area of research building the market timing theory of financing decisions that has earlier collected work by e.g. Korajczyk et al. (1991), Baker and Wurgler (2002) and Butler et al. (2006).

1.3. Limitations of the study

I acknowledge that this study suffers from certain limitations. The use of U.S. data only restricts the analysis on the continent of North America. Taking into account that to my understanding no this kind of research has been conducted on European debt issue data, a different sample selection could have brought new light on the debt issuance motives on a global scale. However, U.S. data offer a homogenous and available data set for research and avoid the complications from variation in business conventions and regulation as with multinational European data. Moreover, since the most part of previous studies related to my area of interest have utilized U.S. data, taking the similar data set enables fair comparison to these studies. Another argument for the sample selection stems from that the debt issuance market is relatively more active in the U.S. than in Western Europe, for instance, corporate bonds accounting for 53% of all external financing of U.S. nonfinancial companies compared to 24% in Western Europe (McKinsey Global Institute, 2011).

Another limitation of the sample here used is that it even though it consists of all public corporate bonds, private debt issues, SEC Rule 144A debt issues and syndicated loans, it still is not able to track all the debt financing used by U.S. companies. In other words, there still are a certain number of bank loans that are left out due to lack of exact data on these issues. This naturally limits the scope of my research. An alternative approach, used by e.g. Baker et al. (2003) and Hovakimian (2006), would be to try to track the debt issuance in the companies' balance sheet.

This data collection method would, however, allow only quarterly frequency data at best, and thus would suffer from problems to find the exact times and maturities of debt issues. In this trade-off between the scope of data and accuracy of data, I prefer the latter option and see it as the most purposeful for the study.

The main constraint regarding the methodology is the challenge to accurately measure adverse selection costs. The academia is far from unanimous on how to measure asymmetric information, and proxies vary from market-to-book ratio and R&D expenses to microstructure-based models and insider trading, depending on the specific focus of research. I am aware of the absence of established methodology and aim to control the problem by using several proxies for information asymmetry.

1.4. Structure of the study

The remainder of the study is organized as follows. The next section discusses the prior literature related to my study. Section 3 presents the hypotheses in detail. Section 4 describes the data and sample construction and Section 5 explains the methodology of the study. Section 6 is reserved for analysis and results, and the last section concludes.

2. Literature review

This section gives an overview of the theoretical framework to my study. I start by presenting the most renowned theories explaining firms' capital structure. Then I continue to discuss prior research on financing decisions in the prevalence of information asymmetry.

2.1. Capital structure theories

According to the famous statement by Modigliani and Miller (1958), in the efficient market the capital structure is irrelevant and there are no gains from opportunistically changing between equity and debt. However, in the prevalence of not purely efficient capital markets, this theorem has several times been disputed in the academia and alternative theories have arisen to explain companies' choice between equity and debt. These theories form the theoretical framework for this study.

"There is no universal theory of capital structure, and no reason to expect one. There are useful conditional theories, however.... Each factor could be dominant for some firms or in some circumstances, yet unimportant elsewhere" (Myers, 2003, p. 216-217)

Of the capital structure theories, the perspective of the two traditional theories, the trade-off theory and management entrenchment theory, is distinctly different from my own. While these two theories focus on the debt-equity relation in the balance sheet, or in the optimal capital structure, that is of less importance in the scope of this study. Instead, the point of view in my study is on the pecking order and market timing theories which concentrate on the actual issue decisions and on which the capital structure only is a result of the historical issue decisions.

The trade-off theory suggests that firms evaluate the different costs of equity and debt and decide on the basis of these which source of capital provides the largest benefits over its costs. For example, the decision on whether to issue debt and when depends, according to this theory, on the advantages of debt financing such as tax shield and the costs related to the financial distress

(e.g. Miller and Scholes, 1978). As these costs vary over time, firms make corresponding changes in the capital structure that rebalance the cost-benefit relation and target the optimal capital structure. The speed of adjusting, in turn, is dependent on adjustment costs: in the absence of adjustment costs firms should never deviate from their optimal capital structures and in the presence of infinite costs, no moves toward the optimal structure would be seen (Leary and Roberts, 2005).

Another famous theory explaining financing decisions is the managerial entrenchment theory built on the work by Zwiebel (1996). Also Stulz (1990) and Morellec (2004) include agency costs in their capital structure models. A sort of extension of the trade-off theory, this theory argues that debt serves as a disciplinary factor for managers constraining their empire building abilities and the agency costs are one factor in the trade-off evaluation (Zwiebel, 1996).

In their purest forms, the trade-off and managerial entrenchment theories do not take a stance on the information environment of investors and managers. This is, in turn, in the focal point of the pecking order theory (Myers, 1984; Myers and Majluf, 1984) which asserts the preference order of capital sources being dependent on their information risk. In other words, retained earnings or internal capital is used when possible because then the possible information asymmetry between investors and managers does not need to be taken into consideration. If retained earnings are inadequate, debt financing will be used, again preferably in the order private-public for minimizing the adverse selection costs (Myers, 1984). Equity financing is used only as a last resort because of information conveyed on the firm valuation through an equity issue. Consequently, the changes in the capital structure are driven by needs for external funds, not by an attempt to reach an optimal mix of debt and equity (Shyam-Sunder and Myers, 1999). Although the pecking order theory is almost always framed in terms of asymmetric information, it can also be generated from tax, agency, or behavioral considerations as noted in Frank and Goyal (2003).

Empirical evidence of the pecking order theory remains mixed. For example Shyam-Sunder and Myers (1999) provide strong evidence of companies' funding behavior according to the pecking order and show that firms even plan to finance anticipated deficits with debt in the long-term.

However, with their sample of mainly mature companies Shyam-Sunder and Myers (1999) are unable to say whether the results would also explain the financing choices of growth companies. Fama and French (2002), in turn, conduct a similar comparison of the empirical validity of the trade-off theory and pecking order theory and show contradictory results to those of Shyam-Sunder and Myers (1999). Also Frank and Goyal (2003) find evidence against the pecking order theory. They also argue that the pecking order theory worked much better in the 1970s and the 1980s and performed progressively worse in the 1990s. Among more recent researchers on the pecking order theory are Bharath et al. (2009) who study U.S. firms over the past three decades and are able to show that asymmetric information considerations are important, albeit not the sole, determinants of financing decisions.

One, a more modern branch of related literature can perhaps be separated as its own capital structure theory. The basic idea of the market timing theory, as explained in Frank and Goyal (2003), is that firms evaluate conditions in both equity and debt market and when in need of financing choose whichever looks favorable at that time. If the issue environment is unfavorable, firms defer issues for better times. In case of particularly attractive conditions, firms may even choose to raise funds for utilizing the window of opportunity even without any specific funding need. Evidence of this is provided by Korajczyk et al. (1991) and Bayless and Chaplinsky (1991), among other studies, who show that firms issue equity following stock price run-ups. In the market timing theory, the capital structure *per se* is of secondary importance and is seen as a result of historical issue decisions that are either driven by e.g. macroeconomic conditions or firm valuation (e.g. Baker and Wurgler, 2002).

These studies can again be distinguished on whether the timing is based on historical conditions or forward-looking measures. For example, Barry et al. (2008) argue that companies time their debt issue decisions to changes in interest rates so that the amount of debt issued is substantially higher when interest rates are low or lower than their recent historical values. Studies starting from Taggart (1977) to Hovakimian et al. (2001) show evidence of firms' tendency to issue equity when their market valuations are high relative to book values or past market values. Barry et al. (2009) in turn examine firms' ability to match debt issues to future interest rates, and

perhaps not surprisingly find evidence of that managers possess no information advantage about future interest rates.

To date, the academia still is unsure about the real drivers of debt market timing. From the macroeconomic point of view, in most studies the focus is on how firms take interest rates or their expected changes into account in the securities issuance decision. This proposition is backed by empirical evidence in the survey by Graham and Harvey (2001) in which a substantial part of CFOs mentions they prefer to borrow at shorter maturities when short-term interest rates are low compared to long-term rates (yet more CFOs indicate that the maturity choice is more influenced by the aim to match the debt maturity with the lifetime of the firm assets).

In addition to survey evidence, Barclay and Smith (1995) empirically show that outstanding debt maturity is negatively related to the yield spread. Similar evidence is provided by Guedes and Opler (1996) who document that the maturity of new public debt issues in the U.S. is negatively related to the yield spread. Barry et al. (2008) in turn point out that the amount of debt issued is substantially higher when interest rates are low (or lower than their recent historical values). These results indicate that firms try to time the market by utilizing a window of opportunity of lower cost of capital. Butler et al. (2006) show that this (naïve) financing strategy does not fully work and managers actually are unable to successfully time debt issues and their maturities around fluctuations in the yield curve. Greenwood et al. (2010) take a completely new path in the research on macroeconomic market timing of debt and argue that the debt maturity is dependent on the discrepancy of maturities between government and corporate debt.

From other than macroeconomic perspective, Doukas et al. (2011) are one of the firsts to examine the adverse selection costs as a debt issue driver. Among their findings is that firms issuing debt in the debt clusters, or in the “hot” market, have higher adverse selection costs of equity than their cold market counterparts. These hot debt firms also issue more than the cold market issuers pointing to managers’ aim to utilize the favorable market conditions. According to these authors, the timing of debt is driven by the time-varying information asymmetry, measured as stock price synchronicity with the market.

2.2. Financing decisions and adverse selection costs

As earlier noted, the pecking order theory (Myers, 1984; Myers and Majluf, 1984) is the only of the capital structure theories that argues for the preference of the less information-sensitive financing means to more public securities. In the same vein, the prevalence of information asymmetry complicates the company's decision when to actually make the possible changes in the capital structure. In other words, the additional information that the management possesses about the company prospects and future plans makes the outsiders or the investors in an inferior position to assess the company value. Consequently, it is in the interest of the company to take this discrepancy, which may impact the investors' behavior and bias the valuation, into account when accessing the capital market.

Why then this asymmetric information matters is perhaps best illustrated by Akerlof (1970) who shows that in the market for "lemons", or a car noticed bad after the purchase, the buyer will demand a discount for the risk of getting a "lemon". Consequently, the buyer is ready to pay at maximum the price of a car of average quality, and the sellers of actually good car will stay away from this market for not getting the fair price for their car (Akerlof, 1970). Similarly to a used car, the real value of equity capital of a company is extremely difficult for non-insiders to assess beforehand, which in the line of Akerlof's (1970) market for lemons leads to a discount in an equity issue as investors adjust the price for a potential "lemon". This price adjustment in the equity valuation of a firm has later become known as the adverse selection cost in the academia, and also gained several attempts to actually measure these costs stemming from information asymmetry.

While several other authors (Ross, 1977; Campbell, 1979; Rendleman, 1980, working paper; Giammarino and Neave, 1982) have discussed the role of asymmetric information in firms' financing decisions, it was the research by Myers (1984) and Myers and Majluf (1984) that famously tied the concept to the pecking order theory and show that the actual costs of asymmetric information can be of sufficient magnitude to force companies to avoid equity issues or to time the equity issue in a period when the asymmetric information temporarily is low. The rationing in Myers and Majluf (1984) goes that in the presence of particularly favorable insider

information the management, acting in the interest of existing shareholders, will refuse to issue equity as the stock price is lower than in the case it incurred also the insider information. Consequently, equity is issued only when the asymmetric information is low enough and the bargain in the issue price not too high to outweigh investment's positive NPV. Since Myers' and Myers and Majluf's pioneering work, a multitude of research has emerged to discuss adverse selection costs of equity and argument what kind of securities companies should issue and when.

Already Myers and Majluf (1984) suggest that the adverse selection costs can be reduced if investors can be convinced of that the issue decision is driven by a real investment opportunity and when the issue is timed in a period when there are several events known by both investors and the management. Choe et al. (1993) were the first to discuss the information asymmetry varying according to economic conditions and show that adverse selection costs are lower in an expansionary period in the economy. Bayless and Chaplinsky (1996) argue that in times of low equity issue volume investors actually are more concerned about the fair equity value, and consequently adverse selection costs are higher for the issuing company, which is why equity issues should be timed in an equity issue cluster of in the hot equity market. Dierkens (1991), in turn, looks timing in more detail and shows that an equity issue should be timed to period after a results announcement to minimize the information asymmetry.

Deviating from the literature on equity issuance and adverse selection costs, another branch of research, represented by e.g. Giammarino and Neave (1982), Brennan and Kraus (1987) and Stein (1992), suggests that convertible debt should be issued instead of debt and equity for the favorable attributes of this hybrid instrument. Nevertheless, although in minority, some studies by Helwege and Liang (1996) and Helwege and Liang (2004), for instance, argue that adverse selection costs play no role in the timing of financing decisions.

Empirical evidence on the existence and magnitude of adverse selection costs concentrates on the price revision of investors in the company value following an equity issue announcement. As Korajczyk et al. (1991) discuss, a price drop increasing in the degree of asymmetric information related to company is expected to be observed at the equity issue announcement. As evidence, Korajczyk et al. (1991) find a decrease of 3.0% in total abnormal stock price return for equity

issuers in a two-day window around equity issue announcement. Bayless and Chaplinsky (1996) show there is a drop in the stock price after an issue announcement which in a market of low equity issuance volume is -3.3% and of high issuance volume close to -2.0% on average. Other studies providing evidence of the negative stock price reaction include Masulis and Korwar (1986), Asquith and Mullins (1986) and Dierkens (1991). The prior literature on time-varying asymmetric information has been able to demonstrate that the magnitude of the price drop also varies according to firm-specific attributes (e.g. Masulis and Korwar, 1986) and economic conditions (Choe et al., 1993).

Regarding adverse selection costs and other financing decisions than equity issuance, the theoretical framework lies on the pecking order theory. Empirical evidence is more rarely found but the few studies published on the subject are able to show that information asymmetry affects the choice of security and market type. In general, these studies argue that higher adverse selection costs prompt firms to choose debt over equity and private market over public market. For example, Bharath et al. (2009) are among the researchers finding that U.S. firms prefer covering financing deficit with debt amid high or increased adverse selection costs. Similarly, Agarwal and O'Hara (2007, working paper) show that higher information asymmetry between managers and investors, measured as the probability of informed trading, leads firms to use relatively more debt than equity. Denis and Mihov (2003) conclude that companies with high information asymmetry are more likely to choose private debt over public debt. Gomes and Phillips (2007, working paper) find that the tendency of issuing debt instead of equity and issuing in the private market instead of public market increase with information asymmetry. Krishnaswami et al (1999) provide similar results on the choice between public and private debt market. Doukas et al. (2011), in turn, utilize the prior literature on equity issues under asymmetric information in the opposite direction and do find evidence for their hypothesis that if high adverse selection costs hinder companies from issuing equity, debt issue clusters should be seen in times of high asymmetric information in the market.

3. Hypotheses

This section discusses the theoretical focus of my study in detail. Before presenting my hypotheses I define the main concepts used in the study.

3.1. Definition of concepts

By *asymmetric information* I relate to the discrepancy of information between managers and investors. Managers in an insider position have additional information on future prospects concerning the company and thus an information advantage over investors, and investors are aware of this (e.g. Myers and Majluf, 1984). Similarly, with this superior information managers are able to identify a situation when the stock price does not reflect the "real" value of the company. From this information disadvantage to investors result the *adverse selection costs*, the adjustment to stock price by investors in case of an equity issue to take into account managers' potential insider information. On theory, the adjustment is always negative, why the term *cost*, since investors ration that no equity issue would be conducted if management knew the stock price reflected the real value of the firm including the favorable information (Myers and Majluf, 1984).

By *market timing* I refer to the aim of a company to utilize a window of opportunity of certain issue market conditions, in this case that of high adverse selection costs (Butler et al., 2006; Doukas et al. 2011).

The concept of *hot market* refers in this study to the clustering of debt issues in certain period (Lowry and Schwert, 2002; Doukas et al., 2011). These periods of unusually high debt issue volume are described as *hot debt market*. Contrariwise, the *cold debt market* is defined as a period of distinctly low issue volume of debt. The methodology for defining *hot* and *cold debt markets* is presented in Section 5.1.

3.2. Hypotheses

The first of my hypotheses represents the core of this study and essentially follows the idea by Doukas et al. (2011). For the part of the impact of adverse selection costs on financing decisions the hypothesis is built on the pecking order theory (Myers, 1984; Myers and Majluf, 1984). The concept of hot issuance, in turn, in this study owns to studies on issue volume fluctuations (Lowry and Schwert, 2002) and market timing (e.g. Baker and Wurgler, 2002; Butler et al., 2006). The hypothesis also is influenced by Dittmar and Thakor (2007) who show that firms are more inclined towards issuing equity when less information asymmetry prevails in the market. I utilize this finding in the opposite direction and aim to show that when more asymmetric information is related to the company, the choice is debt financing.

H1: Hot debt issuance occurs when firm's adverse selection costs are high

The second hypothesis also springs from the pecking order theory and its argued preference of private capital to public funds (Myers, 1984). For example, Krishnaswami et al. (1999) document that firms with high information asymmetry rely more on private debt than firms with lower information asymmetry. Also Diamond (1984), Fama (1985) and Denis and Mihov (2003) conclude that firms with a higher degree of information asymmetry will borrow privately, while firms with lower information asymmetry prefer public debt. In the light of this earlier research, I hypothesize that the hot debt market phenomenon is more observable in case of private debt which in this context refers to private debt as well as syndicated loans that can be seen as a hybrid form of public debt and bank financing (Dennis and Mullineaux, 2000).

H2: Debt market timing to time-varying adverse selection costs is more pronounced for private debt issuance

The third hypothesis is motivated by prior research on market timing. For example, Alti (2006) and Doukas et al. (2011) find that hot issuers or market timers issue relatively more than the cold-market issuers or non-timers. In the same vein, Bayless and Chaplinsky (1996) find that an equity issue in the hot equity market is significantly larger than that in the cold market. If the hypothesis is accepted, it strongly speaks for market timing motives.

H3: Hot debt issuers issue more debt than cold debt issuers for utilizing the window of opportunity

The forth hypothesis is, similarly, a forceful argument for market timing. Its motivation lies in the empirical evidence by e.g. Alti (2006) who shows that equity issuers in the hot IPO market are driven to the market mainly due to favorable issue window and use the additional money to increase cash reserves instead of financing growth opportunities. Choe et al. (1993) provide additional justification for this hypothesis by reckoning that the more valuable the investment opportunity and assets in place, the more likely it is that the firm is willing to bear the adverse selection costs associated with an equity issue. A consequent interpretation of this is that when weaker investment opportunities are available and high information asymmetry prevails, companies will opt for debt.

H4: The proceeds from hot debt issues are not used for investments i.e. issue decision is not driven by real investment opportunities but mainly determined by market conditions

4. Data

The original sample consists of all the non-convertible public and private debt issues as well as debt issues under SEC Rule 144A and issues of syndicated loans done between 1 January 1999 and 31 December 2009 in the U.S. market. Following the standard practice in prior literature, I exclude debt issues done by financial firms (SIC 6000–6999). The study concentrates on long-term debt and thus the maturity of the debt is restricted to be over one year. Convertible debt can be viewed as delayed common stock offering, and is thus excluded from the sample to focus on debt financing. The issue data is collected from SDC Platinum. The original sample consists of a total of 20,548 issues, of which 4,133 are public debt issues, 2,573 private debt issues and 13,842 issues of syndicated loans.

In addition to the more common public debt type, or corporate bonds, the sample includes private debt issues, private debt issues under SEC Rule 144A and syndicated loans. These debt securities are included in the sample for a more comprehensive view of the corporate debt market and for analyzing whether the hot debt market phenomenon is more observable for private debt issues as the hypothesis H2 argues. Private debt issues are placements of debt directly and privately sold to U.S. investors without registration to the SEC. The issues under SEC Rule 144A are defined as issues placed with so-called ‘‘qualified institutional buyers” (QIB) which generally are entities with net worth exceeding USD 100 million. Unlike the traditional private debt issues with cannot be resold for at least a year from the issue, the issues under SEC Rule 144A do not have a holding period but can be traded only among the QIBs according to the regulation by the SEC. Similarly to traditional private debt issues, the issues under SEC Rule 144A are not registered, which makes them technically non-public securities (Barry et al., 2009).

Syndicate loans, in turn, represent a hybrid form between public bond and bank loan where two or more institutions agree jointly to make a loan to a borrower and each bank in the syndication setting is a direct lender to the borrower. Due to this arrangement, syndicated loans typically involve elements of both “relationship financing” and “transaction financing” in the sense that the lead bank screens and monitors the borrower in a relationship-like context, but then sells or

underwrites some or all of the loan in a capital-market-like setting (Dennis and Mullineaux, 2000).

Since corporate debt is typically issued in tranches, I aggregate the issues by the same firm within a given calendar month following Doukas et al. (2011) and take the sum of the issue proceeds and average maturity of the issues. For example Gomes and Phillips (2007, working paper) aggregate over quarter, but monthly frequency allows a more careful tracking of timing. For analyzing different types of issues, the same procedure is conducted for the issues of the same type by the same company within a given calendar month resulting in three separate subsamples in addition to the whole sample: aggregated public debt issues, aggregated private issues and aggregated syndicated loan issues. The aggregation leads to a total sample of 14,129 issues of which 2,769 are public debts or nonfinancial corporate bonds, 1,928 are private debt issues (of which 1,330 private debt issues under SEC Rule 144A) and 9,430 syndicate loan issues. The size of these aggregated issues is verified to be over USD 1 million.

The syndicated loan data is cleaned such that the issues for which no closing date is available are excluded. In case of no defined issue date, the announcement date is used. If no announcement date is available, the closing date of the deal is taken, and in the absence of this number deal signing date is used.

The accounting data as well as the stock price data for all the issuers in the aggregate sample are collected from Thomson ONE Banker Worldscope database. For analysts' earnings forecast data, I/B/E/S database in Thomson ONE Banker is used. The data on macroeconomic variables are collected from DataStream.

The observations for which no accounting data of stock price data are found, as well as observations with analyst coverage less than two analysts are excluded from the sample. Due to need for comprehensive additional data, the sample size was significantly reduced. The number of observations in the final sample is 6,389 issues of which 1,527 issues are public debt issues, 814 private debt issues and 4,408 syndicated loan issues.

5. Methodology

This section describes the methodology used in the study. First, the method for defining hot and cold debt issue months is explained. Then I move on to describe the measures used in this study to estimate adverse selection costs.

5.1. Hot debt market

For constructing the hot and cold market periods I follow the methodology in Helwege and Liang (2004), Alti (2006) and Doukas et al. (2011). First the debt volume is defined in constant dollars measured as of 1 December 2009. Then the three-month centered moving average of the volume of debt issues each month is taken. The advantage of moving average is that it avoids seasonal considerations for debt issue waves (Alti, 2006). Since the U.S. economy grew by about 2.0% per annum over the 10-year period between years 1999-2009, I detrend the monthly moving average debt issue volume at a rate of 2.0/12 % per month (0.16%), following Alti (2006). Hot (cold) months are then defined as those ranked in top (bottom) 30% of all the months in the sample. This is the cut-off rate used by Bayless and Chaplinsky (1996) and Doukas et al. (2011). Alternative definitions include e.g. top (bottom) 25% of monthly volume in Helwege and Liang (2004) and median in Alti (2006). The median definition is later tested as a robustness check of this study. A dummy variable, to be used in the regressions, is created for the hot and cold periods and takes a value of 1 when an individual debt issue is conducted during a hot month and value of 0 if it occurs in a cold month.

While the number-based hot and cold market measure would similarly be able to capture the extent to which the market is unusually active or passive, the volume-based hot-cold market measure is chosen because it has the advantage that macroeconomic conditions become exogenous determinants of windows of debt market opportunities (Doukas et al., 2011). Another justification for the volume-based measure is that if managers believe the debt market is favorable, they presumably aim to time the market by issuing abnormally high volumes of debt (Alti, 2006). The number of debt issues would have examined the hot debt market phenomenon

from a different angle by measuring whether the favorable issue environment increased the issue frequency or brought more companies in the market.

5.2. Measures of adverse selection costs

Measuring the adverse selection costs poses the largest challenge regarding methodology since no established benchmark exists. The literature knows a wide variety of measures ranging from simple proxies such as research and development expenditure (e.g. Frank and Goyal, 2009) and analyst forecast estimates (Dittmar and Thakor, 2007) to more complex market microstructure-based proxies (e.g. Bharath et al., 2009), but none of these has been documented superior to others.

In this study I rely on several proxies that I have divided into direct and indirect measures depending on whether they have a direct link with firm characteristics, such as the stock beta, or whether the asymmetric information is revealed through a more indirect means like analysts' forecast dispersion. I use three direct measures (stock beta, stock price synchronicity and volatility) and one indirect measure (analysts' earnings forecast dispersion) in the regressions. The method of using more than one proxy is similar to that of Autore and Kovacs (2010) who study firms' external financing decisions under time-varying information asymmetry and use firm size, analyst coverage, analysts' earnings forecast dispersion and forecast error, a measure of earnings quality and relative quoted bid-ask spread to proxy for asymmetric information related to equity.

5.2.1. Stock beta

The stock beta can be interpreted as a proxy of asymmetric information due to its ability to measure the responsiveness of the stock's return to market-wide information (Doukas et al., 2011). The idea with stock beta, as with stock price synchronicity, is that the lower beta or stock synchronicity, the larger amount of firm-specific information is used by investors to value equity. Consequently, when it is more difficult for investors to observe firm-specific information (i.e.,

higher idiosyncratic risk) the adverse selection costs of equity increase as investors are constrained to infer the true value of the firm from market-wide information only (Doukas et al., 2011). The following interpretation is that the adverse selection costs are negatively related to the proportion of firm-specific information, i.e. the lower the beta (or stock price synchronicity), the higher the adverse selection costs.

Doukas et al. (2011) justify the use of beta by its direct link to firm performance. However, as such beta can be judged insufficient to comprehensively capture the adverse selection costs as defined in this study. First, the stock beta is relatively static measure of time-varying asymmetric information. Secondly, it risks being subject to several interpretations along with adverse selection. As noted in Autore and Kovacs (2010), beta is traditionally used to measure also risk and problematic since on the one hand higher information asymmetry should lead to more debt financing (Myers and Majluf, 1984) and on the other hand higher risk is associated with more equity issues (Fluck, 1998).

The reference study by Doukas et al. (2011) uses the stock beta as one of the two measures of asymmetric information related to the debt issuers' equity. Also I include this measure in my study as one proxy and complete it with three other measures of asymmetric information. The stock beta is calculated as the covariance between the stock market return and the return on the company stock price divided by the variance of market return

$$\beta = \frac{Cov\ (r_a, r_m)}{Var(r_m)}$$

where r_m is the market return in this study is the daily return on the S&P500 stock index and r_a the asset return is the daily return on the issuing company stock measured for 12 months before the issue date.

5.2.2. Stock price synchronicity

Another measure following the study by Doukas et al. (2011) is the stock price synchronicity. In detail, the synchronicity is the residual sum of squares from the market model regression of daily stock returns for 12 months prior to issue. Doukas et al. (2011) estimate the synchronicity using monthly stock returns from 48 months prior to the issue. The decision to use a shorter time span and more frequent returns is, however, expected to give a more accurate estimate of the synchronicity around the issue. The measure is also used by e.g. Roll (1988) and Durney et al. (2003) and based in the following market model

$$r_i = \alpha_i + \beta_i(r_m - r_f) + e_i$$

where r_i is the total daily return on stock i, r_m the daily market return (return on S&P 500 index), r_f is the risk-free return (10-year U.S. Treasury bond yield), α_i and β_i are coefficients and e_i is the error term. The R^2 or stock price synchronicity from such a regression is of the following form

$$R^2 = 1 - \frac{RSS}{TSS} = 1 - \frac{\sum_i (r_i - f_i)^2}{\sum_i (r_i - \bar{r})^2}$$

where *RSS* is the sum of squared residuals and *TSS* the total sum of squares of the market model. Log transformation $\ln(R^2/(1-R^2))$ creates an unbounded continuous variable out of a variable originally bounded by 0 and 1, yielding a dependent variable with a more normal distribution (Doukas et al., 2011).

A lower R^2 indicates that a larger amount of firm-specific information is used by investors to value equity and the company's future cash flows. When it is more difficult for investors to observe firm-specific information (i.e. higher idiosyncratic risk) the adverse selection costs of equity increase as investors are constrained to infer the true value of the firm from market-wide information only (Durnev et al., 2003).

Doukas et al. (2011) motivate the use of stock price synchronicity with the same arguments as with the stock beta. It is directly linked to firm performance and easily available. Contradictory evidence for the use of this measure is provided by West (1988) and Barberis et al. (2005) who suggest that lower R^2 may in fact reflect greater non-information related noise in stock returns or investor sentiment rather than more firm-specific information.

5.2.3. Stock volatility

Third measure of adverse selection costs is the stock volatility. This proxy has an intuitively sensible interpretation: the more volatility in a share price of a company stock, the more disagreement about the "real" price of the stock and similarly the more information asymmetry in the market. Van Ness et al. (2001) evaluate adverse selection components and support the use of volatility as a proxy. They conclude that the major determinant of adverse selection seems to be volatility while other measures of information asymmetries such as M/B-ratio are not related to adverse selection. For example Dierkens (1991) and Krishnaswami et al. (1999) utilize a volatility measure, the residual standard deviation of daily stock returns, as a proxy for adverse selection costs in their market timing research.

To construct the volatility measure, I use the method similar to Krishanaswami et al. (1999) where the volatility of a firm is the residual standard deviation of stock returns defined as the standard deviation of the residuals of the market model regression using daily returns from the 12 month prior to the issue:

$$\sigma = \frac{1}{N-1}\sum_{i=1}^{N}(e_i - \bar{e})^2$$

where e_i is the error term from the market model in Section 5.2.2. and σ is the standard deviation of these error terms in a sample with N observations. The motivation for the use of the residual standard deviation variable is that it captures the firm-specific uncertainty that remains after removing from total uncertainty the uncertainty that is common to the firm's insiders and the

market (Krishanaswami et al., 1999). The drawback of this measure is, however, that the residual volatility of stock price may be noisy and include a higher percentage of the total uncertainty related to the firm than some other measure of adverse selection costs (Dierkens, 1991).

5.2.4. Analysts' forecast dispersion

Of indirect measures of adverse selection, proxies based on analysts' forecasts are among the most commonly used (see e.g. Dittmar and Thakor, 2007; Autore and Kowacs, 2010). The use is based on the assumption that the level of agreement among analyst is highly correlated with the level of agreement between managers and investors (Dittmar and Thakor, 2007). Consequently, standard deviation of analysts' forecasts about companies' earnings can be seen to proxy for information asymmetry related to company equity. Supporting evidence for this measure is provided by Van Ness et al. (2001) who find a strong correlation between analyst earnings forecast dispersion and stock bid-ask spread and conclude that this underlines the ability of analyst earnings dispersion to reflect adverse selection costs.

Not surprisingly, critic to this measure can also be found in the literature. For example, Diether et al. (2002) and Pasquariello and Vega (2007) suggest that dispersion in analysts' earnings forecasts is a better proxy for differences in opinion about a security than for information asymmetry about its issuer. On the other hand, disagreement among analysts may also be an indication of the lack of available information about the firm.

The measure used in this study is in detail the standard deviation of analysts' quarterly EPS forecast for the quarter prior to the issue. The requirement for the measure is that the firm must have analyst coverage of at least three analysts. The standard deviation is normalized by the absolute value of median EPS forecast for the quarter prior to the issue. Methodology varies in prior studies, for example, Gomes and Phillips (2007, working paper) use company share price five days before the earnings announcement date as a scaler, Dittmar and Thakor (2007) propose scaling by book equity and Krishnaswami,et al. (1999) by earnings volatility.

5.3. Determinants of hot debt issuance

The determinants of hot debt issue timing are assessed using the OLS regressions. The following regression is estimated to capture the association between adverse selection costs and the occurrence of a hot debt market, accounting for capital market conditions

$$HOTD = a + b_1ADV + b_2(Rst\text{-}\pi) + b_3(Rlt\text{-}Rst) + b_4(Rct\text{-}Rlt) + b_5(RS\&P500)t + b_6(\Delta P/E)t + \varepsilon t$$

where *HOTD* is a dummy variable that takes the value of 1 if debt is issued during a hot debt market period and value of 0 if debt issued during a cold market period. The control variables include the short-term interest rate (Rs_t-π, 3-month Treasury bill rate – actual monthly inflation rate), the term spread (Rl_t-Rs_t, 10-year Treasury bond yield – 3-month Treasury bill rate), the risk spread (Rc_t-Rl_t, Moody's Seasoned Baa corporate bond yield – 10-year Treasury bond rate), average equity market return ($R_{S\&P500}$, monthly return of S&P500 index) and equity market valuation changes ($\Delta P/E$, monthly change in price-earnings ratio of S&P500 index). *ADV* is the measure of adverse selection costs that ranges from stock beta to analyst forecast dispersion (*ADV1-ADV4*) and each is used in turn.

For detecting whether the hot debt issuance effect is more pronounced in the case of private debt, the regressions above are run on the aggregate sample as well as the subsample of syndicated loans, public debt issues and private debt issues in turn.

5.4. Hot debt issuance impact on debt levels

To address the question whether hot debt issuers issue more than the cold market issuers due to timing reasons, the following regression is run, controlling for several firm characteristics. The method is similar to what Alti (2006) uses in his study for hot equity issues. The inclusion of the intersection of hot debt market dummy and adverse selection costs (*HOTD x ADV*) follows Doukas et al. (2011) and allows studying the impact of adverse selection costs in hot months on

the relative issue size. The choice of control variables is the same as in Doukas et al. (2011) and relies on earlier literature (e.g. Rajan and Zingales, 1995; Fama and French, 2002) on the determinants of leverage. Definitions of control variables are included in Appendix A. The regression is of the following form

$$Y_t = c_o + c_1 HOTD + c_2 HOTD\ x\ ADV + c_3 D/A_{t-1} + c_4 M/B_{t-1} + c_5 RE/A_{t-1} + c_6 EBITDA/A_{t-1} + c_7 SIZE_{t-1} + c_8 PPE/A_{t-1} + c_9 R\&D/A_{t-1} + c_{10} RDD_{t-1} + c_{11} INV/A_{t-1} + c_{12} DIV/E_{t-1} + c_{13} Cash/A_{t-1} + c_{14} OCON_{t-1} + c_{15} D\text{-}OCON_{t-1} + \varepsilon_t$$

where the Y_t is first the percentage of newly issued debt over total assets at fiscal year-end in the issue year and then the percentage of newly issued debt over total assets at fiscal year-end prior to the issue year. The comparison between the proceeds over issue year and pre-issue year is expected to reveal whether hot debt issuers issue more debt independent of their pre-issue debt ratios. The comparison between hot and cold debt issuers, in turn, show whether hot debt issuers raise relatively more capital than cold debt issuers.

5.5. Hot debt issuers' use of proceeds

To examine the effect of hot debt issuance on firm capital structure, the following regression is constructed

$$Y_t = c_o + c_1 HOTD + c_2 HOTD\ x\ ADV_{t-1} + c_3 D/A_{t-1} + c_4 M/B_{t-1} + c_5 RE/A_{t-1} + c_6 EBITDA/A_{t-1} + c_7 SIZE_{t-1} + c_8 PPE/A_{t-1} + c_9 R\&D/A_{t-1} + c_{10} RDD_{t-1} + c_{11} INV/A_{t-1} + c_{12} DIV/E_{t-1} + c_{13} Cash/A_{t-1} + c_{14} OCON_{t-1} + c_{15} D\text{-}OCON_{t-1} + \varepsilon_t$$

where the dependent variable Y_t is the change in leverage (book debt divided by total assets) from pre-issue year to issue year. The set of control variables is the same as in the previous regressions. Following Baker and Wurgler (2002), Alti (2006) and Doukas et al. (2011), I further decompose the change in leverage to negative of net equity issuances, change in retained earnings and the effect on leverage through firm growth in assets ($E_{t-1}(1/A_{t-1}/A_{t-1})$ which can be further split into change in cash and change in other assets. The decomposition is presented below. The

rationing is that if firms raise more debt than they need, then the debt proceeds are more likely to boost their cash and short-term investments than their long-term assets.

$$Y_t = -e/A_t - \Delta RE/A_t + E_{t-1}(1/A_t - 1/A_{t-1}) = -e/A_t - \Delta RE/A_t + E_{t-1}(\Delta Cash + \Delta OtherAssets)/A_t$$

The original regression above is run on each of this component and for the four different samples.

5.6. Robustness checks

For robustness check, the regressions above are conducted with some modifications in methodology. The first robustness check concerns the definition of the hot debt market. Instead of the top and bottom 30% of the monthly detrended 3-month moving average volume as in the original regressions, I use the median as cut-off rate for the hot and cold debt market. The second and third robustness checks are for controlling market valuation and size of issuing firms. For this, I divide each sample in high M/B and low M/B portfolios based on whether companies' market-to-book value is above or equal or below the sample mean M/B at the pre-issue year end. Similarly, the small-large firm portfolios are constructed by dividing the companies by their sales to small (sales below the sample mean sales on issue year) and large (sales above or equal to the sample mean sales on issue year). The fourth robustness check, regressing the hot debt month dummy, adverse selection cost proxies and firm characteristic control variables on the change in the tangible assets ($\Delta PPE/A_t$) in accordance with the equation in Section 5.5., allows to further examine the investment behavior of issuing companies.

6. Analysis and results

In this section I first look into the occurrence of the hot debt market. After this I proceed to the differences between hot and cold debt issuers on an industry level and then on a firm level. Finally, I discuss the results from the regressions based on methodology described in the previous section.

6.1. Occurrence of the hot debt market

Figure 2 illustrates the development of issue volume in the debt market in aggregate calculated as the detrended centered 3-month moving average volume in real December 2009 U.S. dollars. The detrending and averaging is done for minimizing the seasonal variation and the impact of economic conjunctures. Shown in the graph is also the occurrence of hot and cold debt months, or the months with top or bottom 30% issue volume. As can be seen, the accumulation of debt issues in years 2005-2008 forces the hot debt months around the highest peak of USD 70.99 billion in September 2007. Another active issue period is visible between February 2001 and March 2002, but it falls behind the later hot debt market as the highest monthly issue volume is barely 60% of the largest issue volume in fall 2007. Figure 4, which plots the hot debt months per year, clarifies the phenomenon and the importance of years 2005-2007 in the debt market as a whole.

Figure 3 gives a picture of the behavior of different debt types in the sample. Issues of syndicated loans and public and private debt issues have tracked each other until 2004 when the syndicated loan market has exploded. This debt market reached its peak of USD 55,985 million in September 2007 to first drop by 60% in the following six months and then to continue declining until the lowest volume of USD 7,175 million in the midst of the banking crisis in December 2008. The divergence of volumes of public and private debt is visible in the turn from 2005 to 2006. In overall, the most striking evidence of the differing behavior of the three debt classes is perhaps in the post-banking crisis era after fall 2008 when there clearly is negative correlation between the volume of syndicated loans and public and private debt issues.

Two of the debt classes have two distinct periods of high issue volume. For both public debt issues and syndicated loans the first peak occurs in 2001. The second high volume time of syndicated loans lasts from May 2005 to December 2007. In the case of public-debt market, the second peak occurs in spring 2009. Looking at the time of the banking crisis which fully came into existence in September 2008, the syndicated loans appear to have reached high volumes in the run-up to the crisis while the public debt market soon activated after the worst panic in the financial market. The reverse changes in issue volumes, affected by atypical conditions in the financial market, in part emphasize the different characteristics of these two debt types. The private debt market has not undergone similarly radical fluctuations. It, too, has peaked in the second half of 2001 but then has the issue volume has gradually decreased without particularly reacting to changes in the economy suggesting that this debt type potentially has lost its attractiveness and place as one alternative of debt financing.

Figure 2. Total debt issue volume in 1999-2009

This figure illustrates the total detrended centered 3-month moving average of aggregate debt issue volume of syndicated loans and public and private issues in millions of December 2009 U.S. dollars.

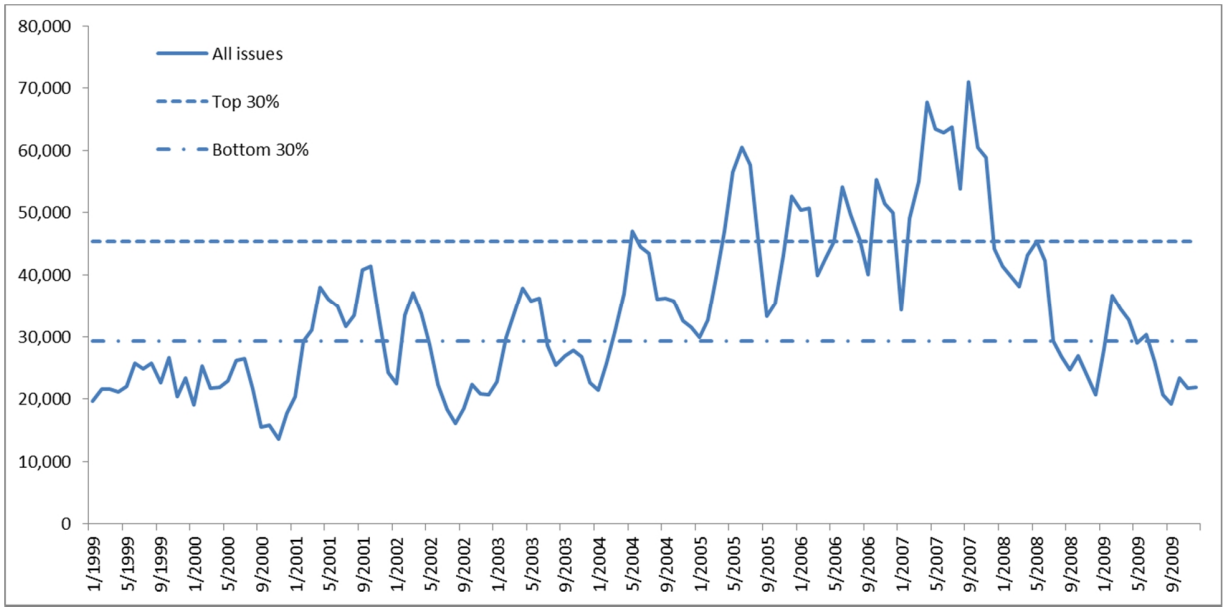


Figure 3. Debt issue volume by issue type in 1999-2009.

This figure illustrates the total detrended centered 3-month moving average of debt issue volume of syndicated loans and public and private debt issues in millions of December 2009 U.S. dollars.

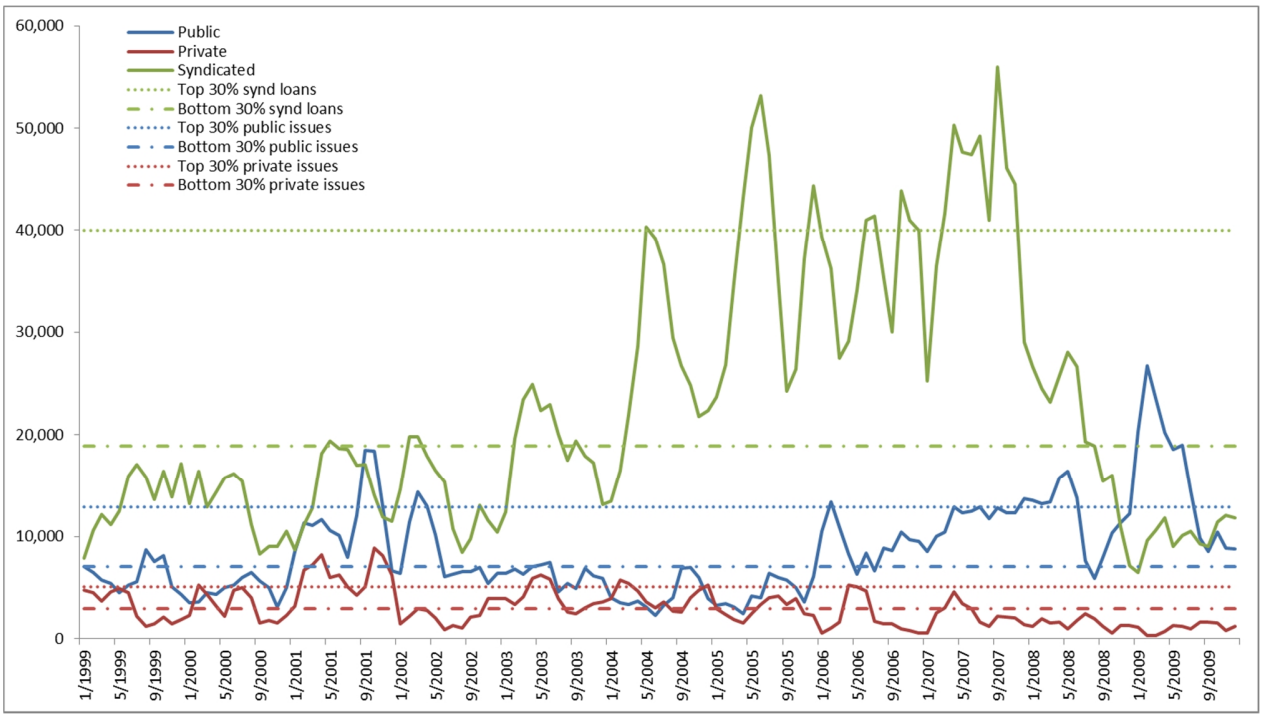


Figure 4. Occurrence of hot debt months per year

This figure reports the number of hot debt months of different debt types per year in 1999-2009.

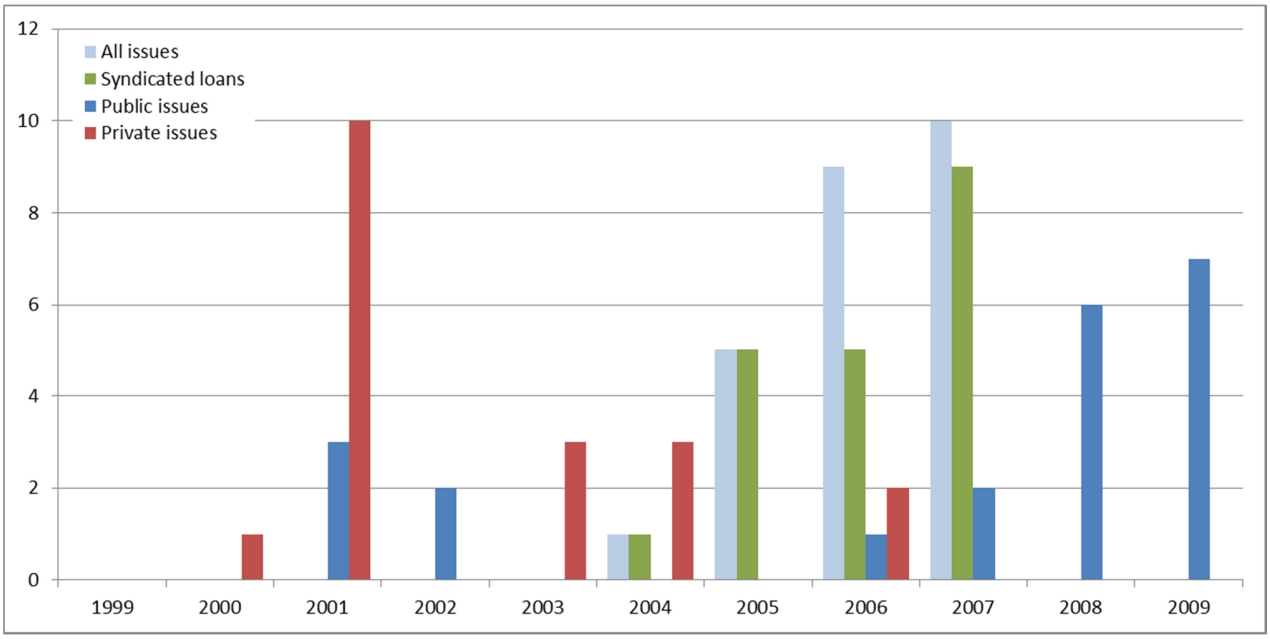
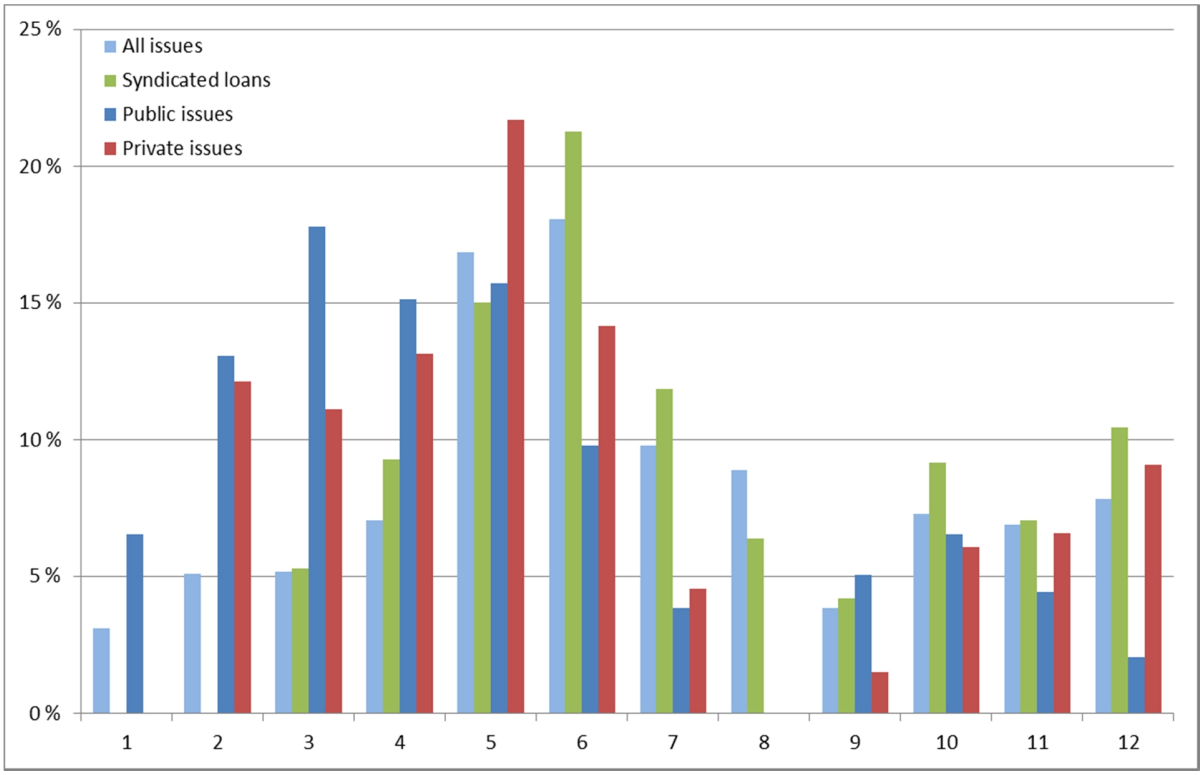


Figure 5 shows the distribution of hot debt issues over the year. As can be seen, the majority of hot issues are made in the first half of month, especially during the second quarter. The preference to issue in this time of the fiscal year in particular may also be related to information asymmetry reasons. Dierkens (1991) documents that the information asymmetry related to a firm is the lowest after an earnings announcement, which is why firms prefer timing their equity issues close after an earnings release. According to the sample data (statistics not reported here), 70% of issuing companies end their fiscal year in December, and following the regulation by the SEC, are required to disclose their annual report with detailed financial statement information within 90 days of the ending of the fiscal year, or in March. In this regard, the accumulation of debt issues in the months after the disclosure of previous year's financial statements provides additional information on the sensitivity of companies to take the information environment into account in capital structure decisions. Even if companies were able to avoid the adverse selection costs of equity by issuing debt instead of equity, it seems rational that they also want to minimize the potential costs of debt related to information asymmetry by issuing after fresh information of the firm available.

Table 1 presents the summary statistics of hot and cold debt months for each debt issue type. Both in terms of volume and number of issues, there is a remarkable difference in the hot and cold debt markets. The biggest differences in monthly volumes between hot months and cold months can be found in syndicated loans and in private debt issues. In private debt issues, the average hot month debt volume has been 282% larger than that of a cold debt month. In syndicated loans this difference is 247% and even in public debt issues 218%. In other words, while in an average cold month the total private debt issue volume was 1.62 billion U.S. dollars, in an average hot debt month the volume totaled USD 6.19 billion. It must be noted, however, that in the private debt sample there are 11 months with none or only one issue that pulls the average volume down.

Figure 5. Occurrence of hot debt months per month

This figure reports the number of hot debt months of different debt types per month in 1999-2009.



Statistics on the monthly number of issues in Table 1also show the difference between the overall issue activity in hot and cold months. In the aggregate sample, the hot debt months have seen 42% more issues than the cooler debt market. In the syndicated loans market the fluctuations are larger and the average number of issues being over two-fold in hot months compared to cold months and the total range of number of issues varies from the minimum of 7 issues per month to 73 issues.

Compared to earlier literature, the distribution between hot and cold debt issues is the other way round in Doukas et al. (2011) who with the similar top and bottom 30% volume cut-off rate and sample ranging from 1970-2006 count 50.4% hot issues and 14.5% cold issues of total number of 6,110 issues. In my sample from 1999 to 2009, the hot issues constitute 23% and cold issues 38% of the total 6,389 issues in the aggregate sample. This reveals a relatively larger issue size in hot months than in cold months in this study, which is particularly apparent for syndicated loans. In the samples of public and private issues the gap between average issue sizes is smaller.

Table 1. Summary statistics of monthly issue volume and frequency by issue type

This table presents the descriptive statistics of monthly volume and number of issues of the aggregate sample and subsamples. The monthly volume is a detrended centered 3-month moving average of debt issue volume of syndicated loans and public and private debt issues in millions of December 2009 U.S. dollars.

	Monthly volume, mUSD				Monthly number of issues			
All issues	*All*	*Synd. loans*	*Public*	*Private*	*All*	*Synd. loans*	*Public*	*Private*
Median	32,072	18,374	7,027	2,458	47	28	11	5
Average	34,155	22,585	8,599	2,974	48	31	12	6
St.dev	12,865	12,424	4,557	1,820	13	12	6	4
Total	4,508,445	2,981,246	1,135,027	392,625	6,389	4,049	1,527	814
% of total	*100 %*	*66 %*	*25 %*	*9 %*	*100 %*	*63 %*	*24 %*	*13 %*
Hot issues	*All*	*Synd. loans*	*Public*	*Private*	*All*	*Synd. loans*	*Public*	*Private*
Median	54,079	44,438	14,471	5,905	54	43	15	9
Average	55,234	45,473	16,502	6,192	58	46	16	10
St.dev	6,818	4,461	3,796	1,123	15	12	7	4
Min	*45,441*	*40,003*	*12,880*	*5,060*	*31*	*28*	*5*	*3*
Max	*70,991*	*55,985*	*26,742*	*8,873*	*99*	*73*	*27*	*19*
Total	1,380,848	909,469	346,538	117,651	1,451	927	622	198
% of total	*31 %*	*31 %*	*31 %*	*30 %*	*23 %*	*23 %*	*41 %*	*24 %*
Difference in avg hot-total	21,079	22,888	7,903	3,218	10	16	4	4
Difference in avg hot-total, %	62 %	101 %	92 %	108 %	20 %	51 %	39 %	69 %
Cold issues	*All*	*Synd. loans*	*Public*	*Private*	*All*	*Synd. loans*	*Public*	*Private*
Median	22,613	12,802	5,398	1,568	40	22	9	4
Average	23,004	13,095	5,185	1,621	41	23	10	4
St.dev	3,628	3,252	1,309	634	9	7	5	2
Min	*13,645*	*6,471*	*2,283*	*269*	*21*	*9*	*2*	*0*
Max	*29,346*	*18,880*	*7,033*	*2,903*	*63*	*44*	*20*	*12*
Total	1,357,219	903,578	347,410	118,306	2,415	1581	663	282
% of total	*31 %*	*31 %*	*31 %*	*30 %*	*38 %*	*39 %*	*43 %*	*35 %*
Difference in avg hot-cold	32,230	32,378	11,317	4,572	17	23	6	7
Difference in avg hot-cold, %	140 %	247 %	218 %	282 %	42 %	102 %	62 %	170 %

As figures above illustrate, periods of unusual debt issue volume exist. In general, the explanation to the active debt issue market may lie on either the demand or supply side. Firms may be attracted to take more debt purely for financing high future growth, and then the demand is driven by real investment opportunities. This would be seen as high investment rates around the time of the issue. The second reason may be just making use of the favorable debt issue environment, or timing the issue, which in turn may be due to (seemingly) low cost of debt or relatively high cost of equity. The low cost debt would be reflected by low overall level of interest rates which generally drive the cost of debt. Another potential motive for a debt issue could be rebalancing towards a target capital structure (Huang and Ritter, 1995), even though this

is improbable to totally explain the exceptionally high volumes as in the syndicated loan market in 2005-2007. Of these potential explanations the high cost of equity is in the core of this study and is expected to be captured by high information asymmetry and the consequent high adverse selection costs. For a broader understanding of the hot debt market I also briefly discuss the role of other possible debt issue volume drivers in later sections.

The other possibility for the high debt volume may be on the supply side. In other words, firms may be driven to the debt market due to abundant supply of debt. In this case, the demand-supply imbalance pulls the cost of debt down, at least for a short period until the demand catches up with supply. The supply explanation should be reflected as low yields of debt in the market. Also high profitability of banks offering debt could indicate a favorable debt market from the point of view of suppliers. One supply-based explanation to the increased volume of public debt issues in particular would be the high demand for these issues and large supply of money to be invested from the part of investors. In case of syndicated loans, it would be the supply of money from banking institutions.

Naturally, there may be several factors behind debt issue peaks, both demand and supply-based, and on top of these drivers changes in the regulatory environment may have added to the demand and supply forces. Regulatory issues, however, are not a probable explanation for the rapid rise of the syndicated loan market since, as Thomas and Wang (2003) explain, the main facilitations for the development of this market such as loan ratings were introduced by the end of 1990s. As interesting as the analysis of the supply-based and other factors would be, the scope of this study only allows concentrating on the demand drivers and on information-asymmetry based motivations in particular. Other reasons, such as low cost of debt and investment rates are taken into account as control variables to concentrate on the impact of adverse selection costs in their own.

Looking back at Figure 3 provides an intriguing twist in this study. Strictly from the point of view of the pecking order theory, the graph can be interpreted that the adverse selection costs of equity have been the highest when the private debt issues, being the less information-sensitive and thus preferred debt type, have peaked. Since also the syndicated loan, between a traditional

bank loan and public debt, is rather low in its information risk (Arena, 2011), the peaks in this issue volume may reflect times of high information asymmetry in the equity market overall. If syndicated loan issuers do not significantly differ from issuers of corporate bonds, there has been a reason, potentially the information safety of bank-financed loans, why companies have engaged in this type of more relationship-based loan arrangement instead of tapping directly the credit market in the form of public debt issue.

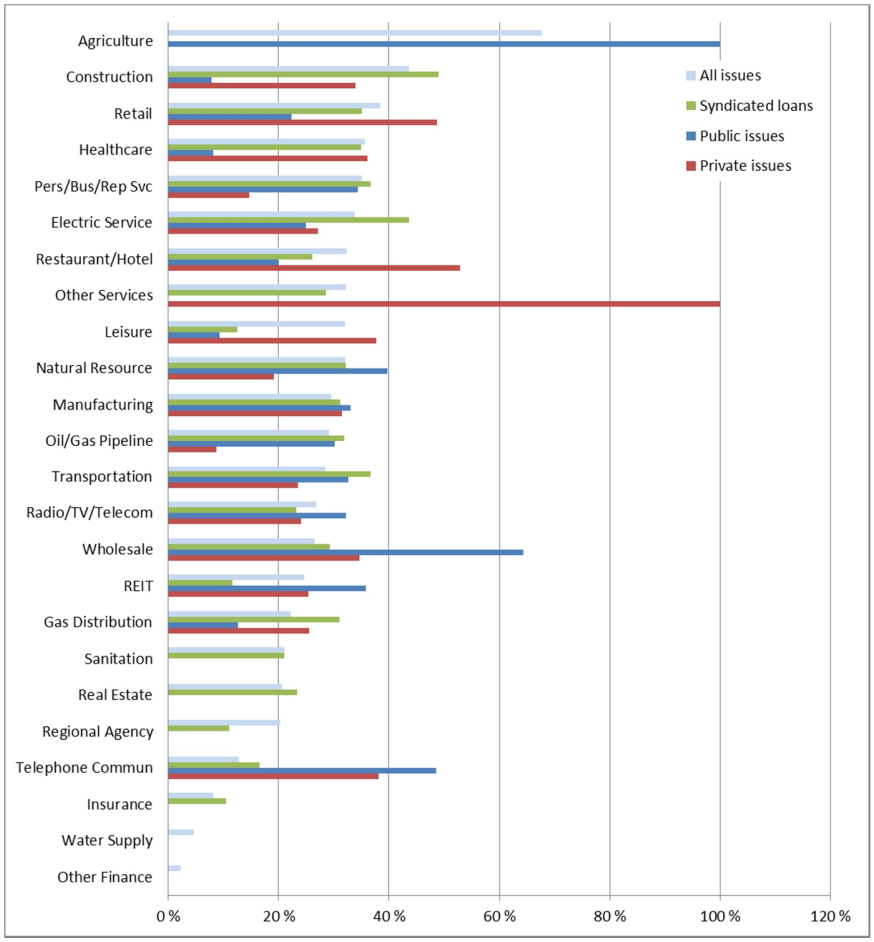
6.2. Industries in the hot debt market

Before proceeding to a more detailed analysis of the characteristics of debt issuers, I investigate which industries have been particularly active in the debt market. Figure 6 illustrates the distribution of hot debt issue activity among industries. Detailed information of the issue volumes and number of issues by industry is presented in Tables 2 and 3. As can be seen from Figure 6, the apparently equal distribution of hot debt issue activity over the 24 industries suggests that the debt clusters are not tied to certain sectors but a relatively economy-wide phenomenon (the high percentages of agriculture and other services are due to only one issue in overall, made in a hot debt month). Similarly, Alti (2006) finds that the hot market effect is remarkably robust and has almost no relationship to industry-level characteristics. Also Doukas et al. (2011) fail to find any sensitivity of the hot debt issuance to industry differences of issuers.

A closer look to Table 2 shows that the industries that have been especially active in issuing in the hot debt market are retail, personal and business services, construction and manufacturing which besides the relatively large volume in total have a high percentage of hot debt volume of total issuance. For example, 44% of debt issue volume in the construction sector was issued in the time of the hot debt market. In the syndicated loans market, which as earlier noted has experienced considerable fluctuations in issue volume, the construction sector has been the most active in hot months the hot debt issues representing 49% of the industry's total issue volume. Other hot market active sectors in the syndicated loan market include electric services (44% hot debt issues and 8% of total hot debt volume), transportation (37% hot debt issues and 3% of total hot debt volume) and personal and business services (37% hot debt issues and 10% of total hot debt volume).

Figure 6. Hot debt issue activity by industry

This table presents the aggregate hot debt issue volume as percentage of total issued debt volume in 1999-2009. The volume is nominal volume in current U.S. dollars. Industry classification is based on SDC Database industry classification of 24 industries. "Other Finance" sector includes passenger airline firms, franchise restaurants and providers of brand management services.



One finding from Table 2 is that there have been different industries that have dominated in the different hot debt markets. This potentially stems from that hot debt months of different debt types have occurred in different points of time, and consequently different industries have been active in the economy in that time. While the telephone communications sector issued only 17% of its syndicated loans in hot debt market, this percentage is 49% for the public debt issues representing as much as 10% of the total public hot debt volume. Similar difference is seen in the case of wholesale industry: companies in the wholesale industry timed 64% of the public debt issues and only 29% of syndicated loans in hot debt months. Private hot debt issuance presents different features with the top three volumes dividing more equally among manufacturing (32%

of total hot debt issue volume), telephone communications (15%) and retail (15%) sector. Another distinctive characteristic in this group is the activity of retail and restaurant and hotel industries issuing 49% and 53% of all the private issues in hot market, respectively.

From the point of view of this study, the interest regarding the active industries in the hot debt market lies in whether these sectors are the ones of high adverse selection costs. Prior literature (e.g. Frank and Goyal, 2003; Krishnaswami et al., 1999) lists the companies with large R&D costs and high amount of intangible assets as the features that may cause high adverse selection costs of equity since investors may find this kind of companies more difficult to value. Bharath et al. (2009) also document that small size of a company relates to higher adverse selection costs.

In light of Tables 2 and 3, the results seem in part to be consistent with the theory. For example, the manufacturing industry, which in terms of volume dominates the hot debt market in all of the debt types, has an average R&D expense of 2.8% and 26% tangible assets of total assets (statistics not reported here) while the corresponding average figures in the aggregate sample are 1.4% and 37%. Also the size of manufacturing companies measured by total sales is lower than total average. In the construction sector in turn, the average R&D figure is as low as 0.02% and these companies also place among the largest on the basis of sales as well as in the proportion of tangible assets. These robust findings indicate that the characteristics, such as R&D expenses, tangibility of assets and size, that often are mentioned to positively correlate with adverse selection costs unlikely explain the activity of certain sectors in the hot debt market. In the next section, I examine whether differences can be found in the firm-level that explain the high debt volumes in certain months and whether these characteristics are related to information asymmetry.

Table 2. Debt issue volume by industry

This table presents the total debt issue volume in 1999-2009 by the industry of the issuer. The volume is nominal volume in millions of current U.S. dollars. Industry classification is based on SDC Database industry classification of 24 industries

	All			Syndicated loans			Public			Private			Public and private		
Industry	*All*	*Hot*	*% hot issues*	*All*	*Hot*	*% hot issues*	*All*	*Hot*	*% hot issues*	*All*	*Hot*	*% hot issues*	*All*	*Hot*	*% hot issues*
Agriculture	3145	2127	68 %	2513	0	0 %	553	553	100 %	78	0	0 %	632	553	88 %
Construction	82267	35947	44 %	59684	29238	49 %	16142	1277	8 %	6441	2189	34 %	22583	4670	21 %
Electric Service	284278	95836	34 %	180862	78869	44 %	69998	17498	25 %	33418	9083	27 %	103416	42339	41 %
Gas Distribution	38692	8575	22 %	21783	6746	31 %	13178	1657	13 %	3730	953	26 %	16909	5723	34 %
Healthcare	79368	28282	36 %	57674	20116	35 %	8959	724	8 %	12735	4605	36 %	21694	9449	44 %
Insurance	5108	417	8 %	4001	417	10 %	720	0	0 %	387	0	0 %	1107	366	33 %
Leisure	89893	28839	32 %	68585	8564	12 %	16830	1555	9 %	4478	1690	38 %	21308	7102	33 %
Manufacturing	1904423	564588	30 %	1286019	401155	31 %	494594	163192	33 %	123810	38911	31 %	618404	317369	51 %
Natural Resource	415298	132879	32 %	292583	94196	32 %	92810	36888	40 %	29904	5718	19 %	122715	59720	49 %
Oil/Gas Pipeline	40932	11935	29 %	20549	6553	32 %	10681	3214	30 %	9702	841	9 %	20383	7442	37 %
Other Finance	2805	63	2 %	2430	0	0 %	278	0	0 %	97	0	0 %	375	20	5 %
Other Services	11436	3681	32 %	9072	2593	29 %	2008	0	0 %	356	356	100 %	2364	356	15 %
Pers/Bus/Rep Svc	362392	127260	35 %	256428	94052	37 %	81469	27966	34 %	24495	3589	15 %	105965	53047	50 %
Radio/TV/Telecom	160817	43089	27 %	104228	24204	23 %	37899	12195	32 %	18689	4502	24 %	56589	20847	37 %
Real Estate	28569	5878	21 %	25161	5878	23 %	3196	0	0 %	212	0	0 %	3408	0	0 %
Regional Agency	2123	431	20 %	945	104	11 %	297	0	0 %	882	0	0 %	1179	0	0 %
REIT	24943	6141	25 %	16603	1929	12 %	4626	1655	36 %	3714	945	25 %	8340	3445	41 %
Restaurant/Hotel	145524	46960	32 %	114172	29767	26 %	20148	4028	20 %	11203	5930	53 %	31351	18147	58 %
Retail	396672	152372	38 %	229119	80412	35 %	131174	29330	22 %	36379	17714	49 %	167553	82148	49 %
Sanitation	46413	9797	21 %	42148	8871	21 %	2976	0	0 %	1290	0	0 %	4266	1285	30 %
Telephone Commun	183719	23589	13 %	60987	10093	17 %	74143	35995	49 %	48589	18529	38 %	122732	69318	56 %
Transportation	125287	35696	28 %	67999	24897	37 %	42266	13794	33 %	15022	3522	23 %	57288	24999	44 %
Water Supply	450	21	5 %	302	0	0 %	46	0	0 %	102	0	0 %	148	0	0 %
Wholesale	81282	21525	26 %	61834	18077	29 %	11895	7655	64 %	7552	2617	35 %	19447	10888	56 %
Total	**4,515,834**	**1,385,927**	**31 %**	**2,985,679**	**946,729**	**32 %**	**1,136,887**	**359,176**	***32 %***	**393,269**	**121,695**	**31 %**	**1,530,156**	**739,233**	**48 %**

Table 3. Number of debt issues by industry

This table presents the total number of debt issues in 1999-2009 by the industry of the issuer. Industry classification is based on SDC Database industry classification of 24 industries.

	All			Syndicated loans			Public			Private			Public and private		
Industry	*All*	*Hot*	*% hot issues*	*All*	*Hot*	*% hot issues*	*All*	*Hot*	*% hot issues*	*All*	*Hot*	*% hot issues*	*All*	*Hot*	*% hot issues*
Agriculture	6	1	17 %	4	0	0 %	1	1	100 %	1	0	0 %	2	1	50 %
Construction	177	50	28 %	97	33	34 %	60	6	10 %	20	5	25 %	80	18	23 %
Electric Service	377	68	18 %	157	36	23 %	156	25	16 %	64	13	20%	220	65	30 %
Gas Distribution	87	12	14 %	35	7	20 %	44	3	7%	8	2	25%	52	13	25 %
Healthcare	158	46	29 %	121	30	25 %	11	1	9%	26	7	27%	37	11	30 %
Insurance	11	1	9%	7	1	14 %	2	0	0%	2	0	0 %	4	1	25 %
Leisure	97	15	15 %	60	9	15 %	24	2	8%	13	3	23%	37	10	27 %
Manufacturing	2616	596	23 %	1735	400	23 %	627	146	23 %	254	69	27%	881	330	37 %
Natural Resource	597	142	24 %	384	83	22 %	124	45	36 %	89	18	20%	213	85	40 %
Oil/Gas Pipeline	47	11	23 %	24	5	21 %	10	3	30 %	13	2	15%	23	9	39 %
Other Finance	12	3	25 %	7	0	0 %	2	0	0%	3	0	0 %	5	1	20 %
Other Services	21	6	29 %	18	4	22 %	2	0	0%	1	1	100%	3	1	33 %
Pers/Bus/Rep Svc	632	160	25 %	491	117	24 %	77	17	22 %	64	13	20%	141	42	30 %
Radio/TV/Telecom	165	42	25 %	93	24	26 %	33	7	21 %	39	9	23%	72	19	26 %
Real Estate	27	4	15 %	21	4	19 %	3	0	0%	3	0	0 %	6	0	0 %
Regional Agency	6	2	33 %	3	1	33 %	1	0	0%	2	0	0 %	3	0	0 %
REIT	46	10	22 %	24	4	17 %	15	4	27 %	7	2	29%	22	8	36 %
Restaurant/Hotel	188	43	23 %	119	23	19 %	41	6	15 %	28	9	32%	69	29	42 %
Retail	521	120	23 %	314	68	22 %	129	31	24 %	78	22	28%	207	81	39 %
Sanitation	43	9	21 %	33	8	24 %	6	0	0%	4	0	0 %	10	2	20 %
Telephone Commun	95	9	9%	38	2	5 %	33	12	36 %	24	8	33%	57	27	47 %
Transportation	288	56	19 %	138	34	25 %	104	19	18 %	46	8	17%	150	50	33 %
Water Supply	4	1	25 %	1	0	0 %	2	0	0%	1	0	0 %	3	0	0 %
Wholesale	168	43	26 %	124	33	27 %	20	9	45 %	24	7	29%	44	17	39 %
Total	**6389**	**1450**	**23 %**	**4048**	**926**	**23 %**	**1527**	**337**	**22 %**	**814**	**198**	**24%**	**2341**	**820**	**35 %**

6.3. Characteristics of debt issuers

In this section I examine the characteristics of firms issuing debt in the hot debt months in years 1999-2009. The main focus is in the characteristics that in earlier literature are shown to be related to information asymmetry. I also analyze the potential differences between issuers of different debt types.

On top of the point of view of adverse selection costs, I investigate whether the hot debt issuing firms have certain features that might explain their more active debt-taking. These determinants of leverage have been widely studied, and debated, in the academia and are typically size, investment rate, growth rate, profitability, cash reserves, tax level and initial leverage ratio (Harris and Raviv, 1991; Rajan and Zingales, 1995; Frank and Goyal, 2009). The emphasis varies depending on the specific theory chosen. For example, the pecking order theory focuses on internal financing reserves and profitability (Myers, 1984), the trade-off theory argues for the importance of tax-level (Miller and Scholes, 1978; DeAngelo and Masulis, 1980) and the rebalancing theories typically concentrate on the changes in debt and equity (Huang and Ritter, 1995). Since this study views the capital structure decisions from the point of view of the pecking order theory and the timing hypothesis, in the following analysis I concentrate on the firm-specific characteristics that are of special interest in these theories. These include profitability, investment rate and cash balance, as well as features related to information asymmetry of a firm, such as size, R&D cost and intangibility of assets.

The pre-issue and issue year characteristics of issuing firms in the aggregate sample, divided into hot and cold debt issue firms, are presented in Tables 4 and 5. According to mean and median values, firms issuing in hot months have less debt, are higher valued and more profitable, have less tangible assets, invest less and have more cash in the year prior to the issue. In part, the findings foster the timing hypothesis of debt issues: hot debt companies take more debt despite that they have higher profits, invest less and have higher cash reserves, i.e. do not have urgent need for increase in debt capital. This clearly conflicts with the pecking order theory that argues that external capital is to be used only if the internal cash flows are insufficient (Myers, 1984). On the other hand, for example, also Doukas et al. (2011) document a higher pre-issue cash

reserves for hot debt issuers. Alti (2006) finds contrary results with negative relation between issue size and profitability.

It must be noted that the pre-issue debt capital ratio, which is lower for hot debt firms, may serve as a potential explanation to their activity to take more debt than cold debt issuers. Thus, more than being in line with the pecking order theory, the results on the determinants of leverage of hot debt firms seem to comply with the rebalancing and trade-off theories in that issuers strive for a certain target ratio (Huang and Ritter, 1995). Also the facts that firms with more tangible assets are more leveraged and firms with better growth opportunities rely more on equity financing point to the trade-off theory.

The results for the issue year, presented in Table 5, do not dramatically differ from pre-issue year figures. Hot debt companies remain less leveraged, higher valued and more profitable than cold debt firms also in the issue year. Considering the dynamics from the pre-issue year to issue year, interestingly the capital expenditure increases for hot debt firms, while it drops in the case of cold debt firms. Cash reserves, on the other hand, decrease from the pre-issue year to issue year potentially due to higher cash outflows to serve the increased debt that hot debt firms take relatively more. These findings go against the hypothesis that the hot debt issuance is driven by timing intentions and hot debt proceeds increase cash reserves instead of being used for investments.

From the point of view of adverse selection costs, the results are somewhat contradictory. R&D expenditure is often related to higher adverse selection costs. For example, Frank and Goyal (2009) hypothesize that firms with high R&D expenses are more difficult to value for investors, and thus adverse selection costs increase with expenditure on research and development. However, as Tables 4 and 5 show, hot debt issuers that are hypothesized to have higher adverse selection costs have R&D expenses of the same level as cold debt issuers. Similarly, hot debt issuers appear to be larger in size, although the difference is only weakly statistically significant, which contradicts the findings in Bharath et al. (2009) on the negative relation between adverse selection costs and firm size. On the other hand, mean values of market-to-book ratios in Tables 4 and 5 suggest that hot debt issuers may have higher adverse selection costs. This argumentation is

based on Baker and Wurgler (2002) who predict that firms with high growth opportunities, measured by M/B ratio, have a larger uncertainty about the future cash flows, and consequently higher degree of adverse selection costs.

Table 4. Firm characteristics in the aggregate sample, pre-issue year

This table reports firm characteristics of issuers in the aggregate sample in the fiscal year prior to the issue year. Definitions of the variables are in Appendix A. All variables except Size and DIV/E are scaled by total assets and represented as decimal number. Hot (cold) issues are issues in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are robust standard error terms. Statistical difference is the difference in means t-test with unequal variances., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	All issuers		**Hot issuers**		**Cold issuers**		**Difference hot-cold**	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Diff.*	*t-value*
D/At-1	0.548	0.543	0.511	0.508	0.567	0.564	-0.056***	-8.707
	(0.202)		(0.189)		(0.205)			
M/Bt-1	1.755	1.435	1.844	1.596	1.719	7.327	0.125***	(-3.174)
	(1.193)		(1.018)		(1.429)			
RE/At-1	0.187	0.203	0.182	0.231	0.177	0.179	0.005	(-0.231)
	(0.524)		(0.798)		(0.359)			
EBITDA/At-1	0.150	0.141	0.154	0.144	0.146	0.138	0.008***	(-2.890)
	(0.083)		(0.079)		(0.084)			
SIZEt-1	8.050	8.013	8.025	8.000	7.990	7.958	0.035	(0.064)
	(1.653)		(1.613)		(1.707)			
PPE/At-1	0.371	0.313	0.337	0.266	0.389	0.339	-0.052	(-0.080)
	(0.256)		(0.257)		(0.255)			
RD/At-1	0.014	0.000	0.014	0.000	0.014	0.000	0.000***	(6.097)
	(0.033)		(0.029)		(0.035)			
INV/At-1	0.071	0.049	0.065	0.045	0.078	0.054	-0.013***	(5.350)
	(0.075)		(0.069)		(0.081)			
DIV/Et-1	0.042	0.010	0.030	0.009	0.033	0.009	-0.003	(0.930)
	(0.222)		(0.083)		(0.199)			
Cash/At-1	0.074	0.035	0.086	0.045	0.067	0.029	0.019***	(-5.440)
	(0.100)		(0.103)		(0.101)			
Obs.	*6389*		*1450*		*2415*			

Table 5. Firm characteristics in the aggregate sample, issue year

This table reports firm characteristics of issuers in the aggregate sample in the fiscal year the issue takes place. Definitions of the variables are in Appendix A. All variables except Size and DIV/E are scaled by total assets and represented as decimal number. Hot (cold) issues are issues in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are robust standard error terms. Statistical difference is the difference in means t-test with unequal variances., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	All issuers		Hot issuers		Cold issuers		Difference hot-cold	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Diff.*	*t-value*
D/At-1	0.566	0.557	0.539	0.534	0.585	0.576	-0.046***	(7.166)
	(0.203)		(0.184)		(0.211)			
M/Bt-1	1.653	1.385	1.764	1.530	1.607	1.292	0.158***	(-3.999)
	(1.188)		(0.892)		(1.559)			
RE/At-1	0.167	0.202	0.203	0.231	0.123	0.181	0.080**	(-1.783)
	(1.367)		(0.467)		(2.133)			
EBITDA/At-1	0.138	0.133	0.147	0.137	0.130	0.130	0.017***	(-2.371)
	(0.213)		(0.082)		(0.330)			
SIZEt-1	8.130	8.094	8.130	8.097	8.064	8.034	0.066	(-1.242)
	(1.601)		(1.546)		(1.654)			
PPE/At-1	0.367	0.307	0.334	0.258	0.385	0.338	-0.051***	(5.995)
	(0.257)		(0.259)		(0.253)			
RD/At-1	0.013	0.000	0.014	0.000	0.013	0.000	0.001	(-0.514)
	(0.031)		(0.001)		(0.001)			
INV/At-1	0.068	0.046	0.067	0.043	0.071	0.049	-0.004*	(1.617)
	(0.077)		(0.075)		(0.081)			
DIV/Et-1	0.037	0.010	0.029	0.012	0.037	0.008	-0.008	(0.965)
	(0.255)		(0.277)		(0.221)			
Cash/At-1	0.073	0.038	0.078	0.042	0.067	0.033	0.010***	(-3.345)
	(0.094)		(0.094)		(0.094)			
Obs.	*6389*		*1450*		*2415*			

As earlier discussed, syndicated loans have behaved in a distinctly different way in the researched 10-year time period, and thus this subsample of issuers is analyzed as its own. Tables 6 and 7 summarize the characteristics of issuers of syndicated loans. Since the syndicated loans represent 66% of the total debt issue volume, the figures in Tables 6 and 7 give a similar picture as for the total sample. Hot debt issuers of syndicated loans are less leveraged, more profitable and larger in size, invest less and have higher cash reserves than cold debt issuers. Moreover, hot syndicated loan issuers have distinctly higher retained earnings than cold debt issuers.

Tables 6 and 7 indicate that the difference in adverse selection costs between hot and cold debt issuers may be more pronounced in the syndicated loans sample than in the aggregate sample. For example, the M/B ratio that has been documented to be positively related to adverse selection costs, as earlier discussed, is considerably higher for hot debt issuers of syndicated loans than in the aggregate sample in the year prior to the issue and the gap only widens in issue year. In the same vein, the hot syndicate loan issuers have relatively less tangible assets than hot debt issuers in the aggregate sample, and the difference between hot and cold issuers is more statistically significant in the sample of syndicated loans. Only R&D expenses that are approximately of the same magnitude for both hot and cold issuers do not support this hypothesis.

Table 6. Firm characteristics of syndicated loan issuers, pre-issue year

This table reports firm characteristics of issuers in the syndicated loan sample in the fiscal year prior to the issue. Definitions of the variables are in Appendix A. All variables except Size and DIV/E are scaled by total assets and represented as decimal number. Hot (cold) issues are issues in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are robust standard error terms. Statistical difference is the difference in means t-test with unequal variances., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	All issuers		**Hot issuers**		**Cold issuers**		**Difference hot-cold**	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Diff.*	*t-value*
D/At-1	0.526	0.521	0.504	0.502	0.544	0.540	-0.040***	(4.721)
	(0.213)		(0.190)		(0.225)			
M/Bt-1	1.782	1.463	1.880	1.620	1.735	1.347	0.145***	(-2.649)
	(1.284)		(1.120)		(1.591)			
RE/At-1	0.177	0.194	0.210	0.225	0.152	0.171	0.058***	(-3.446)
	(0.440)		(0.368)		(0.455)			
EBITDA/At-1	0.150	0.140	0.154	0.143	0.147	0.140	0.007**	(-1.847)
	(0.087)		(0.082)		(0.091)			
SIZEt-1	7.639	7.580	7.826	7.791	7.470	7.420	0.356***	(-5.649)
	(1.544)		(1.513)		(1.545)			
PPE/At-1	0.342	0.271	0.317	0.212	0.363	0.296	-0.046***	(4.402)
	(0.254)		(0.251)		(0.255)			
RD/At-1	0.016	0.000	0.015	0.000	0.016	0.000	-0.001	(0.968)
	(0.038)		(0.030)		(0.041)			
INV/At-1	0.069	0.046	0.063	0.040	0.080	0.053	-0.017***	(5.397)
	(0.079)		(0.069)		(0.088)			
DIV/Et-1	0.030	0.000	0.029	0.007	0.026	0.000	0.003	(-0.410)
	(0.148)		(0.081)		(0.219)			
Cash/At-1	0.086	0.043	0.092	0.051	0.080	0.033	0.012***	(-2.743)
	(0.110)		(0.106)		(0.113)			
Obs.	*4048*		*926*		*1581*			

Table 7. Firm characteristics of syndicated loan issuers, issue year

This table reports firm characteristics of issuers in the syndicated loan sample in the fiscal year the issue takes place. Definitions of the variables are in Appendix A. All variables except Size and DIV/E are scaled by total assets and represented as decimal number. Hot (cold) issues are issues in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are robust standard error terms. Statistical difference is the difference in means t-test with unequal variances., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	All issuers		Hot issuers		Cold issuers		Difference hot-cold	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Diff.*	*t-value*
D/At	0.545	0.534	0.533	0.529	0.560	0.550	-0.027***	(3.191)
	(0.218)		(0.1919		(0.238)			
M/Bt	1.672	1.395	1.802	1.557	1.621	1.300	0.181***	(-3.274)
	(1.328)		(0.971)		(1.793)			
RE/At	0.141	0.195	0.212	0.232	0.067	0.169	0.145**	(-2.143)
	(1.689)		(0.359)		(2.64)			
EBITDA/At	0.137	0.132	0.145	0.135	0.126	0.130	0.019**	(-1.829)
	(0.261)		(0.086)		(0.404)			
SIZEt	7.723	7.645	7.921	7.857	7.529	7.439	0.392***	(-6.439)
	(1.495)		(1.461)		(1.49)			
PPE/At	0.338	0.263	0.312	0.232	0.360	0.299	-0.048***	(4.660)
	(0.254)		(0.282)		(0.253)			
RD/At	0.015	0.000	0.015	0.000	0.015	0.000	0.001	(0.556)
	(0.035)		(0.001)		(0.001)			
INV/At	0.068	0.043	0.064	0.041	0.073	0.046	-0.009***	(2.700)
	(0.016)		(0.074)		(0.091)			
DIV/Et	0.025	0.000	0.025	0.008	0.022	0.000	0.003	(-0.255)
	(0.245)		(0.338)		(0.142)			
Cash/At	0.082	0.043	0.085	0.046	0.080	0.039	0.005	(-1.289)
	(0.103)		(0.102)		(0.108)			
Obs.	*4048*		*926*		*1581*			

Characteristics of companies issuing public debt are presented in Tables 8 and 9. Tables 10 and 11 give information on the issuers of private debt. Comparison between the three subsamples reveals a few distinct characters of syndicated loans issuers in overall. First, the syndicated loan issuers are clearly the least leveraged in pre-issue year from all the hot debt issuers in the three subsamples, and also the difference in debt ratios between hot and cold issuers is the most striking. This conflicts with findings of Altunbas et al. (2010) showing that syndicated loan issuers are more leveraged than public debt issuers. However, the lower pre-issue leverage may provide a partial explanation to the exceptional debt issue activity and volume of syndicated loan

issuers in hot debt months. On the other hand, the cash reserves of hot syndicated loan issuers are the highest and also the capital expenditures among the lowest in both pre-issue and issue year indicating that no urgent need for capital increases exist.

Syndicated loan issuers are also higher valued in terms of M/B ratio. And while the hot debt issuers in the public debt sample are on average only 2% higher valued than cold debt issuers, in the syndicated loans sample the difference is as high as 8%. As a syndicated loan due to its hybrid nature between bank loan and public debt can be interpreted as private debt, this finding is consistent with Krishnaswami et al. (1999) who argue that mean market-to-book ratio of private debt issuers is larger than that of firms who access the public debt market. Reflecting the high growth potential, the M/B figure could be a partial explanation to the larger debt issue volume of syndicated loan issuers. This, on the other hand, should be also seen as higher investment rates which yet are lower for hot than cold debt issuers. Another interpretation for the high M/B figure is from the point of view of adverse selection costs that increase together with growth opportunities (Hovakimian, 2006). Consequently, the high M/B ratio of syndicated loan issuers would tell about high information asymmetry related to these issuers. Also the lower level of tangible assets of hot syndicated loan issuers compared to other samples points to this. In the same vein, the figures of M/B ratio and tangible assets for hot syndicated loan issuers are also higher than those of cold debt issuers, a similar phenomenon in the sample of public debt issues.

Another difference between the three issuer groups is found in size. The public debt issuers appear as the largest in size of sales, the private debt issuers are slightly smaller and syndicated loan issuers have the smallest turnover on average. This result, as well as the higher M/B ratio of syndicated loan issuers, goes straight against the findings of Altunbas et al. (2010) who conclude that it is corporate borrowers that are smaller firms with a stronger growth potential than syndicated loan issuers, at least in Europe. There also is a significant difference inside the syndicated loan issuer sample, hot debt issuers being larger than cold debt issuers. This is not, however, reflected in the issue size shown in Table 1. Despite smaller average company size, the issues by syndicated loan issuers are almost of the same volume as public debt issues.

Both hot and cold debt issuers of syndicated loans have higher pre-issue capital expenditures than public debt issuers, and similarly to the sample of public debt issuers, cold debt issuers are more active to invest in pre-issue year. Interestingly, public hot debt issuers appear to increase the capital expenditures in issue year, while cold issuers decrease their capital spending. The surge in hot debt issuers' investment activity is against the hypothesis that the main motivation for the debt issue is the timing and not an increase in investment opportunities. The private debt issuers appear to behave according to the timing hypothesis the investment rate dropping from pre-issue year to issue year and cash balance rising for hot debt issuers from the pre-issue year.

Table 8. Firm characteristics of public debt issuers, pre-issue year

This table reports firm characteristics of public debt issuers in the fiscal year prior to the issue. Definitions of the variables are in Appendix A. All variables except Size and DIV/E are scaled by total assets and represented as decimal number. Hot (cold) issues are issues in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are robust standard error terms. Statistical difference is the difference in means t-test with unequal variances., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	All issuers		**Hot issuers**		**Cold issuers**		**Difference hot-cold**	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Diff.*	*t-value*
D/At-1	0.591	0.281	0.581	0.569	0.597	0.588	-0.016*	(1.467)
	(0.158)		(0.166)		(0.140)			
M/Bt-1	1.729	1.401	1.736	1.411	1.705	1.367	0.031	(-0.456)
	(1.009)		(0.968)		(1.038)			
RE/At-1	0.281	0.250	0.300	0.279	0.246	0.230	0.054***	(-3.260)
	(0.482)		(0.279)		(0.220)			
EBITDA/At-1	0.154	0.146	0.167	0.160	0.145	0.136	0.022***	(-4.730)
	(0.068)		(0.072)		(0.064)			
SIZEt-1	9.169	9.258	9.375	9.363	9.092	9.157	0.283***	(-3.030)
	(1.413)		(1.401)		(1.390)			
PPE/At-1	0.423	0.395	0.420	0.387	0.421	0.389	-0.001	(0.055)
	(0.249)		(0.253)		(0.246)			
RD/At-1	0.012	0.000	0.015	0.000	0.011	0.000	0.139**	(-2.122)
	(0.024)		(0.028)		(0.023)			
INV/At-1	0.073	0.055	0.052	0.060	0.070	0.053	-0.018***	(-2.482)
	(0.068)		(0.080)		(0.065)			
DIV/Et-1	0.076	0.035	0.120	0.038	0.066	0.033	0.054*	(-1.487)
	(0.372)		(0.632)		(0.321)			
Cash/At-1	0.051	0.028	0.057	0.031	0.046	0.025	0.011**	(-2.343)
	(0.067)		(0.000)		(0.060)			
Obs.	*1527*		*337*		*663*			

Table 9. Firm characteristics of public debt issuers, issue year

This table reports firm characteristics of public debt issuers in the fiscal year the issue takes place. Definitions of the variables are in Appendix A. All variables except Size and DIV/E are scaled by total assets and represented as decimal number. Hot (cold) issues are issues in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are robust standard error terms. Statistical difference is the difference in means t-test with unequal variances., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	All issuers		**Hot issuers**		**Cold issuers**		**Difference hot-cold**	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Diff.*	*t-value*
D/At	0.603	0.597	0.601	0.584	0.604	0.604	-0.003	(0.193)
	(0.150)		(0.169)		(0.139)			
M/Bt	1.629	1.360	1.632	1.389	1.627	1.353	0.005	(-0.116)
	(0.832)		(0.803)		(0.848)			
RE/At	0.259	0.239	0.288	0.277	0.245	0.228	0.043***	(-2.423)
	(0.243)		(0.289)		(0.215)			
EBITDA/At	0.144	0.137	0.15	0.146	0.141	0.133	0.009**	(-2.136)
	(0.064)		(0.068)		(0.061)			
SIZEt	9.236	9.274	9.347	9.344	9.180	9.248	0.167**	(-1.792)
	(1.373)		(1.420)		(1.347)			
PPE/At	0.416	0.383	0.419	0.382	0.415	0.384	0.004	(-0.227)
	(0.249)		(0.255)		(0.246)			
RD/At	0.012	0.000	0.014	0.000	0.011	0.000	0.004**	(-2.169)
	(0.023)		(0.001)		(0.021)			
INV/At	0.067	0.051	0.073	0.056	0.064	0.049	0.039**	(-2.179)
	(0.061)		(0.072)		(0.055)			
DIV/Et	0.070	0.035	0.084	0.039	0.063	0.034	0.021	(-0.913)
	(0.301)		(0.390)		(0.243)			
Cash/At	0.055	0.031	0.071	0.043	0.047	0.026	0.024***	(-4.583)
	(0.070)		(0.086)		(0.059)			
Obs.	*1527*		*337*		*663*			

Table 10. Firm characteristics of private debt issuers, pre-issue year

This table reports firm characteristics of private debt issuers in the fiscal year prior to the issue. Definitions of the variables are in Appendix A. All variables except Size and DIV/E are scaled by total assets and represented as decimal number. Hot (cold) issues are issues in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are robust standard error terms. Statistical difference is the difference in means t-test with unequal variances., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	All issuers		**Hot issuers**		**Cold issuers**		**Difference hot-cold**	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Diff.*	*t-value*
D/At-1	0.580	0.566	0.598	0.579	0.567	0.552	0.030**	(-1.680)
	(0.200)		(0.180)		(0.213)			
M/Bt-1	1.673	1.358	1.705	1.406	1.714	1.393	-0.009	(0.101)
	(1.027)		(0.937)		(0.963)			
RE/At-1	0.121	0.169	0.173	0.183	0.054	0.202	0.119*	(-1.383)
	(0.864)		(0.280)		(1.410)			
EBITDA/At-1	0.142	0.137	0.147	0.146	0.143	0.142	0.004	(-0.547)
	(0.086)		(0.088)		(0.082)			
SIZEt-1	8.000	7.944	8.062	7.880	8.081	8.026	-0.020	(0.133)
	(1.629)		(1.511)		(1.679)			
PPE/At-1	0.417	0.389	0.407	0.368	0.411	0.381	-0.005	(0.196)
	(0.260)		(0.250)		(0.263)			
RD/At-1	0.007	0.000	0.005	0.000	0.007	0.000	-0.002	(1.253)
	(0.019)		(0.013)		(0.018)			
INV/At-1	0.075	0.053	0.074	0.050	0.081	0.057	-0.007	(1.029)
	(0.069)		(0.065)		(0.077)			
DIV/Et-1	0.031	0.008	0.039	0.000	0.038	0.015	0.001	(-0.110)
	(0.121)		(0.174)		(0.082)			
Cash/At-1	0.061	0.028	0.054	0.030	0.066	0.032	-0.012*	(1.450)
	(0.090)		(0.081)		(0.095)			
Obs.	*814*		*198*		*282*			

Table 11. Firm characteristics of private debt issuers, issue year

This table reports firm characteristics of private debt issuers in the fiscal year the issue takes place. Definitions of the variables are in Appendix A. All variables except Size and DIV/E are scaled by total assets and represented as decimal number. Hot (cold) issues are issues in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are robust standard error terms. Statistical difference is the difference in means t-test with unequal variances., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	All issuers		**Hot issuers**		**Cold issuers**		**Difference hot-cold**	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Diff.*	*t-value*
D/At	0.600	0.578	0.607	0.585	0.597	0.577	0.030	(-0.601)
	(0.184)		(0.172)		(0.197)			
M/Bt	1.594	1.326	1.556	1.403	1.603	1.326	0.229	(0.674)
	(0.987)		(0.689)		(0.835)			
RE/At	0.136	0.163	0.165	0.193	0.110	0.184	-0.019	(-1.115)
	(0.508)		(0.289)		(0.750)			
EBITDA/At	0.134	0.132	0.133	0.134	0.134	0.137	-0.004	(0.142)
	(0.088)		(0.089)		(0.092)			
SIZEt	8.122	8.061	8.168	7.974	8.196	8.147	0.021	(0.204)
	(1.542)		(1.455)		(1.536)			
PPE/At	0.411	0.384	0.400	0.355	0.410	0.371	0.029	(0.405)
	(0.259)		(0.249)		(0.265)			
RD/At	0.007	0.000	0.006	0.000	0.007	0.000	-0.001	(0.564)
	(0.018)		(0.001)		(0.001)			
INV/At	0.073	0.051	0.071	0.048	0.076	0.054	0.017	(0.760)
	(0.072)		(0.068)		(0.074)			
DIV/Et	0.036	0.009	0.042	0.005	0.040	0.016	0.025	(-0.087)
	(0.141)		(0.238)		(0.108)			
Cash/At	0.063	0.032	0.063	0.031	0.066	0.037	0.026	(0.408)
	(0.081)		(0.080)		(0.081)			
Obs.	*814*		*198*		*282*			

6.3.1. Credit ratings

To better understand the dynamics in the debt issue market, I investigate the possible differences in the credit quality of issuers. Table 12 presents the distribution of issues in low and high credit rating classes, the rating of BBB by Standard and Poor's serving as a divider. As can be seen, there barely are any differences in the credit quality of issuers. The largest proportion or 2% of all rated companies with rating below BBB is found in the sample of private debt issues. I do not find any differences between hot and cold debt issuers. A similar finding is presented by Doukas et al. (2011) who report all the hot and cold debt issuers similarly high-rated. The findings here conflict with Denis and Mihov (2003) who argue that the main determinant of the choice of the debt instrument is the credit quality of the issuer, high credit quality firms preferring to use public debt and low credit quality firms primarily relying on non-bank private debt. In the same vein, the renegotiation and liquidation hypothesis (Denis and Mihov, 2003) on the lower-quality companies' preference to issue debt through banks, which could have explained the surge in syndicated loan volume, does not hold.

Even though no distinguishing can be made on the basis of credit quality, a striking difference is found in the rating activity of syndicated loan issues. Whereas 69% of hot syndicated loan issuers are rated, only 5% of issuers in the cold market have a reported credit rating. A quick investigation on the development of the credit rating activity shows that actually in the hot debt months in the syndicated loan market the proportion of not rated loans declines from the earlier months and again rises after the drop in the issue volume. It appears that the credit rating agencies have activated with the ratings of the syndicated loans amid the rise of issue volume. The improved transparency of syndicated loans may again have contributed to the attractiveness of the debt instrument, and for example Altunbas et al. (2010) mention loan ratings as one explanation for the surge of the syndicated loan market. This certainly may have contributed to the massive volume of syndicated loans but since the tighter monitoring and screening already is in larger role in syndicated loan arrangement (Denis and Mihov, 2003; Boot and Thakor, 2000), the incremental benefit from and consequently the importance of credit ratings can be questioned.

Table 12. Credit ratings of issuers

This table reports the credit rating of debt issuer at the time of the issue. High credit rating is defined as Standard & Poor's rating BBB or above, low credit rating is Standard & Poor's rating below BBB. Hot (cold) issues are issues in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars.

	Aggregate sample			Syndicated loans			Public issues			Private issues		
Definition	*All*	*Hot*	*Cold*	*All*	*Hot*	*Cold*	*All*	*Hot*	*Cold*	*All*	*Hot*	*Cold*
High credit rating	4,781	1,077	1,797	2,586	640	20	1,513	334	661	682	175	228
Low credit rating	32	5	13	17	3	11	1	0	0	14	3	5
Not rated	1,576	368	605	1,445	283	622	13	3	2	118	20	49
All rated	4,813	1,082	1,810	2,603	643	31	1,514	334	661	696	178	233
Total	6,389	1,450	2,415	4,048	926	653	1,527	337	663	814	198	282
High credit rating, % of all rated	99 %	100 %	99 %	99 %	100 %	65 %	100 %	100 %	100 %	98 %	98 %	98 %
Low credit rating, % of all rated	1 %	0 %	1 %	1 %	0 %	35 %	0 %	0 %	0 %	2 %	2 %	2 %
Not rated, % of total	25 %	25 %	25 %	36 %	31 %	95 %	1 %	1 %	0 %	14 %	10 %	17 %
All rated, % of total	75 %	75 %	75 %	64 %	69 %	5 %	99 %	99 %	100 %	86 %	90 %	0 %

6.3.2. Maturities of debt issues

Table 13 shows the maturities of debt issues in the sample. As can be seen, on average, public and private debt has been issued at longer maturities the average maturity of public debt having been 10.4 years and that of private debt issues 9.6 years. Syndicated loan issues have an average maturity of 4.3 years. The results turn out close to those in Denis and Mihov (2003) who find the median maturity of public debt issues the longest (15.6 years) compared to that of private debt issues (9.4 years) and bank loan agreements (7.1 years).

The differences between debt types partially stem from that relationship-based loans, syndicated loans in this case, with more concentrated investor base are relatively easy renegotiate and monitor while transaction-based debt such as public bonds typically require a more complex and time-consuming process and thus are built as a longer-term contract. Another explanation for the variation in maturities could be that firms issuing corporate bonds typically are larger in size and prefer and are able to issue longer-term debt while debt of shorter maturity is more likely to be used by smaller firms (Stohs and Mauer, 1996; Guedes and Opler, 1996). In contrast to the argument by Barclay and Smith (1995), the differences in maturities do not seem to be driven by credit quality which in earlier section was shown to be more or less similar for all issuers.

Another finding from Table 13 is that hot debt issues appear to have longer maturity than cold debt in case of public debt and syndicated loans. In a way, this conflicts with the hypothesized higher adverse selection costs in the hot debt months since according to adverse selection models companies with high information asymmetry should issue short-term debt to avoid locking in their financing costs with longer-term debt (Myers, 1977). Guedes and Opler (1996), however, do not find any relation between adverse selection costs and debt maturity. On the other hand, the longer maturities of hot debt issues could point to that companies issuing in the hot debt market have aimed at utilizing the favorable debt market conditions by making longer-spanning debt contracts, similarly as Faulkender (2005) and Guedes and Opler (1996) find that firms aim at matching maturity to the term spread.

Table 13. Maturities of debt issues

*This table reports the average and median maturities of debt issues as announced in years 1999-2009. The difference is the difference between the mean maturities of hot and cold debt issues and is tested using t-test in means with unequal variances. T-values are in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	All				Syndicated loans				Public				Private			
	All	*Hot*	*Cold*	*Diff. hot-cold*	*All*	*Hot*	*Cold*	*Diff. hot-cold*	*All*	*Hot*	*Cold*	*Diff. hot-cold*	*All*	*Hot*	*Cold*	*Diff. hot-cold*
Average	6.42	6.47	6.31	0.16	4.30	4.89	3.90	0.99***	10.37	10.34	10.24	0.10	9.57	8.51	9.25	-0.74**
Median	5.00	5.01	5.00	(0.946)	5.00	5.00	3.62	(-16.785)	9.61	8.18	8.13	(-0.200)	8.68	8.13	8.63	(1.685)

6.3.3. Issuers' adverse selection costs

The adverse selection cost proxies of different issuers are presented in Table 14. According to the first hypothesis H1, a higher value of adverse selection costs (measured by four earlier discussed proxies) should be found for hot debt issuers compared to cold debt issuers.

For the full sample, hot debt issuers do have higher adverse selection costs when measured by stock beta (ADV1) and stock price synchronicity (ADV2). The difference is strongly statistically significant. The residual volatility (ADV3) and analysts' forecast dispersion (ADV4), however, yield controversial results. For these proxies, the adverse selection costs are higher for cold debt issuers, although the statistical significance is less than 10% for the difference in analysts' forecast dispersion.

Table 14. Adverse selection costs in the aggregate sample

This table reports the adverse selection costs of issuers of syndicated loan, public and private debt in 1999-2009. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All variables are represented as decimal number. Hot (cold) issuers are firms issuing in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are robust standard error terms. Statistical difference is the difference in means t-test with unequal variances., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	All issues		**Hot issuers**		**Cold issuers**		**Difference hot-cold**	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Diff.*	*t-value*
ADV1	0.917	0.877	1.124	1.071	0.797	0.733	0.327***	(-21.984)
	(0.465)		(0.451)		(0.441)			
ADV2	-1.775	-1.548	-1.584	-1.443	-1.957	-1.775	0.373***	(-9.424)
	(1.382)		(0.881)		(1.576)			
ADV3	0.024	0.021	0.017	0.016	0.029	0.025	-0.012***	(34.536)
	(0.013)		(0.007)		(0.015)			
ADV4	0.176	0.048	0.159	0.044	0.179	0.05	-0.020	(0.740)
	(0.908)		(0.726)		(0.967)			
Obs.	*6389*		*1450*		*2415*			

Tables 15-17 show the average values of adverse selection cost proxies in the three subsamples. Except for ADV2, the adverse selection costs have been higher for syndicated loan issuers than for issuers of public debt or private debt. Regarding the unusually high volume of syndicated loans and easily observable hot market time, the fact that the adverse selection costs of these issuers have been the highest of the debt issuers provides confirming evidence for the study. This finding is also in the same line with earlier studies, by e.g. Diamond (1984) and Krishnaswami et al. (1999), which argue that firms with higher degree of asymmetry will borrow privately, while firms with lower information asymmetry prefer public debt. On the other hand, the actual private debt issue sample does not support the hypothesis with lower adverse selection cost figures than those of syndicated loan and public debt issuers. Regarding the hypothesis that hot debt issuers have higher adverse selection costs than cold debt issuers, only ADV1 and ADV2 provide confirming evidence for this in the syndicated loans sample.

A specific feature of syndicated loans is that they effectively allow sharing the credit risk among the lenders participating in the syndicate (Dennis and Mullineaux, 2000). This suggests that the syndicated loan issuer may have a higher firm-specific risk that the lenders are able to diversify in the syndicate. From this perspective, the higher mean values of stock beta and residual volatility of syndicated loan issuers than public or private debt issuers are natural since these variables are typically related to risk.

Even though the results of adverse selection costs for syndicated loan issuers do not completely foster the hypothesis, figures in Table 16 for the public debt issuers provide a clearer picture. In case of all the ADV measures, the hot debt issuers have higher values than the cold issuers, and except for ADV4, the difference is statistically significant. The findings are consistent with Doukas et al. (2011) who with the similar sample of public debt issues document higher values of beta and stock price synchronicity for hot debt issuers. The mean values of adverse selection costs of private debt issuers in Table 17, on the other hand, are in the opposite direction and suggest that the information asymmetry related to hot private debt issuers is lower than that of cold debt issuers.

Table 15. Adverse selection costs of syndicated loan issuers

This table reports the adverse selection costs of issuers of syndicated loan in 1999-2009. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All variables are represented as decimal number. Hot (cold) issuers are firms issuing in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are robust standard error terms. Statistical difference is the difference in means t-test with unequal variances., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	All issues		**Hot issuers**		**Cold issuers**		**Difference hot-cold**	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Diff.*	*t-value*
ADV1	0.969	0.933	1.135	1.079	0.826	0.758	0.309***	(-16.009)
	(0.473)		(0.459)		(0.478)			
ADV2	-1.844	-1.591	-1.620	-1.478	-2.193	-1.957	0.573***	(-10.886)
	(1.346)		(0.910)		(1.720)			
ADV3	0.025	0.021	0.017	0.016	0.033	0.030	-0.016***	(33.735)
	(0.014)		(0.007)		(0.016)			
ADV4	0.182	0.052	0.168	0.046	0.191	0.056	-0.023	(0.839)
	(0.843)		(0.600)		(0.715)			
Obs.	*4048*		*926*		*1581*			

Table 16. Adverse selection costs of public debt issuers

This table reports the adverse selection costs of issuers of public debt in 1999-2009. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All variables are represented as decimal number. Hot (cold) issuers are firms issuing in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are robust standard error terms. Statistical difference is the difference in means t-test with unequal variances., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	All issues		**Hot issuers**		**Cold issuers**		**Difference hot-cold**	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Diff.*	*t-test*
ADV1	0.803	0.771	0.865	0.870	0.746	0.720	0.119***	(-4.621)
	(0.416)		(0.398)		(0.363)			
ADV2	-1.503	-1.239	-0.939	-0.487	-1.723	-1.546	0.785***	(-7.577)
	(1.495)		(1.710)		(1.163)			
ADV3	0.020	0.018	0.022	0.019	0.019	0.018	0.003***	(-3.763)
	(0.010)		(0.011)		(0.008)			
ADV4	0.173	0.039	0.171	0.039	0.124	0.039	0.047	(-1.100)
	(1.202)		(0.727)		(0.447)			
Obs.	*1527*		*337*		*663*			

Table 17. Adverse selection costs of private debt issuers

This table reports the adverse selection costs of issuers of private debt in 1999-2009. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All variables are represented as decimal number. Hot (cold) issuers are firms issuing in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are robust standard error terms. Statistical difference is the difference in means t-test with unequal variances., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	All issues		**Hot issuers**		**Cold issuers**		**Difference hot-cold**	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Diff.*	*t-test*
ADV1	0.875	0.797	0.779	0.702	0.942	0.876	-0.163***	(3.670)
	(0.466)		(0.502)		(0.448)			
ADV2	-1.940	-1.773	-2.349	-2.081	-1.593	-1.443	-0.756***	(6.161)
	(1.265)		(1.390)		(1.225)			
ADV3	0.024	0.021	0.028	0.024	0.023	0.020	0.005***	(-4.305)
	(0.014)		(0.014)		(0.013)			
ADV4	0.149	0.048	0.097	0.046	0.128	0.044	-0.031*	(1.353)
	(0.488)		(0.154)		(0.339)			
Obs.	*814*		*198*		*282*			

6.3.4. Correlations between adverse selection cost proxies

In order to dig deeper into the behavior of adverse selection costs and to look for answer to the variation in the initial results, the Spearman rank correlations between the ADV proxies were calculated and are presented in Table 18. Rank correlations are used because they allow a greater weight on the ability of the components to measure ordinal information asymmetries, rather than absolute information asymmetries. In addition to the figures for the aggregate sample, the correlations are also calculated for syndicated loan issuers, public and private issuers in turn.

The results from the correlation tables are somewhat puzzling. The hypothesis and also the motivation for the use of several proxies is that the different measures are expected to capture the underlying information asymmetry despite the differences in methodology and point of view. However, the correlations between the proxies vary from -0.454 (between R^2 and residual volatility in hot debt issuers in the aggregate sample) to 0.757 (between beta and R^2 in the sample of cold syndicated loan issues). The adverse selection proxy that is the most consistent with the theory appears to be beta which on average has a correlation coefficient of 0.334 with other ADV variables. It remains debatable whether it is the adverse selection costs that binds beta to other variables or if it is some other feature, such as risk.

Varying correlations between the four proxies here are similar to earlier studies attempting to model information asymmetry (e.g. Van Ness et al., 2001; Bharath et al., 2009) and underline the fact that no universally used and academically accepted measure of adverse selection exists. However, especially the stock price synchronicity or R^2, although used in the related literature (e.g. Doukas et al., 2011), seems to be a questionable measure for information asymmetry. As can be seen in Table 18, R^2 is the only adverse selection measure that moves against other ADV variables. The negative correlation with residual standard deviation is not surprising due to the definition of these variables. Since R^2 is calculated as one minus the sum of squares of error terms over total sum of squares, large fluctuations in error terms, measured by the residual volatility, make it prone to decrease.

The correlation matrices should reveal if there is a mutual fraction of adverse selection costs in proxies, and the documented negative correlation coefficients tell this kind of common feature does not exist. The discrepancy between the proxies thus leaves a question which features the used metrics actually measure if the adverse selection costs are not the common denominator for them. Moreover, since the correlations range widely, a more important question is which proxy or proxies to count on in the following analysis. In the absence of any benchmark and due to ambiguousness of the issue, the best one is left with is the assumption that each proxy measures adverse selection costs from a different and limited scope emphasizing a particular characteristic of information asymmetry.

Table 18. Correlation between adverse selection proxies

*This table presents the Spearman rank correlations between adverse selection cost measures. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Aggregate sample

All issues	ADV1	ADV2	ADV3	ADV4
ADV1	1			
ADV2	0.590***	1		
ADV3	0.142***	-0.330***	1	
ADV4	0.129***	-0.068***	0.278***	1
Obs.				*6389*

Syndicated loans

All issues	ADV1	ADV2	ADV3	ADV4
ADV1	1			
ADV2	0.598***	1		
ADV3	0.109***	-0.352***	1	
ADV4	0.137***	-0.029*	0.257***	1
Obs.				*4048*

Public debt issues

All issues	ADV1	ADV2	ADV3	ADV4
ADV1	1			
ADV2	0.666***	1		
ADV3	0.155***	-0.193***	1	
ADV4	0.072***	-0.096***	0.327***	1
Obs.				*1527*

Private debt issues

All issues	ADV1	ADV2	ADV3	ADV4
ADV1	1			
ADV2	0.658***	1		
ADV3	0.126***	-0.359***	1	
ADV4	0.095***	-0.123***	0.249***	1
Obs.				*814*

Hot issues	ADV1	ADV2	ADV3	ADV4
ADV1	1			
ADV2	0.400***	1		
ADV3	0.537***	-0.454***	1	
ADV4	0.103***	-0.198***	0.310***	1
Obs.				*1450*

Hot issues	ADV1	ADV2	ADV3	ADV4
ADV1	1			
ADV2	0.450***	1		
ADV3	0.505***	-0.441***	1	
ADV4	0.123***	-0.155***	0.306***	1
Obs.				*926*

Hot issues	ADV1	ADV2	ADV3	ADV4
ADV1	1			
ADV2	0.559***	1		
ADV3	0.438***	0.113**	1	
ADV4	0.249***	-0.025	0.487***	1
Obs.				*337*

Hot issues	ADV1	ADV2	ADV3	ADV4
ADV1	1			
ADV2	0.756***	1		
ADV3	0.165**	-0.294***	1	
ADV4	0.118*	-0.016	0.278***	1
Obs.				*198*

Cold issues	ADV1	ADV2	ADV3	ADV4
ADV1	1			
ADV2	0.713***	1		
ADV3	0.315***	-0.290***	1	
ADV4	0.167***	0.002	0.282***	1
Obs.				*2415*

Cold issues	ADV1	ADV2	ADV3	ADV4
ADV1	1			
ADV2	0.757***	1		
ADV3	0.335***	-0.200***	1	
ADV4	0.200***	0.094***	0.275***	1
Obs.				*1581*

Cold issues	ADV1	ADV2	ADV3	ADV4
ADV1	1			
ADV2	0.719***	1		
ADV3	0.091**	-0.371***	1	
ADV4	-0.0251	-0.140***	0.218***	1
Obs.				*663*

Cold issues	ADV1	ADV2	ADV3	ADV4
ADV1	1			
ADV2	0.566***	1		
ADV3	0.181***	-0.293***	1	
ADV4	0.140**	-0.099*	0.292***	1
Obs.				*282*

6.4. Determinants of hot debt issuance

The purpose of this section is to analyze whether the occurrence of a hot debt market is driven by adverse selection costs accounting for the macroeconomic environment of the hot debt market. First, I examine the determinants of the hot debt market as a whole, and then continue the analysis to syndicated loans, public and private debt in turn.

6.4.1. Aggregate sample

Table 19 presents the results from the regression of hot debt dummy on adverse selection costs and macroeconomic variables in the aggregate sample. Based on the results, the hot debt issuance activity appears to be driven by a decrease in the term spread, risk spread and real short-term interest rate. Also falling equity returns and increasing market valuation seem to affect the occurrence of hot debt market, but their explanatory power is relatively low. To sum, a decrease in the price of debt in the economy spurs an increase in the debt market, indicating that firms follow a naïve timing strategy (Barry et al., 2008). For the part of risk spread and short-term interest rate, the results are in line with previous studies by e.g. Taggart (1977), Marsh (1982) and Faulkender (2005) who document a positive relation between debt issue activity and a decrease in interest rates and explain this by managers' aim to time the market by utilizing lower interest rates, which Graham and Harvey (2001) also report in their survey.

For the term spread, the results do not hold with earlier literature. For example Faulkender (2005) and Doukas et al. (2011) find that debt issuance is associated with an increase in the term spread. The results in Table 19, however, show a negative relation between term spread and hot debt months. Since the increase in real short-term interest rate should, according to results, decrease the hot debt activity, the term spread effect seems to be driven by falling long-term interest rate.

The negative coefficient for the term-spread is, in fact, interesting due to its documented relation to likelihood of recession. Specifically, Estrella and Mishkin (1996) find that a steep term spread indicates a low likelihood of recession, and consequently a flat or inverted term spread suggests

an impending recession. From this point of view, the debt clusters appear to occur in a contracting economy, consistent with the findings in Korajczyk and Levy (2003) on counter-cyclicality of debt issuance. The negative relation of equity market return to hot debt market brings additional evidence of this. How this relates to adverse selection costs is documented by Choe et al. (1993) who find evidence of that adverse selection costs of equity are low in times of expansionary economic periods and high in non-expansionary business cycles. Thus, I interpret that firms are tempted to issue debt in the hot debt market in part due to attractively low interest rate levels but also due to overall high adverse selection costs of equity in the economy.

Table 19. Determinants of hot debt months in the aggregate sample

This table reports the results of the regression of the hot debt month dummy on the macroeconomic variables. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Rst-π is real short-term interest, Rlt-Rst is term spread, Rct-Rlt is risk spread, RS&P500 is monthly return on S&P 500 index, ΔP/E is monthly change in S&P 500 P/E ratio. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. Figures in parentheses are t-values., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

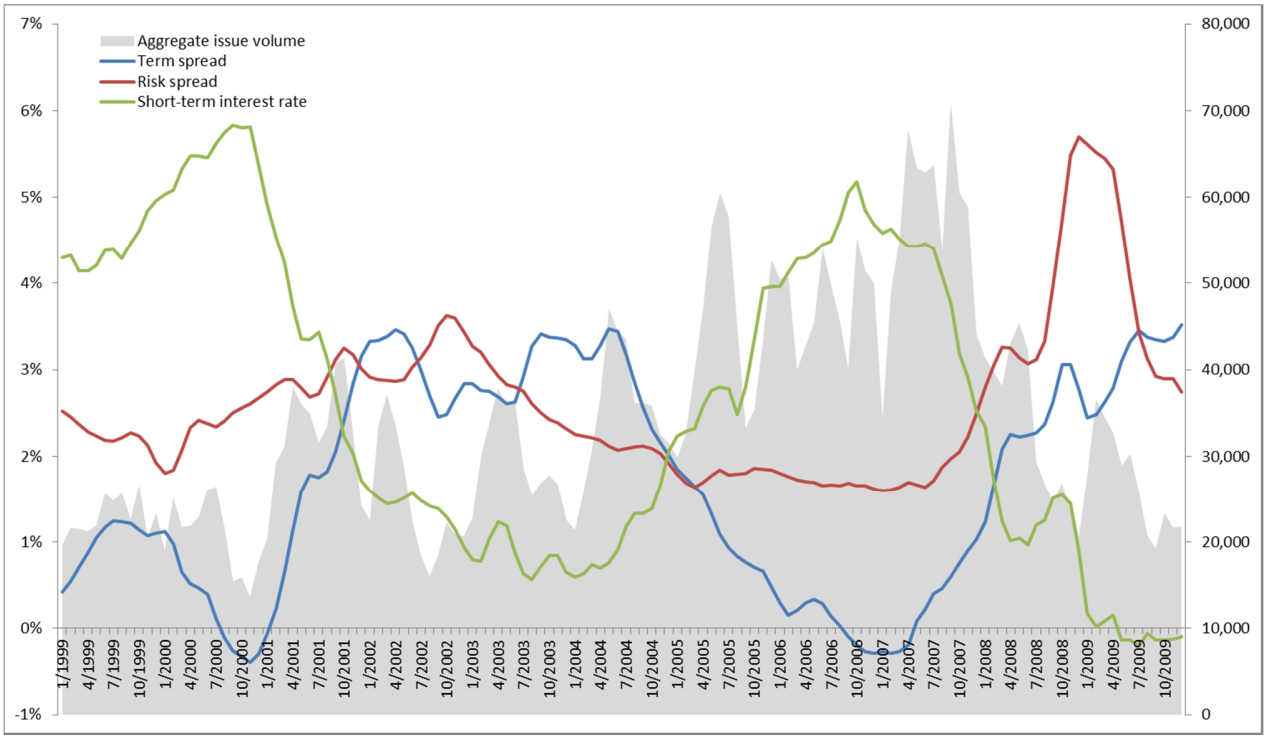
Variable	*ADV*	*Rst-π*	*Rlt-Rst*	*Rct-Rlt*	*RS&P500*	*ΔP/E*	*Constant*	*R2*	*Adj. R2*
ADV1	0.165***	-0.271***	-0.420***	-0.313***	-0.015***	0.003***	2.420***	0.670	0.669
	(15.85)	(-41.72)	(-47.36)	(-44.83)	(-12.98)	(8.60)	(58.64)		
ADV2	0.056***	-0.263***	-0.422***	-0.330***	-0.016***	0.003***	2.670***	0.666	0.665
	(14.50)	(-38.36)	(-46.91)	(-47.21)	(-13.33)	(8.87)	(75.68)		
ADV3	-5.950***	-0.283***	-0.435***	-0.293***	-0.014***	0.003***	2.730***	0.671	0.671
	(-16.95)	(-45.31)	(-50.44)	(-40.45)	(-12.09)	(8.91)	(78.00)		
ADV4	-0.008*	-0.309***	-0.463***	-0.323***	-0.016***	0.003***	2.790***	0.648	0.647
	(-1.39)	(-49.07)	(-52.92)	(-45.68)	(-13.31)	(8.91)	(77.30)		

Figure 7 illustrates the relation between the aggregate issue volume, term spread, risk spread and real short-term interest rate. The equity market variables are left out from the graph due to relatively low significance. The graph clearly shows how the months of highest debt issue volume, or the period from May 2005 to November 2007, are times of low, even inverted term spread and relatively low risk spread. The short-term interest rate seems to also have peaked in the middle of the hot debt market but the regression still reports a negative coefficient for this variable. Interestingly, the debt market variables have behaved the opposite way during the first, lower peak in the debt market the term spread climbing up with the debt volume and also risk spread increasing. These inconsistent correlations tell either about exceptionality of the second debt volume peak or that the debt issue decisions are not dependent of macroeconomic

environment. The latter explanation appears less reliable since evidence of correlation of debt issues and interest rates can be found e.g. in Barry et al. (2008). The former alternative implies that some other forces, stronger than the macroeconomic determinants, have driven the issuance volumes.

Figure 7. Development of debt market variables and aggregate issue volume

This figure presents the development of term spread, risk spread and real short-term interest rate and the aggregate issue volume in 1999-2009. The macroeconomic variables are smoothed with a centered 3-month moving average and the aggregate issue volume is a detrended, centered 3-month moving average aggregate volume of syndicated loans, public and private debt issues in millions of December 2009 U.S. dollars.



This study offers the information asymmetry as explanation for the high issue volumes, and thus I turn my attention to the coefficients of adverse selection cost variables in Table 19. The expected sign of the coefficients is positive: according to the hypotheses, high adverse selection costs should drive debt issue clusters. The results in Table 19 fulfill this expectation for the part of ADV1 and ADV2, or stock beta and stock price synchronicity. These results are similar to Doukas et al. (2011) who also find stock beta and synchronicity partly explaining the hot debt market phenomenon.

Two other adverse selection proxies yield results not consistent with the hypothesis. The coefficients for residual volatility (ADV3) and analysts' forecast dispersion (ADV4) are negative and statistically significant indicating that hot debt months do not occur in times of high firm-specific volatility or disagreement among investors on the appropriate stock value. Especially the high value of residual volatility is noticeable. This is inconsistent with Choe et al. (1993) who find opposite results for volatility and probability of debt issuance. It must be noted, however, that Choe et al. (1993) use total stock price volatility which by definition captures also the overall market volatility, while my measure of residual volatility tells about the pure firm-specific volatility. Table 19 on values of adverse selection costs provides some explanation to the finding. The volatility and dispersion values are lower for hot debt issuers in the aggregate sample and thus also its relation to hot market dummy in regression is negative.

An issue worth noticing is the high model fit with R^2 varying from 0.65 to 0.67. The high statistical significance of all variables as well as the strong model fit can be depicted to the clustering of hot debt issues in a certain time span over the sample 10 year period. Since there is little dispersion in the occurrence of hot months, the regression results are determined by conditions in the most apparent cluster period, i.e. from April 2005 to November 2007.

6.4.2. Syndicated loans

The regressions above were also conducted for the subsample of syndicated loans. The results are shown in Table 20. Taking into account how large part of the aggregate sample the syndicated loans constitute and that the hot debt months are the same as in the aggregate sample, the results are not surprising. Similar to the results for the aggregate sample in Table 19, the hot debt months occur when the real short-term interest rate, term spread and risk spread are low, and when equity market returns are declining. Also the measures of adverse selection costs behave in the same way as in the aggregate sample, the stock beta and synchronicity having a positive relation and residual volatility and analysts' forecast dispersion a negative relation to the occurrence of the hot debt market.

Table 20. Determinants of hot debt months in the sample of syndicated loan issues

This table reports the results of the regression of the hot debt month dummy on the macroeconomic variables. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Rst-π is real short-term interest, Rlt-Rst is term spread, Rct-Rlt is risk spread, RS&P500 is monthly return on S&P 500 index, ΔP/E is monthly change in S&P 500 P/E ratio. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. Figures in parentheses are t-values., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Variable	*ADV*	*Rst-π*	*Rlt-Rst*	*Rct-Rlt*	*RS&P500*	*ΔP/E*	*Constant*	*R2*	*Adj. R2*
ADV1	0.142***	-0.282***	-0.431***	-0.302***	-0.010***	0.002***	2.495***	0.685	0.684
	(12.17)	(-35.75)	(-40.48)	(-39.07)	(-8.34)	(5.94)	(50.52)		
ADV2	0.055**	-0.265***	-0.422***	-0.309***	-0.011***	0.002***	2.691***	0.688	0.688
	(13.20)	(-31.99)	(-39.29)	(-40.33)	(-8.55)	(6.03)	(62.71)		
ADV3	-6.315**	-0.285***	-0.436***	-0.264***	-0.009***	0.002***	2.718***	0.699	0.698
	(-16.35)	(-38.13)	(-42.96)	(-32.64)	(-7.48)	(5.80)	(65.27)		
ADV4	-0.004	-0.315***	-0.468**	-0.311***	-0.011***	0.002***	2.808***	0.667	0.666
	(-0.45)	(-41.27)	(-44.67)	(-39.24)	(-8.41)	(5.91)	(64.48)		

6.4.3. Public debt issues

Table 21 reports the regression results for the sample of public debt issues. Similarly to the aggregate sample, also high public debt issuance activity is determined by a decrease in real short-term interest rate and term spread, but the most powerful driver appears to be an increase in the risk spread. Decreasing equity market returns and improving price-to-equity ratio also partly explain the debt issue clusters but they have an equally low significance as for the aggregate and syndicated loan sample.

Figure 8 illustrates the development of debt market variables relative to the public and private issue volumes. As opposed to the aggregate sample, the relation between debt market conditions and issue volume appears more consistent and some clear patterns can be seen especially for the public debt issue market. First, as the high positive coefficient of the risk spread indicates, the premium of corporate bond yields over the long-term interest rate increases with the rising volume of public debt issues. This correlation is remarkable in the issue peak of spring 2009 in the aftermath of the banking crisis of 2008 but is also visible in the issue cluster of 2001. The second pattern is the negative correlation between real short-term interest rate and issue volume, again pointing to the debt market timing of interest rates. Even though the issue sample consist of only long-term debt and the timing to lower short-term interest rate seems naïve, decreasing

short-term interest rate tell about an overall reduce in the price of debt and firms attempt to make use of that.

Since this subsample is similar to Doukas et al. (2011), it is interesting to compare the results to their findings. Over the sample period of 1970-2006 that Doukas et al. (2011) use, the results are similar for the part of short-term interest rate, risk spread and equity market return. The positive coefficient for the risk spread also complements the findings by Barry et al. (2008) who explain the positive relation between debt issuance and credit spread by relatively high supply of corporate bonds to demand resulting to lower bond prices and higher credit spreads. However, whereas Doukas et al. (2011) and Antoniu et al. (2009) document the term spread to increase in the debt market of high issue volumes, I find a negative and statistically significant relation between hot debt months and the term spread. The analysis of Doukas et al. (2011) leads to that hot months of public debt issues are those preceding improving economic conditions; the results in this study indicate that actually hot debt market has occurred prior to recessionary periods.

For the part of adverse selection costs, the results are puzzling. Not only the signs of coefficients of the four measures are inconsistent with each other, they also are contrary to the results for the aggregate sample. Only residual volatility appears to behave the same way as in previous tables with a negative relation to the hot debt market. The analyst forecast dispersion as adverse selection costs measure does yield results consistent with the hypothesis that adverse selection costs are high in hot debt months. Since for the other adverse selection cost proxies the coefficient is negative, I conclude that public debt clusters are not determined by high information asymmetry of equity but rather by favorable debt market conditions.

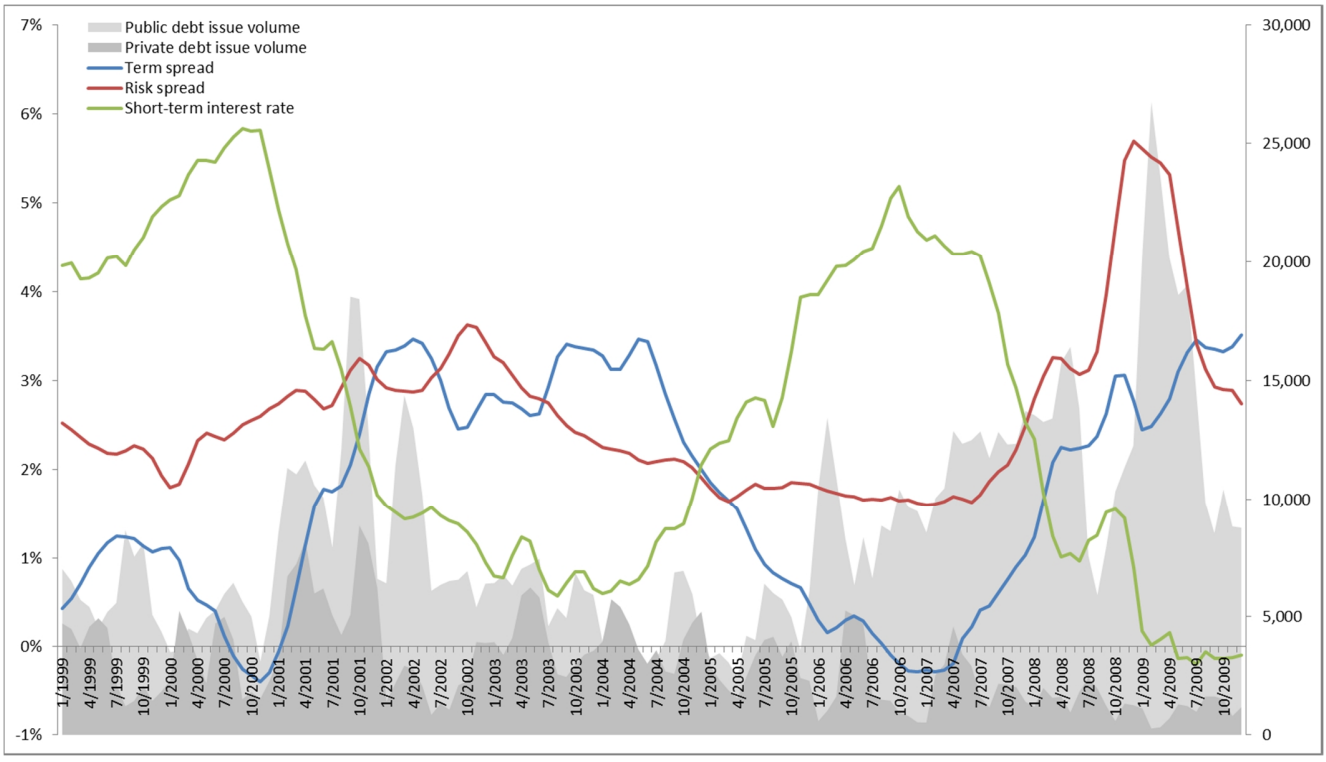
Table 21. Determinants of hot debt months in the sample of public debt issues

This table reports the results of the regression of the hot debt month dummy on the macroeconomic variables. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Rst-π is real short-term interest, Rlt-Rst is term spread, Rct-Rlt is risk spread, RS&P500 is monthly return on S&P 500 index, ΔP/E is monthly change in S&P 500 P/E ratio. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. Figures in parentheses are t-values., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Variable	*ADV*	*Rst-π*	*Rlt-Rst*	*Rct-Rlt*	*RS&P500*	*ΔP/E*	*Constant*	*R2*	*Adj. R2*
ADV1	-0.023	-0.078***	-0.068***	0.215***	-0.005**	0.002***	0.034	0.423	0.419
	(-0.67)	(-4.52)	(-2.85)	(12.51)	(-2.21)	(3.70)	(0.27)		
ADV2	-0.025***	-0.093***	-0.081***	0.217***	-0.005**	0.002***	0.034	0.423	0.422
	(-2.50)	(-5.28)	(-3.42)	(12.89)	(-1.97)	(3.72)	(0.32)		
ADV3	-2.390**	-0.066***	-0.057***	0.228***	-0.005**	0.002***	-0.024	0.424	0.421
	(-1.77)	(-4.03)	(-2.49)	(12.67)	(-2.28)	(3.82)	(-0.22)		
ADV4	0.030*	-0.073***	-0.063***	0.217***	-0.006**	0.002***	-0.013	0.424	0.420
	(1.45)	(-4.65)	(-2.78)	(12.83)	(-2.29)	(3.65)	(-0.13)		

Figure 8. Development of debt market variables and public and private debt issue volume

This figure presents the development of term spread, risk spread and real short-term interest rate and the public and private debt issue volume in 1999-2009. The macroeconomic variables are smoothed with a centered 3-month moving average and the issue volume is a detrended, centered 3-month moving average volume of public and private debt issues in millions of December 2009 U.S. dollars.



6.4.4. Private debt issues

Results about the determinants of hot debt market for the private debt issues are shown in Table 22. The drivers of private debt clusters appear to be significantly different from those of other two debt types. Already Figure 8 suggested that no strong correlation between debt market conditions exists: the private debt issue volume does not seem to react to variation in the term spread, risk spread or short-term interest rate but slowly decays after the peak of 2001 with some lower peaks in 2003, 2004 and 2006. Even when there can be seen some correlation, the behavior of the debt market variable is not consistent with e.g. the term spread plunging in the private debt cluster of 2004 but peaking in the hot private debt months of 2006.

Since according to Table 22 hot private debt market appears to positively correlate with the equity market, this relation is illustrated in detail in Figure 9. Interestingly, the private debt issue volume climbs high in times of high equity market returns and improving P/E ratios. Also the magnitude of correlation stays approximately the same over the ten year period. The record high P/E ratio in spring 2009 provides a striking exception and is due to extremely low reported earnings after the crisis times in 2007-2008. In overall, the positive relation indicates that private debt issue decisions are in part driven by changes in the debt market conditions, but also affected by favorable conditions in the equity market. Private debt issuers are attracted to make an issue when equity investors are in a positively responsive mood, suggesting that these investors at least partially form the investor base of private placements of debt also. The positive term spread, documented to predict low likelihood of recession by Estrella and Mishkin (1996), underlines this finding that private debt issue activity is high prior to expansionary period in the economy, and also emphasizes that private debt market differs from that of syndicated loans and public debt.

Considering the unconventional behavior of the private debt market, finding the coefficient for adverse selection costs different from those in previous tables is not surprising. Nor it is unexpected in light of the study by Choe et al. (1993) who argue that the adverse selection costs are low in expansionary conjuncture in the economy. While syndicated loan market was documented to be driven by adverse selection costs, hot months in the private debt market are those of low adverse selection costs. Residual volatility, as with previous samples, shows strong

correlation with the hot debt market but in case of private debt market this relation is positive. Since the other three adverse selection costs proxies prove negative and statistically significant, I contend that adverse selection costs of equity do not drive private debt issue clusters but instead decrease the probability of a hot private debt market. This is against the hypothesis H1 and similar to the finding for the public debt market. Due to the low sample size, however, the results for the private debt market should be analyzed with a critical eye.

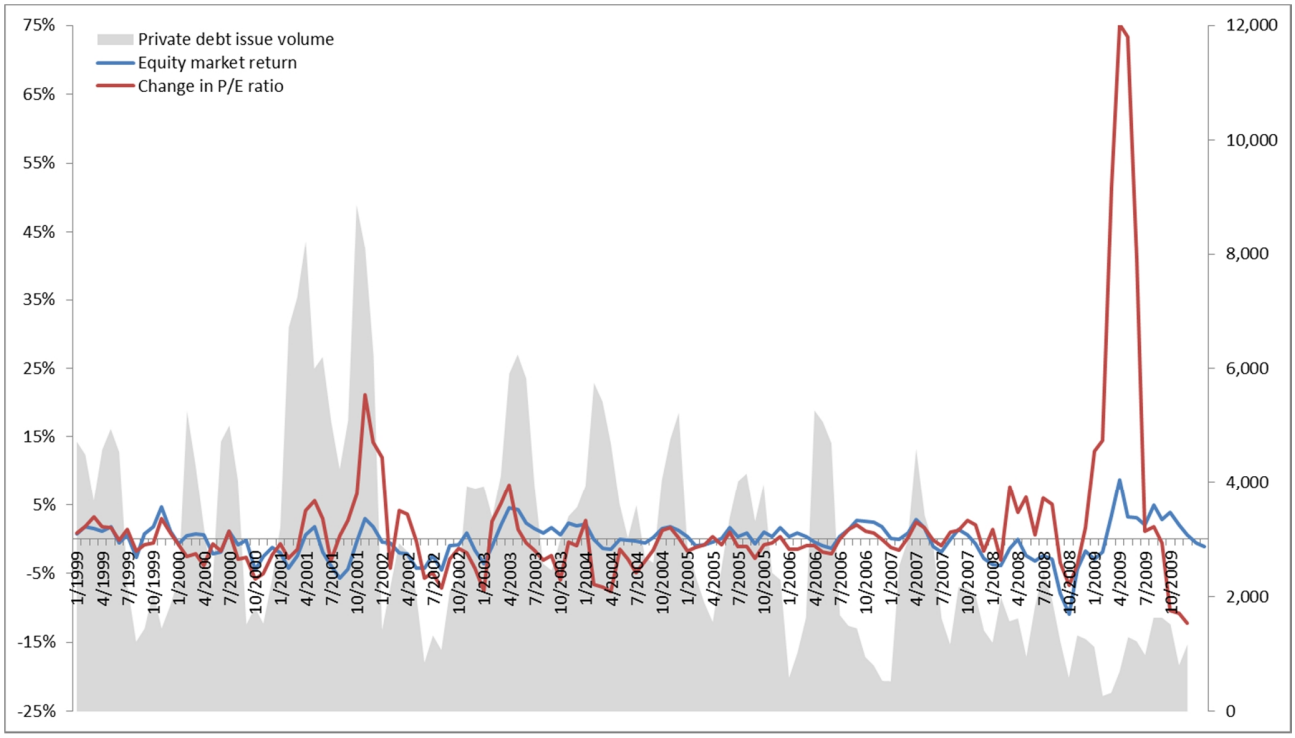
Table 22. Determinants of hot debt months in the sample of private debt issues

*This table reports the results of the regression of the hot debt month dummy on the macroeconomic variables. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Rst-π is real short-term interest, Rlt-Rst is term spread, Rct-Rlt is risk spread, RS&P500 is monthly return on S&P 500 index, ΔP/E is monthly change in S&P 500 P/E ratio. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. Hot (cold) issuers are firms issuing in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Variable	*ADV*	*Rst-π*	*Rlt-Rst*	*Rct-Rlt*	*RS&P500*	*ΔP/E*	*Constant*	*R2*	*Adj. R2*
ADV1	-0.141***	0.116***	0.201***	-0.008	0.013**	-0.001	-0.112	0.078	0.066
	(-2.89)	(3.65)	(4.53)	(-0.21)	(2.25)	(-0.61)	(-0.54)		
ADV2	-0.106***	0.057**	0.143***	0.015	0.014***	-0.001	-0.236*	0.125	0.114
	(-5.87)	(1.72)	(3.18)	(0.45)	(2.62)	(-0.66)	(-1.33)		
ADV3	5.561***	0.119***	0.194***	0.000	0.012**	-0.001	-0.386**	0.083	0.071
	(3.32)	(3.80)	(4.35)	(0.01)	(2.13)	(-0.92)	(-2.15)		
ADV4	-0.116*	0.141***	0.229***	0.015	0.013**	-0.001	-0.397**	0.066	0.054
	(-1.45)	(4.59)	(5.22)	(0.43)	(2.24)	(-0.78)	(-2.19)		

Figure 9. Development of equity market variables and private debt issue volume

This figure presents the development of monthly return on S&P 500 index, monthly change in S&P 500 P/E ratio and private debt issue volume in 1999-2009. The equity market variables are smoothed with a centered 3-month moving average and the issue volume is a detrended, centered 3-month moving average volume of public and private debt issues in millions of December 2009 U.S. dollars.



6.5. Hot debt impact on issue size

This section describes the results from the regression of newly issued debt over total assets to certain firm characteristics in both aggregate sample and selected subsamples. The regressions are related to the third hypothesis H3 according to which *hot debt issuers issue more debt than cold debt issuers for utilizing the window of opportunity.*

6.5.1. Aggregate sample

Table 24 presents the mean values for the relative issue size for hot and cold debt issuers in all of the samples based on the percentage of issue proceeds of total assets in pre-issue year and issue year, respectively. The mean and median values of the issue proceeds in absolute numbers are shown above, in Table 23. The results provide confirming evidence for the hypothesis that hot debt issuers take relatively more debt than their cold debt counterparts. Using the second measure, the proceeds over pre-issue assets, the results for the aggregate sample and syndicated loans support the hypothesis. However, the inverted difference for public and private debt issues undermines the findings.

When measured as percentage of total issue-year assets, the difference between hot and cold debt issuers is positive in both aggregate sample and all the three subsamples. In one out of four, the difference is statistically significant. On average, the difference in the issue size is 4.1 %-points. For the subsamples the largest gap is in the sample of private debt issuers where hot debt issuers take 4.0 %-points more debt issuers in cold debt months. Considering the earlier results for syndicated loans that suggest that the hot debt market phenomenon is more pronounced in this market, the relatively small difference in issue size is surprising.

Table 23. Absolute mean and median values for issue proceeds

This table presents the mean and median values of issue size in millions of nominal December 2009 U.S. dollars in the aggregate sample and subsamples.

	Aggregate sample			Syndicated loans			Public issues			Private issues		
Definition	*All*	*Hot*	*Cold*	*All*	*Hot*	*Cold*	*All*	*Hot*	*Cold*	*All*	*Hot*	*Cold*
Average issue size	631.2	1,717.1	932.2	660.3	952.0	471.9	669.7	1,000.5	437.7	414.5	515.3	355.9
Median issue size	320.0	459.3	334.7	325.0	500.0	250.0	389.8	499.7	297.8	249.5	249.7	251.9
Number of issues	6,389	1,450	2,524	4,048	926	1,581	1,527	337	663	814	198	282

The average size of a debt issue has been 18.8% of pre-issue total assets in years 1999-2009. The variance in size of different debt types emphasizes the already earlier documented differences between the three debt markets. While an average public debt issue is 5.7% of total assets, the average syndicated loan amounts to 21.9% of total assets. The mean value for private debt issue

size is 10.8%. This is despite the fact that firms issuing syndicated loans are smallest in size measured by annual sales. Contrariwise, firms conducting relatively smallest issues, public debt issues, are the largest in size. The differences in issue size of different debt types are similar to those reported in Denis and Mihov (2003) and Gomes and Phillips (2007, working paper) who document larger relative sizes of private debt issues compared to public debt issues.

The fact that the issue sizes of public debt are largest in absolute terms reflects the high fixed costs related to corporate bonds. Flotation costs related to arrangement of the debt issue such as fees paid to the investment bank and regulatory fees spur companies to issue relatively larger issues in the quest for economies of scale. Logically this leads to large issues of public debt issues than of syndicated loans or private debt issues that do not require for example registration to the SEC. However, syndicated loans are in absolute terms approximately of the same size as public debt issues and still close to 22% of issue-year total assets, compared to 11% of public debt issues. In case of syndicated loans that are relatively cheap to arrange, the economies of scale have probably not encouraged for large issue size, but instead it may have been the easiness and price of this debt instrument that has increased the issue sizes. Also the particular characteristic of a syndicated loan to be split, and consequently the credit risk of its issuer to be diversified for several participating lenders, may have contributed to issue sizes.

Table 24. Mean values of issue size

This table presents the mean values of issue size relative to total assets in issue year and pre-issue year in the aggregate sample and subsamples. Proceeds is nominal value of the issue. The statistical significance of difference between hot and cold debt issuers is based on t-test of mean values with unequal variances., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

All issues	*Proceeds/At*	*Proceeds/At-1*	*Number of obs.*
All	0.188	0.231	6389
Hot	0.198	0.252	1450
Cold	0.157	0.189	2415
Difference	0.041***	0.063***	
t-value	(-4.996)	(-6.183)	
Syndicated loans			
All	0.219	0.267	4048
Hot	0.235	0.300	1581
Cold	0.222	0.264	926
Difference	0.013	0.036***	
t-value	(-1.180)	(-2.520)	
Public issues			
All	0.057	0.068	1527
Hot	0.062	0.058	337
Cold	0.047	0.069	663
Difference	0.015***	-0.011**	
t-value	(-2.807)	(-1.855)	
Private issues			
All	0.108	0.135	814
Hot	0.129	0.113	198
Cold	0.089	0.155	282
Difference	0.040***	-0.042***	
t-value	(-3.144)	(-2.505)	

The regression results for the aggregate sample, presented in Table 25, partially confirm the hypothesis that hot market period has an increasing effect on issue size. The expected positive sign of hot market dummy (HOTD) is fulfilled in case of ADV1 (stock beta), ADV3 (residual volatility) and ADV4 (analyst forecast dispersion). The statistical significance, however, is strong only for ADV1 and ADV4. For ADV2 (R^2) the sign of the coefficient is negative with low statistical significance.

The interaction between hot market dummy and adverse selection cost proxy (HOTD x ADV) is expected to capture the impact of information asymmetry on the level of debt issuance in hot debt periods. Multiplying the adverse selection costs measure by HOTD dummy allows concentrating on the impact of adverse selection costs on hot debt issuers, in line with the focus of the study. Based on the results, it can be analyzed that only when this information asymmetry is measured by residual volatility, the adverse selection costs increase the relative issue size. Contrary to the hypothesis, the sign of the coefficient is negative for all the other adverse selection cost proxies, indicating that the high adverse selection costs actually reduce the relative issue size in hot months. Since the only statistically significant coefficients of adverse selection costs are negative, my conclusion is that adverse selection costs have a decreasing impact on issue size.

The results in Table 25 indicate that a size of a debt-issue is, in addition to the timing in the hot debt market, driven by the issuers' pre-issue leverage ratio, profitability and R&D costs and is decreased in relation to market valuation, size and tangibility of the assets. Interestingly, both capital expenditures and cash reserves seem to have a positive relation to issue size suggesting that firms with high investment expenditure but already relatively high reserves take debt in large amounts. Ownership concentration and dividend payout both show negative coefficients as expected but the results are not statistically significant.

For the most part the results go against the classical capital structure theories. For example, the trade-off theory is challenged with the finding that already highly leveraged firms issue more debt. On the other hand, the higher profitability of firms making large debt issues contradicts the pecking order theory that argues that firms with large cash flows should prefer internal financing (Myers and Majluf, 1984). Regarding the tangibility of assets, for example Frank and Goyal (2003) argue that firms with more tangible assets tend to issue more debt due the higher collateral value of assets. According to Table 25 and the negative sign of PPE/At-1, this argument does not hold. Also the finding that smaller firms issue relatively more debt is inconsistent with earlier literature. It is a stylized fact that large firms have more stable cash flows and thus higher debt capacity. Moreover, Titman and Wessels (1988) document a positive relation between firm size and debt ratio and provide high transaction costs of long-term debt issues for explanation. The negative coefficient for the M/B ratio negative is on the other hand consistent with earlier

research (e.g. Alti, 2006; Hovakimian, 2006) which argues that companies with high market-to-book ratios or growth opportunities prefer equity to debt.

Table 25. Impact of hot debt month on issue size in the aggregate sample

*This table reports the results of the regression of issue size, Proceeds/At, on hot market dummy, HOTD, adverse selection costs, ADV controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Variable	*HOTD*	*HOTD x ADV*	*D/At-1*	*M/Bt-1*	*RE/At-1*	*EBITDA/At-1*	*SIZEt-1*	*PPE/At-1*	*RD/At-1*
ADV1	0.072***	-0.024**	0.103***	-0.006**	0.020***	0.136***	-0.071***	-0.095***	0.400***
	(4.20)	(-1.74)	(5.11)	(-1.85)	(2.78)	(2.58)	(-28.21)	(-4.75)	(2.98)
ADV2	0.002	-0.027***	0.102***	-0.006**	0.022***	0.131***	-0.069***	-0.030***	0.415***
	(0.11)	(-3.90)	(5.02)	(-1.78)	(3.02)	(2.49)	(-27.07)	(-4.52)	(3.09)
ADV3	0.020	1.505**	0.102***	-0.006**	0.022***	0.128***	-0.070***	-0.092***	0.422***
	(1.19)	(1.66)	(5.05)	(-1.75)	(3.00)	(2.43)	(-26.93)	(-4.63)	(3.14)
ADV4	0.046***	-0.006	0.104***	-0.006**	0.02***	0.129***	-0.071***	-0.094***	0.412***
	(5.82)	(-0.66)	(5.13)	(-1.79)	(2.81)	(2.44)	(-28.15)	(-4.73)	(3.06)

	RDDt-1	*INV/At-1*	*DIV/Et-1*	*Cash/At-1*	*OCONt-1*	*DOCONt-1*	*Cons*	*R2*	*Obs.*
ADV1	-0.004	0.091*	-0.023	0.064*	-0.022	0.022**	0.673***	0.211	3865
	(-0.53)	(1.42)	(-1.00)	(1.41)	(-0.14)	(1.54)	(27.80)		
ADV2	-0.005	0.080	-0.022	0.061*	-0.037	0.021*	0.657***	0.213	3865
	(-0.58)	(1.26)	(-0.98)	(1.35)	(-0.23)	(1.47)	(26.95)		
ADV3	-0.003	0.083*	-0.021	0.055	-0.027	0.023*	0.663***	0.211	3865
	(-0.40)	(1.30)	(-0.91)	(1.21)	(-0.17)	(1.55)	(26.91)		
ADV4	-0.004	0.090*	-0.021	0.058*	-0.020	0.023*	0.671***	0.210	3865
	(-0.46)	(1.41)	(-0.94)	(1.30)	(-0.12)	(1.57)	(27.75)		

6.5.2. Syndicated loans

Similar regressions were conducted for the subsample of syndicated loans. The results of the regressions for the issue year are presented in Table 26. As can be seen, the hot debt month seems to have a statistically significant impact on issue size when the proxy used is stock beta (ADV1) or earnings forecast dispersion (ADV4). This gives support for the hypothesis that hot debt issuers make larger issues for utilizing the favorable time window, even though the absolute

value of the difference in the issue size in Table 23 does not point to that. The finding also confirms the earlier findings that the hot debt market phenomenon is visible in this debt market in particular. The HOTD x ADV variable measuring the importance of adverse selection costs on hot months is statistically significant and positive only in case of residual volatility (ADV3). Since the signs of adverse selection cost proxies are negative and statistically significant for two out of four, I conclude that for syndicated loan issuers the costs related to information asymmetry do not increase the issue size of a syndicated loan in the hot debt market. Instead, there appears to be other determinants, most importantly pre-issue debt ratio and R&D costs, which have a positive relation to the issue size.

Comparison to the aggregate sample reveals that the syndicated loans sample shares the exactly same characteristics as the total sample. In both samples, the hot debt period has a positive relation to relative issue size when adverse selection costs are measured by beta or analysts' forecast dispersion. Regressions also yield similar results for the residual volatility explaining part of the issue size for the hot debt issuers. The coefficients are, however, somewhat lower for the aggregate sample. Again, the similarity of results is not surprising considering that syndicated loans make the majority of the aggregate volume and thus drive the results in the aggregate sample.

Table 26. Impact of hot debt month on issue size of syndicated loans

*This table reports the results of the regression of issue size, Proceeds/At, on hot market dummy, HOTD, adverse selection costs, ADV controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Variable	*HOTD*	*HOTD x ADV*	*D/At-1*	*M/Bt-1*	*RE/At-1*	*EBITDA/At-1*	*SIZEt-1*	*PPE/At-1*	*RD/At-1*
ADV1	0.084***	-0.030*	0.183***	-0.008**	0.004	0.117*	-0.087***	-0.065***	0.419***
	(3.44)	(-1.55)	(6.28)	(-1.73)	(0.27)	(1.65)	(-21.91)	(-2.42)	(2.42)
ADV2	0.006	-0.027***	0.182***	-0.007**	0.008	0.11*	-0.085***	-0.060**	0.44***
	(0.31)	(-2.73)	(6.26)	(-1.66)	(0.55)	(1.56)	(-21.19)	(-2.05)	(2.55)
ADV3	0.042**	0.461	0.183***	-0.007**	0.005	0.113*	-0.087***	-0.063**	0.436***
	(1.70)	(0.36)	(6.27)	(-1.66)	(0.34)	(1.59)	(-21.22)	(-2.17)	(2.52)
ADV4	0.054***	-0.017	0.184***	-0.008**	0.004	0.108*	-0.087***	-0.065**	0.431***
	(4.64)	(-1.14)	(6.32)	(-1.70)	(0.27)	(1.52)	(-21.88)	(-2.25)	(2.49)

	RDDt-1	*INV/At-1*	*DIV/Et-1*	*Cash/At-1*	*OCONt-1*	*DOCONt-1*	*Cons*	*R2*	*Obs.*
ADV1	0.004	-0.007	-0.003	-0.007	-0.225	0.011	0.786***	0.190	2507
	(0.38)	(-0.08)	(-0.10)	(-0.11)	(-0.88)	(0.58)	(23.10)		
ADV2	0.004	-0.0160	-0.003	-0.010	-0.253	0.011	0.77***	0.190	2507
	(0.32)	(-0.18)	(-0.12)	(-0.16)	(-0.99)	(0.57)	(22.44)		
ADV3	0.005	-0.010	-0.002	-0.014	-0.225	0.012	0.78***	0.190	2507
	(0.43)	(-0.11)	(-0.07)	(-0.23)	(-0.88)	(0.59)	(22.48)		
ADV4	0.005	-0.006	-0.002	-0.012	-0.222	0.012	0.78***	0.190	2507
	(0.45)	(-0.06)	(-0.06)	(-0.21)	(-0.86)	(0.58)	(23.07)		

6.5.3. Public debt issues

Table 27 presents the regression results for the sample of public issues. Hot debt month impact is the most visible for this subsample with positive and statistically significant coefficients. Also for the other determinants the results differ from those for the aggregate sample in Table 25. For example, while high market-to-book valuation decreases the issue size of a syndicated loan, in case of public debt issues the higher market valuation encourages for a larger issue. Interestingly also the coefficient for cash is positive and statistically significant suggesting that public debt issuers of large volumes already have high amount of cash in the balance sheet, as opposed to syndicated loan issuers for which cash reserves decrease the issue size.

Hot debt issuers with high adverse selection costs do not seem to make larger debt issues when adverse selection costs are measured by stock beta or R^2. This is inconsistent with what Doukas et al. (2011) documents for public debt issuers. However, adverse selection costs are an important consideration for firms with high analyst forecast dispersion. The varying results on the impact of adverse selection costs for issuers of different debt types again raise the question of which variable to rely on. Considering the high statistical significance of the positive coefficient for ADV4, I argue that adverse selection costs do increase the issue size in the public debt market.

Table 27. Impact of hot debt month on issue size of public debt issue

*This table reports the results of the regression of issue size, Proceeds/At, on hot market dummy, HOTD, adverse selection costs, ADV controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Variable	*HOTD*	*HOTD x ADV*	*D/At-1*	*M/Bt-1*	*RE/At-1*	*EBITDA/At-1*	*SIZEt-1*	*PPE/At-1*	*RD/At-1*
ADV1	0.020**	-0.003	0.006	0.006**	-0.031***	0.134***	-0.023***	-0.039***	-0.407***
	(1.95)	(-0.29)	(0.32)	(1.85)	(-2.53)	(2.78)	(-13.24)	(-3.01)	(-3.36)
ADV2	0.015***	-0.002	0.006	0.006**	-0.030***	0.134***	-0.023***	-0.038***	-0.402***
	(2.79)	(-0.70)	(0.33)	(1.78)	(-2.43)	(2.79)	(-13.24)	(-3.00)	(-3.31)
ADV3	0.011	0.292	0.005	0.007**	-0.030***	0.133***	-0.023***	-0.038***	-0.407***
	(1.14)	(0.79)	(0.27)	(1.97)	(-2.48)	(2.76)	(-13.09)	(-2.95)	(-3.36)
ADV4	0.014***	0.015***	0.005	0.006**	-0.029***	0.140***	-0.023***	-0.038***	-0.404***
	(2.79)	(2.79)	(0.27)	(1.87)	(-2.41)	(2.92)	(-12.99)	(-3.02)	(-3.34)

	RDDt-1	*INV/At-1*	*DIV/Et-1*	*Cash/At-1*	*OCONt-1*	*DOCONt-1*	*Cons*	*R2*	*Obs.*
ADV1	-0.003	0.071**	-0.005	0.331***	-5.698	0.009	0.238***	0.252	1000
	(-0.48)	(1.66)	(-0.88)	(8.27)	(-1.04)	(0.76)	(10.97)		
ADV2	-0.003	0.071**	-0.005	0.332***	-5.680	0.008	0.237***	0.252	1000
	(-0.54)	(1.66)	(-0.95)	(8.31)	(-1.04)	(0.74)	(11.01)		
ADV3	-0.003	0.066*	-0.004	0.326***	-5.396	0.009	0.236***	0.252	1000
	(-0.51)	(1.53)	(-0.83)	(8.15)	(-0.98)	(0.77)	(10.94)		
ADV4	-0.003	0.071**	-0.005	0.328***	-5.332	0.009	0.233***	0.253	1000
	(-0.53)	(1.68)	(-0.84)	(8.27)	(-0.98)	(0.79)	(10.81)		

6.5.4. Private debt issues

The results for the sample of private debt issues, shown in Table 28, are mostly similar to those for public debt issues. The hot debt market seems to drive the volume upwards. Moreover, also in the case of private debt issues, companies with initially high leverage, market valuation and small size issue relatively more debt. However, whereas in other subsamples the profitability measured by EBITDA clearly is an important driver of issue size, in case of private issues the relation is contrariwise. The analysis for other determinants of issue size remains ambiguous since the statistical significance is not found for the majority of variables.

Regarding the relation between adverse selection costs and size of private debt issues, the variables provide yet another picture. As can be seen in Table 28, companies with high beta and high residual volatility make large private debt issues. The impact of R^2 and analyst forecast dispersion is negative but statistically insignificant. These findings lead me to a conclusion that adverse selection costs do increase the private debt issue size in hot debt months. In the same vein, results in Table 29 provide supporting evidence for accepting the hypothesis that hot debt issuers take more debt in an attempt to utilize the window of opportunity. In case of private debt, the issue size seems to be driven by adverse selection costs. Moreover, these findings, as well as the results for syndicated loans suggest accepting the second hypothesis H2 that the hot debt market phenomenon is more pronounced for private debt issuers.

Table 28. Impact of hot debt month on issue size of private debt issue

*This table reports the results of the regression of issue size, Proceeds/At, on hot market dummy, HOTD, adverse selection costs, ADV controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Variable	*HOTD1*	*HOTD x ADV*	*D/At-1*	*M/Bt-1*	*RE/At-1*	*EBITDA/At-1*	*SIZEt-1*	*PPE/At-1*	*RD/At-1*
ADV1	0.010	0.035**	0.035*	0.008*	0.018***	-0.011	-0.040***	-0.025	0.549*
	(0.57)	(2.10)	(1.30)	(1.29)	(3.36)	(-0.15)	(-10.81)	(-0.85)	(1.51)
ADV2	0.036**	-0.001	0.038*	0.008	0.019***	-0.028	-0.041***	-0.029	0.500*
	(2.08)	(-0.10)	(1.42)	(1.23)	(3.58)	(-0.37)	(-10.91)	(-0.97)	(1.37)
ADV3	0.001	1.292**	0.030	0.008	0.019***	0.000	-0.040***	-0.026	0.465
	(0.06)	(2.20)	(1.12)	(1.16)	(3.54)	(-0.01)	(-10.81)	(-0.86)	(1.28)
ADV4	0.041***	-0.028	0.040*	0.008	0.019***	-0.028	-0.041***	-0.029	0.516*
	(3.45)	(-0.53)	(1.47)	(1.19)	(3.58)	(-0.38)	(-10.93)	(-0.97)	(1.41)

	RDDt-1	*INV/At-1*	*DIV/Et-1*	*Cash/At-1*	*OCONt-1*	*DOCONt-1*	*Cons*	*R2*	*Obs.*
ADV1	-0.016*	0.096	-0.007	0.012	-6.759	0.033*	0.387***	0.290	480
	(-1.38)	(0.91)	(-0.16)	(0.17)	(-0.38)	(1.59)	(10.42)		
ADV2	-0.017*	0.114	-0.015	0.045	-8.196	0.030*	0.392***	0.283	480
	(-1.50)	(1.07)	(-0.35)	(0.62)	(-0.46)	(1.43)	(10.48)		
ADV3	-0.016*	0.089	-0.007	0.034	-8.039	0.029*	0.390***	0.290	480
	(-1.42)	(0.83)	(-0.16)	(0.47)	(-0.46)	(1.39)	(10.53)		
ADV4	-0.017*	0.113	-0.016	0.044	-8.329	0.031*	0.392***	0.284	480
	(-1.43)	(1.06)	(-0.37)	(0.61)	(-0.47)	(1.47)	(10.51)		

6.6. Use of proceeds

To test the forth hypothesis that *the proceeds from hot debt issues are not used for investments i.e. issue decision is not driven by real investment opportunities but mainly determined by market conditions*, I regress the change in leverage and its components on the hot debt dummy and adverse selection cost proxies. For controlling the firm characteristics, I use the same set of control variables as in previous regressions. I expect the sign of the hot debt market dummy (HOTD) and the intersection of hot debt market dummy and adverse selection costs (HOTD x ADV) to have a statistically significant coefficient suggesting that issuing in a hot debt market and the information environment have explanatory power on the changes in leverage and its

components. In particular, the focus is on the change in cash reserves. A positive hot debt market coefficient for the change in cash would mean that firms issue in hot debt market for timing reasons and more than needed the issue proceeds cumulating into cash reserves.

Before proceeding to regression results, summary of mean values of changes in leverage, calculated for each component of leverage, is presented in Table 29. Table 29 also shows the average values for the leverage ratio in issue year. The finding that the leverage increases for hot debt issuers more than for cold debt issuers is not a surprise but a natural consequence of earlier remark that hot debt issues are larger and that hot debt issuers are less leveraged prior to the issue than cold debt issuers. Also the result that the change in retained earnings is positive for hot debt issuers complements the earlier results in Tables 4-11 which show that these firms clearly are more profitable. From the point of view of the timing hypothesis, the increase of 1.4% in the cash reserves of public hot debt issuers and a rise of 9% for private hot debt issuers indicate that proceeds of a hot debt issue are used to accumulate cash reserves instead of to finance investments.

Table 29. Mean values of change in leverage and its components

This table reports the mean values of changes in leverage and its components from pre-issue fiscal year to fiscal year the issue takes place. Detailed definitions of variables are in Appendix A. All variables are expressed as decimal numbers. Hot (cold) issues are issues made within in months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values., ** and *** denote statistical significance at 10%, 5% and 1% level, respectively. Difference between hot and cold issues tested using t-test in means with unequal variances. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

All issues	ΔD/At	e/At	ΔRE/At	ΔCash/At	D/At	*Obs.*
All	0.018	-0.011	-0.007	-0.001	0.566	6389
Hot	0.028	-0.030	0.003	-0.008	0.539	1450
Cold	0.018	-0.007	-0.009	0.000	0.585	2415
Difference	0.010***	-0.023***	0.012***	-0.008***	-0.046***	
t-value	(-2.71)	(5.40)	(-3.05)	(3.61)	(7.17)	
Syndicated loans						
All	0.020	-0.011	-0.008	-0.004	0.545	4048
Hot	0.029	-0.031	-0.016	-0.006	0.533	1581
Cold	0.017	0.001	0.002	0.000	0.560	926
Difference	0.012***	-0.032***	-0.018***	-0.006***	-0.027***	
t-value	(-2.35)	(5.39)	(-3.15)	(2.36)	(3.19)	
Public issues						
All	0.013	-0.015	0.002	0.005	0.604	1527
Hot	0.020	-0.008	-0.012	0.014	0.601	337
Cold	0.007	-0.008	0.001	0.001	0.604	663
Difference	0.013***	0.000	-0.013***	0.013***	-0.003	
t-value	(-2.78)	(-0.05)	(2.40)	(-4.39)	(0.19)	
Private issues						
All	0.020	-0.035	0.015	0.002	0.600	814
Hot	0.009	-0.001	-0.008	0.009	0.607	198
Cold	0.029	-0.086	-0.005	0.000	0.597	282
Difference	-0.020**	0.085**	-0.003	0.009*	0.010	
t-value	(2.25)	(-1.85)	(0.27)	(-1.59)	(-0.60)	

Table 30 presents the summary of the results of regression coefficients for the part of adverse selection costs for the aggregate sample as well as for the three subsamples. Although the impact of the timing of debt issue in a hot debt market is marginal and statistically insignificant in most of the cases, some robust conclusions can be drawn from the summarized results.

In general, it appears that timing the debt issue in a hot market increases the leverage ratio, reduces the net equity issuance, increases retained earnings and decreases cash holdings. As with the previous regressions, the behavior of the three debt types varies. For example, issuing private debt in a hot debt month reduces the leverage ratio, contrary to other two subsamples. Table 10 in Section 6.3. on the characteristics of private debt issuers and Table 22 in Section 6.5. on issue sizes provide some explanation showing that hot private debt issuers exceptionally have higher debt ratios prior to the issue and make smaller issues relative to pre-issue total assets than private debt issuers in cold months.

The most interesting finding regarding the hypotheses is that also the public debt sample provides an exception: while a syndicated loan or a private debt issue in a hot month decreases cash reserves, in case of public debt issuers, a hot debt issue accumulates the cash balance. In the light of Table 29 which shows a 13 %-point larger change of cash reserves for hot debt issuers the finding is not surprising. This is consistent with the hypothesis H4 that the proceeds from hot debt issues are not, at least immediately, used for investments, which is seen as an increase in the cash reserves. Regarding prior studies, Doukas et al. (2011) fail to find a positive relation between hot public debt market and cash reserves.

When it comes to adverse selection costs, the results suggest more strongly accepting the hypothesis H4 than rejecting it. Even though statistical significance is low for R^2 in particular, in overall supporting evidence of the importance of adverse selection costs in the dynamics of leverage can be found. Most importantly, the coefficient for adverse selection costs in column 9 in Table 29 is positive in 11 out of 16 regressions and statistically significant in eight cases, indicating that the proceeds of hot debt issuers with particularly high adverse selection costs go into cash reserves. In other words, firms utilize the favorable window of opportunity to issue debt when information asymmetry and thus costs of equity issue are high even though there was no other reason to take more capital, i.e. actual investment needs.

Another piece of evidence in favor of information asymmetry theory is the negative coefficient of adverse selection costs in regressions on the change in net equity issuance. Similarly to Choe et al. (1993) I find that the high adverse selection costs hinder companies from issuing equity,

especially when the information asymmetry related to equity is measured by stock beta and residual volatility.

Contrary to what hypothesized and prior research (e.g. Doukas et al., 2011), the hot debt market phenomenon barely has explanatory power on the change in the change in leverage ratio. The only signs of that the hot debt issuance causes the issuer's debt ratio to increase are in the sample of public debt issues. The relative indebtedness of private debt issuers appears to decrease as a result of a hot debt issue. For aggregate sample and syndicated loans no statistically significant between hot debt issuance and change in leverage ratio exists. Recalling the pre-issue and issue year characteristics of issuers in Tables 4 and 5 allow to better understand the controversial results: according to the descriptive statistics, public hot debt issuers have significantly less debt in the balance sheet prior to the issue than cold debt issuers, and thus may be willing to efficiently utilize this possible debt capacity in the favorable debt issue time. Private hot debt issuers, in turn, already have high leverage ratio close to 60% in the pre-issue year and are limited to further increase it with the hot debt issue.

A more comprehensive analysis of adverse selection cost measures reveals interesting facts about these proxies. ADV3, or residual volatility, seems to have most explanatory power on the changes in leverage and its components in all of the samples. Also ADV4 performs well in the regressions. The coefficients for these two measures also are in most cases as expected, most importantly in the aggregate and the syndicated loan sample. This finding suggests that residual volatility and analysts' forecast dispersion may be the best proxies to capture the information asymmetry related to equity. The correlations between the adverse selection cost proxies in Table 18 can be interpreted to add to the evidence as the relation between residual volatility and forecast dispersion is positive, relatively high and consistent in all samples.

In addition to regressions on changes in balance sheet items, I also regress the leverage ratio in issue year on the same set of explanatory variables as in other regressions. The results clearly show that only timing a public debt issue in the active debt market has a positive impact on the issuers' debt ratio. However, complementing the earlier results, adverse selection costs have no statistically significant relation to leverage, and if the coefficient is significant at conventional

levels, the sign is not positive and thus against the hypothesis. Contrariwise, timing a private debt issue in the hot debt market reduces leverage. Again, the results concerning adverse selection costs are ambiguous and nothing conclusive can be said about their relation to the leverage of private debt issuers.

Table 30. Selected results of regressions of change in leverage and its components

*This table reports the selected results of the regressions of leverage or its component (ΔD/At, e/At, ΔRE/At, or ΔCash/At in turn) on hot market dummy, HOTD, adverse selection costs, ADV controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	ΔD/At		**e/At**		**ΔRE/At**		**ΔCash/At**		**D/At**		
All issues	*HOTD*	*HOTD x ADV*	*HOTD*	*HOTD x ADV*	*HOTD*	*HOTD x ADV*	*HOTD*	*HOTD x ADV*	*HOTD*	*HOTD x ADV*	*Obs.*
ADV1	0.003	-0.002	0.005	-0.017**	-0.008	0.018***	-0.002	0.000	0.003	-0.002	3865
	(0.42)	(-0.24)	(0.60)	(-2.35)	(-0.95)	(2.50)	(-0.49)	(-0.01)	(0.42)	(-0.24)	
ADV2	0.001	-0.001	-0.011*	0.002	0.015**	0.002	-0.004	-0.001	0.001	-0.001	3865
	(0.08)	(-0.21)	(-1.50)	(0.44)	(2.04)	(0.56)	(-1.13)	(-0.62)	(0.08)	(-0.21)	
ADV3	-0.001	0.183	0.013*	-1.600***	-0.004	0.901**	-0.008**	0.360*	-0.001	0.183	3865
	(-0.16)	(0.41)	(1.41)	(-3.27)	(-0.42)	(1.90)	(-1.91)	(1.58)	(-0.16)	(0.41)	
ADV4	0.001	0.002	-0.014***	0.001	0.012***	-0.005	-0.003**	0.007***	0.001	0.002	3865
	(0.33)	(0.61)	(-3.23)	(0.21)	(2.94)	(-1.22)	(-1.72)	(3.56)	(0.33)	(0.61)	
Syndicated loans											
ADV1	0.010	0.000	-0.004	-0.019**	-0.003	0.017**	0.000	-0.003	0.010	0.000	2507
	(0.88)	(-0.01)	(-0.28)	(-1.89)	(-0.24)	(1.66)	(-0.05)	(-0.73)	(0.88)	(-0.01)	
ADV2	0.008	-0.001	-0.026***	0.000	0.024**	0.005	-0.009**	-0.003	0.008	-0.001	2507
	(0.84)	(-0.30)	(-2.41)	(0.01)	(2.22)	(0.84)	(-1.77)	(-1.11)	(0.84)	(-0.3)	
ADV3	0.008	0.116	0.002	-1.603**	0.002	0.845	-0.010*	0.331	0.008	0.116	2507
	(0.69)	(0.19)	(0.17)	(-2.33)	(0.13)	(1.21)	(-1.64)	(1.07)	(0.69)	(0.19)	
ADV4	0.009**	0.005	-0.026***	0.003	0.019***	-0.012*	-0.006**	0.010***	0.009**	0.005	2507
	(1.70)	(0.69)	(-4.23)	(0.38)	(2.95)	(-1.49)	(-2.14)	(2.91)	(1.70)	(0.69)	
Public issues											
ADV1	0.003	0.003	-0.007*	0.006*	0.004	-0.009***	-0.002	0.019***	0.022***	-0.007	1527
	(0.84)	(0.98)	(-1.54)	(1.48)	(0.99)	(-2.45)	(-0.39)	(3.36)	(2.45)	(-0.80)	
ADV2	0.004**	-0.001	-0.003	-0.001	-0.001	0.001*	0.019***	0.005***	0.012**	-0.004**	1527
	(1.74)	(-0.69)	(-0.82)	(-0.57)	(-0.49)	(1.33)	(6.29)	(3.84)	(2.33)	(-2.00)	
ADV3	0.004	0.052	-0.033***	1.560***	0.029***	-1.654***	0.003	0.525***	0.021***	-0.234	1527
	(1.24)	(0.37)	(-7.41)	(8.75)	(7.30)	(-10.22)	(0.54)	(2.53)	(2.47)	(-0.70)	
ADV4	0.006***	0.000	-0.002	0.001	-0.004*	-0.001	0.014***	0.001	0.016***	0.002	1527
	(2.64)	(-0.54)	(-0.69)	(0.95)	(-1.45)	(-0.57)	(4.89)	(0.46)	(3.38)	(0.47)	
Private issues											
ADV1	-0.006	-0.010	0.005	0.023**	0.002	-0.013	-0.010*	0.017**	-0.006	-0.010	480
	(-0.43)	(-0.78)	(0.36)	(1.67)	(0.09)	(-0.78)	(-1.30)	(2.32)	(-0.43)	(-0.78)	
ADV2	-0.019*	-0.002	0.020*	-0.001	0.000	0.004	0.000	-0.002	-0.019*	-0.002	480
	(-1.39)	(-0.47)	(1.42)	(-0.27)	(0.00)	(0.65)	(-0.03)	(-0.69)	(-1.39)	(-0.47)	
ADV3	-0.007	-0.256	-0.023*	1.621***	0.031**	-1.416***	-0.034***	1.333***	-0.007	-0.256	480
	(-0.43)	(-0.55)	(-1.47)	(3.47)	(1.68)	(-2.53)	(-4.00)	(5.28)	(-0.43)	(-0.55)	
ADV4	-0.020**	0.061*	0.024***	-0.019	-0.004	-0.042	0.004	-0.001	-0.020**	0.061*	480
	(-2.14)	(1.45)	(2.63)	(-0.44)	(-0.40)	(-0.84)	(0.79)	(-0.06)	(-2.14)	(1.45)	

6.6.1. Aggregate sample

Although the focus of this study is on the impact of adverse selection costs on leverage, the regression results for controlling variables are reviewed below to gain a broader understanding of the drivers of leverage. Since this study goes in the path of both the pecking order theory and the timing theory, it is of interest to examine whether more support for these theories can be found.

Tables B.1-B.5 in Appendix B show the detailed results of regressions for the aggregate sample. In a broad scale, the results are varied but some consistency with classic theories of capital structure can be found. Additional support for the timing hypothesis is also visible. Some determinants of leverage also bring more support to the adverse selection cost hypothesis. However, there are some findings that contradict the pecking order theory. In overall, when interpreting the results some caution has to be kept in mind since for all the regressions of change in balance sheet items the model fit is relatively low, although in the same level as in Doukas et al. (2011).

According to the results in Table B.1, firms with high cash reserves increase their leverage ratios. On the other hand, companies limit their equity issuance in hot debt months. These findings can both be interpreted as evidence of the importance of timing in capital structure decisions. It must be noted, however, the negative relation of the M/B ratio to the net equity issuance is strikingly inconsistent with the equity market timing study of Baker and Wurgler (2002) that show that firms issue equity when its valuation is high.

From the point of view of adverse selection costs, certain results in the aggregate sample provide evidence in favor of the pecking order theory. Higher R&D costs, smaller amount of tangible assets and smaller company size have been documented (e.g. Frank and Goyal, 2009; Krishnaswami et al., 1999) to increase adverse selection costs of equity. Consequently, the positive sign of R&D costs and negative coefficient of tangible assets and of size in the regression of change in leverage tell that these determinants related to information asymmetry make firms to increase leverage, which supports the pecking order theory. The signs of the

coefficients of SIZE and PPE/A are the same for the results of the drivers of the change in book equity but they are not statistically significant.

Although the positive sign of cash on the change in leverage supports the timing hypothesis, it conflicts with the pecking order theory according to which firms resort to external financing only when internal funds are insufficient (Myers, 1984). This finding on the cash and also the positive relation of EBITDA to the change in leverage indicate that more profitable companies tend to increase their leverage. These results are similar to earlier literature (e.g. Huang and Ritter, 2009) which provides evidence against the pecking order theory.

Two other interesting findings can be found in Table B.5. First, ownership concentration seems to play a role in capital structure decisions in that company in hands of fewer owners prefers debt financing, as expected, in order to avoid the dilution of ownership in the company. Secondly, adjustment towards a target capital ratio documented e.g. by Opler and Titman (1994), Flannery and Rangan (2006) and Frank and Goyal (2009) is challenged by the finding that pre-issue leverage ratio has a strongly positive impact on the issue year debt ratio.

6.6.2. Subsamples

The results for syndicated loans, public debt issues and private debt issues are presented in Appendix B in Tables B.6-B.10, B.11-B.15 and B.16-B.20, respectively. As with the aggregate sample, the model fit is relatively low for other than the last regressions. In the same vein with previous results, the syndicated loans sample appears to behave in the similar way to the aggregate sample and provide, with some exceptions, evidence of both timing and pecking order of capital structure decisions.

Again, the results for issuers of different debt types vary. Most importantly, the sample of public debt issues provides strong support for the timing hypothesis. The positive and statistically significant coefficient of hot debt market dummy for the change in cash tells that the proceeds of hot public debt issues accumulate cash reserves. Moreover, adverse selection costs appear to have some additional explanatory power in the increase of cash, especially when these costs are measured by residual volatility.

When it comes to private debt issues, the results follow those of other samples. However, one exception to the aggregate and syndicated loan sample is that residual volatility and beta increase book equity, exactly contrary to what hypothesized. What drives this behavior is unclear, especially in light of prior research (Choe et al., 1993) that documents a negative relation between stock price volatility and probability of equity issuance. Contrary to results on issue size in Section 6.5, Tables B.16-B.20 in Appendix B do not yield any supporting evidence for that the hot debt market phenomenon were more visible for the private debt market, as hypothesized.

6.7. Robustness checks

For examining the robustness of the results, I conduct four robustness checks concerning the definition of the hot debt market, control for the market valuation and size of issuers and lastly the investment behavior of issuing companies. Due to limited space, the results from the robustness checks are not reported here but are shortly reviewed in this section.

First, I use the median, instead of the top and bottom 30%, of the monthly detrended 3-month moving average volume to divide the months into hot and cold debt months. This method is similar to Alti (2006) and allows investigating whether the phenomenon is robust to the definition of the hot debt market. In aggregate, the division results to 2,566 hot debt and 3,823 cold debt issues. In syndicated loan sample the issues are divided into 1,581 hot debt and 2,467 cold debt issues, and in the public debt sample into 589 hot debt and 938 cold debt issues. Private hot debt issues count as 336 issues and issues in cold debt months as 478 issues.

In general, using median volume leads to similar findings as with the original method, although the effect of timing in the hot debt market and adverse selection costs on the issue size and use of proceeds appear less strong and statistically less significant. Especially for the private debt issue sample the results turn out poorly statistically significant due to relatively flat debt market overall which the median method even more emphasizes.

For the determinants of the hot debt market, I find results similar to original regressions. With the median method the impact of the explanatory variables is less strong for syndicated loans and stronger for public debt issues. The effect of adverse selection costs, negative for public and private debt issues and positive for syndicated loans, is more pronounced for all samples. In line with Section 6.5., I remark that the issue size has been larger in hot debt than cold debt months and is driven by profitability, pre-issue leverage ratio, decrease in company size and also investment rate while adverse selection costs do not seem to have explanatory power on the issue size. Examination of the post-issue dynamics of the leverage reveals that public hot debt issues have a significantly increasing impact on cash balance, although with the median method the magnitude is smaller as the hot debt months now include also the less peaked months.

In overall, also using the median method for the definition of the hot debt market it seems that adverse selection costs are to a certain point related to debt waves. However, it can be concluded that the median method causes the idea of the hot debt market to "water down" since all the months with issue volume higher than median are considered hot debt months. Consequently, in these regressions the impact of adverse selection costs appears less statistically significant than in the original regressions. This suggests that it is mainly in the unusually active debt issue market that the adverse selection costs actually serve as a debt issue driver.

As the second robustness check I investigate the independence of the results on the market valuation of firms. I divide each sample in high M/B and low M/B portfolios based on whether companies' market-to-book value is above or equal or below the sample mean M/B at the pre-issue year end. I then run the regressions for the resulted eight subsamples.

Although the M/B portfolios are relatively small and consequently the statistical significance low for private debt issuers in particular, I find that the hot debt market phenomenon is more pronounced for high M/B portfolio than low M/B portfolio. In their robustness check analysis, Doukas et al. (2011) find that the hot debt market is more observable for low M/B than high M/B companies, which is interpreted as that high-valued firms are more prone to using overvalued equity in financing that debt issues. However, my results lead to a contrary analysis. According to the regression results, timing a debt issue in a hot debt market has more impact on the issue size and the change in the leverage ratio for high M/B firms than for low M/B firms. Also the occurrence of the hot debt market is more dependent of adverse selection costs in case of high-valued companies. In particular, the difference is clear for the change in equity indicating that companies with high market valuation avoid issuing equity in the hot debt market. Moreover, the adverse selection costs seem to play a bigger role for the issue size and use of proceeds of high-valued companies. In light of the earlier discussion on the use of M/B as adverse selection cost proxy, the results suggest that high-valued firms suffer from high adverse selection costs, and thus refrain from issuing equity, as well as utilize the window of opportunity by issuing more debt in the hot debt market.

In the similar manner as for the market valuation, I examine the dependence of hot debt market timing on company size. In this third robustness check, large-small size portfolios are built using the mean issue-year sales figure as a divider. The regression results show that hot debt market drives the issue size of small firms more than that of large firms. No differences can be found in the strength of the impact of adverse selection costs. This observation is done for the portfolios of the aggregate sample. For the large-small size portfolios of syndicated loans, public and private debt issues, however, the regressions do not yield any convenient results the statistical significances being weak.

When it comes to the changes in the balance sheet after the debt issue, I find that the impact of a hot debt issue on the leverage ratio or its component in most cases is stronger when the company is large in size. For example, the leverage ratio increases in case of public debt issue and decreases after private debt issue more due to a hot debt issue if the company is large. Also the increase in cash balances after a public debt issue is more pronounced for large companies

although smaller companies make relatively larger issues as shown in Section 6.5. Moreover, smaller firms also invest larger proportion relative to total assets in the pre-issue year (results not reported here), and thus it seems that smaller companies use the larger funds from debt issues for investments than accumulating cash reserves, which indicates that the pure timing motivation is less important for these smaller companies making public debt issues. For the portfolios of syndicated loan issuers the negative impact of hot debt timing and adverse selection costs on cash holdings is stronger for smaller firms. To sum, the importance of timing appears to a certain point vary according to the firm size. As discussed in Section 6.3., the hot debt issuers also tend to be smaller in size than cold debt issuers. The results from the robustness check, however, show that mostly the phenomenon is independent of company size.

As the fourth and last robustness check and to further examine the investment behavior of issuers, the hot debt month dummy, adverse selection cost proxies and firm characteristic control variables are regressed on the change in the tangible assets ($\Delta PPE/A_t$) in accordance with the equation in Section 5.5. In overall, the change in tangible assets from pre-issue year to issue year appears small being on average -4.1%, and thus the results are only poorly significant and model fit low for the most part. Moreover, the coefficients of hot debt month and adverse selection costs vary from positive to negative between samples similarly to regressions on other components of leverage in Section 6.6. Also correspondingly to original regressions, the change in tangible assets of public debt issuers appears to be most driven by the hot debt month. However, in overall the original regressions in the study seem to give a better and more conclusive picture of the investment behavior of companies than the change in $PPE/A_{t,}$ even though it initially were more intuitive.

7. Summary and conclusions

This study examines the hot debt market, or the clustering of debt issue volume in certain periods of time, and the factors behind this phenomenon. In particular, by taking the perspective of the pecking order theory and following a recent study by Doukas et al. (2011), I investigate whether the active debt issue market is driven by adverse selection costs of equity. I hypothesize that when the time-varying information asymmetry related to a company is severe and consequently the adverse selection costs of issuing equity high, the firm takes on to issue debt in order the utilize the favorable window of opportunity even when no actual need for additional capital, i.e. real investment opportunities, existed. For the empirical analysis I use debt issue data of syndicated loans, public and private debt issues of non-financial companies from 1999-2009 in the U.S. The comprehensive data of the debt market allow me to further examine the behavior of different debt issue types and to contribute to the still limited literature on the drivers of various debt markets. Building on the pecking order theory and prior literature (e.g. Krishnaswami et al., 1999), I further test whether the hot market phenomenon is more pronounced for private debt.

For measuring the adverse selection costs I use four proxies, three of them (stock price beta, stock price synchronicity and residual volatility of stock price) directly related to firm performance and one indirect measure (analysts' earnings forecast dispersion). All the measures are widely used in prior literature on adverse selection costs. The choice of multiple proxies is motivated by the ambiguous nature of information asymmetry of equity and the fact that no established benchmark measure of adverse selection costs exists but the measures instead vary from market microstructure-based to balance sheet figures.

7.1. Main findings

I find that the aggregate issue volume strongly clusters in years 2005-2007 and is in particular driven by the increase in the issue volume of syndicated loans. The hot debt months, or the months ranked in the top 30% issue volume, consequently occur in these years for the aggregate sample and the subsample of syndicated loans. Investigation of two other subsamples, namely

public and private debt issues, reveals that these markets have behaved in significantly other way in 1999-2009 having their hot debt months in 2001-2002 and 2006-2009 for public debt issues and 2000-2001, 2003-2004 and 2006 for private debt. Concerning all the three debt types, I also find that over the year firms prefer issuing debt close after disclosing financial information from the previous year to further minimize the information asymmetry (Dierkens, 1991) even though in the case of debt this were not as critical as for equity issues.

Regarding the characteristics of hot debt issuers, I show that the debt issue peaks are not driven by certain industries but the phenomenon is independent of issuers' sector similarly to findings by Doukas et al. (2011) and Alti (2006). I do not either find any difference in the credit ratings between issuers of different types of debt nor between hot and cold debt issuers, and thus, in contrast to earlier literature (e.g. Denis and Mihov, 2003), I fail to explain the increase in volume of certain debt type by the credit quality of a firm.

The issuer firms, however, differ from each other in their other characteristics. On average, firms issuing in hot months have less debt, are higher valued and more profitable, have less tangible assets, invest less and have more cash in the year prior to the issue. Lower investment rate and higher cash reserves indicate that no actual need for additional capital exists, which I interpret to give confirming evidence for the timing hypothesis. Larger intangible assets and high equity market valuation, in turn, speak for high adverse selection costs (Krishnaswami et al., 1999; Hovakimian, 2006). What is more, these characteristics are more pronounced in the sample of syndicated loan issues which I conclude to support the earlier documented pecking order of debt from private to public securities (Krishnaswami et al., 1999; Denis and Mihov, 2003). In the same vein, the hot debt market phenomenon in the syndicated loan market is emphasized by the difference in company size; of the different debt issuers syndicated loan issuers appear to be smallest based on pre-issue year sales and clearly make the largest issues relative to total assets.

The hypotheses of the study and main findings are summarized in Figure 10. Consistent with the hypothesis H1 that *hot debt issuance occurs when firm's adverse selection costs are high*, I find that the adverse selection costs of hot debt issuers have been higher than those of cold debt issuers, on average. In particular, the difference is observable for public debt issuers, which leads

to similar findings as in Doukas et al. (2011). Confirming the hypothesis on the more observable private hot debt market, adverse selection costs of syndicated loan issuers are the highest of all the subsamples. Unfortunately, as is the case in earlier literature, the four proxies of adverse selection cost yield controversial results at times and the presented correlations show that actually these measures only poorly capture any "universal" adverse selection costs. The overall statistical significances and signs of adverse selection variables allow, however, drawing conclusions in certain direction in most of the cases.

When examining the determinants behind debt issue clusters, I find that in addition to higher adverse selection costs, firms are driven to the active debt issue market for favorable debt market conditions. Most importantly for the focus of the study, on the basis of stock beta and stock price synchronicity, the results allow me to accept the hypothesis of the dependence of debt issue clusters on information asymmetry in aggregate and for the syndicated loan market. In the public and private debt market, contrary to what Doukas et al. (2011) report, adverse selection costs do not seem to have the expected positive impact on the occurrence of hot debt months.

The importance of lower interest rates and risk spreads provides supporting evidence for the naïve timing strategy of companies earlier documented by e.g. Barry et al. (2008). While the determinants of hot debt months of syndicated loans and public debt issues confirm earlier evidence of counter-cyclicality of debt issuance (Choe et al., 1993), the private debt market appears to peak in expansionary periods in the economy, and also increase in issue volume in times of high equity market returns. Without plunging further in the analysis, these results suggest that the market of private placements of debt actually behaves more equity-like and thus is not as clear substitute for the public debt as some earlier research (e.g. Denis and Mihov, 2003; Gomes and Phillips, 2007, working paper) suggests.

According to the results, it seems that the *debt market timing to time-varying adverse selection costs is more pronounced for private debt issuance* as the hypothesis H2 argues. Syndicated loans, that basically are private debt issued to financial institutions, provide the most convincing evidence for this. I find that the adverse selection costs are the highest for both hot and cold syndicated loan issuers of all the subsamples. Moreover, evidencing the timing attempts, I

document that the hot syndicated loan issuers make significantly larger issues and issue at considerably longer maturities than issuers in other times. For the sample of private debt issues, I find that the impact of hot debt market on the issue size is significant, which further supports the hypothesis H2.

The massive volume of syndicated loans and the unexpected behavior in this market of relationship-based lending does, in fact, support the overall theory of this study on the importance of adverse selection costs as a debt issue driver. The surge of private debt and consequently the low levels of corporate bond issue volume suggest that companies have relied more on this type of relationship banking partially due to its information-safety. In other words, adverse selection costs seem to have affected companies' financing decision between not only equity and debt but also between different debt types in the line of the pecking order theory and earlier studies such as Krishnaswami et al (1999). The fall of the private debt market conflicts with this explanation, but the private placement market has distinct characteristics such as limited issue size and relative complexity of arrangement. Thus, even though private debt might appear as a preferred instrument to corporate bond due its information-safety, it cannot be considered as a real alternative to public issuance, as earlier noted. The sudden crash of the syndicated loan market also challenges the explanation on the pecking order of debt instruments but it is more probably due to radically decreased supply that has dried up amid collapses of banks, uncertainty related to financial institutions as a whole and tightened regulation than a dramatic change in adverse selection costs of equity.

Regarding the hypothesis H3 that *hot debt issuers issue more debt than cold debt issuers for utilizing the window of opportunity,* I do find that the issue size is larger for hot debt issuers than for cold debt issuers the average difference being 4.1 %-points in the aggregate sample. This complements the findings on the hot market effect on issue size in Alti (2006) and Doukas et al. (2011). In line with earlier studies such as Denis and Mihov (2003) and Arena (2011), I document larger issue sizes for private (private and syndicated loans) than public debt. However, higher adverse selection costs do not seem to encourage firms to make larger debt issues in hot debt months on average. For public and private debt issues information asymmetry appears to

have some explanatory power on the issue size. Mostly, however, it is other factors, such as profitability, pre-issue leverage ratio and small firm size that increase the issue size.

For the hypothesis H4, *the proceeds from hot debt issues are not used for investments i.e. issue decision is not driven by real investment opportunities but mainly determined by market conditions*, I investigate the impact of hot debt month and adverse selection costs on the dynamics of leverage and its components. I find that a debt issue in a hot debt market increases the leverage ratio, reduces the net equity issuance, increases retained earnings and decreases cash holdings. The results for the aggregate sample and also for syndicated loans thus suggest rejecting the forth hypothesis. However, in case of public and private debt issues, a hot debt issue accumulates cash reserves providing evidence in favor of the hypothesis. The regression results confirm that the impact of hot debt issuance on the issuer's balance sheet does not tell about timing attempts, in aggregate, even though in case of public and private debt issues the regressions yield results consistent with the hypothesis. Against the research question, the statistical significance of the impact of adverse selection costs in the use of proceeds appears weak.

Figure 10. Summary of hypotheses and main findings

This figure presents the summary of hypotheses used in the study as well as the main findings as regards to the hypotheses.

H1: *Hot debt issuance occurs when firm's adverse selection costs are high* ✓ Adverse selection costs of hot debt issuers are higher than cold debt issuers on average ✓ Adverse selection costs are one driver of debt clusters in the syndicated loan market - Favorable debt market conditions are more important determinants of hot debt market - Adverse selection costs low in an active private debt market	*H2: Debt market timing to time-varying adverse selection costs is more pronounced for private debt issuance* ✓ Adverse selection costs are highest for hot syndicate loan issuers ✓ Syndicated loan issuers utilize the window of opportunity with longer maturity and larger issue size in hot debt months ✓ Hot debt market effect is significant for private debt issue size - Adverse selection costs only poorly explain occurrence of hot private debt market
H3: Hot debt issuers issue more debt than cold debt issuers for utilizing the window of opportunity ✓ Issue size is larger in a hot debt month for all debt types - Explanatory power of e.g. low pre-issue leverage for the issue size is stronger than that of adverse selection costs	*H4: The proceeds from hot debt issues are not used for investments i.e. the issue is not driven by real investment opportunities* ✓ Pre-issue cash is higher and investment rates lower for hot debt issuers ✓ Timing affects the accumulation of cash reserves of public debt issuers - Impact of adverse selection costs is varying and statistically weak in aggregate

7.2. Critical note on the results

In overall, based on this study it appears that timing considerations do play a role in firms' capital structure decisions and that especially the unusual behavior of syndicated loan market seems to have been partially affected by the asymmetrical information between investors and managers. The relation between adverse selection costs and debt market timing is varying in magnitude and also in direction for different debt types, but perceptible and positive for syndicated loans. Nevertheless, as pointed out in Section 1.3. as one limitation of the study, finding reliable evidence of this relation still suffers from the ambiguous nature of information asymmetry and the lack of valid measures to proxy for adverse selection costs of equity. This clearly challenges the interpretation of the results of also this study as the measures are known to be able to capture the phenomenon far from perfectly and each from a slightly different angle.

Similarly, when drawing conclusions about drivers of debt issue clusters it must be kept in mind that using regressions does allow examining the relative importance of certain factors behind a phenomenon but in the same time suffers from extreme simplification. There may be factors that are difficult to control and include in models but which yet may have significant explanatory power. As Bayless and Chaplinsky (1996) note in their study on equity market timing, herding and fad-based behavior provide a partial explanation for the increased volume in hot periods and these basically unidentified determinants of issue volume result in hot and cold issue markets being defined with some noise. As earlier discussed, especially the case for syndicated loans with an exceptionally strong rise (and later fall) in volume suggests that in addition to factors addressed in this study there are forces behind this phenomenon that may be related to this kind of herding, either on the demand or supply side.

7.3. Practical implications and suggestions for future research

Motivated by the discussion in the previous section, one apparent suggestion for future researchers is to attempt to model information asymmetry more accurately, and perhaps test the hypotheses of this study with more sophisticated measures of adverse selection costs. With potentially more accurate proxies, another interesting topic would be to examine how temporal variation of information asymmetry affects the financing decisions of a firm and whether a strong increase in information asymmetry on a level of one firm, or the deviation of adverse selection costs from their "normal" levels spurs the company to issue debt.

Apart from the theme of information asymmetry, one of the most interesting results in this study is the significantly divergent behavior of different debt markets. The correlation between the issue activity of syndicated loan, public debt and private debt was found hardly positive, and even periods of negative relation were discovered. Consequently, it is of interest of future research to further study the drivers of different debt markets. Although some research on these issues can be found from recent years (e.g. Boot and Thakor, 2000; Denis and Mihov, 2003; Altunbas et al., 2010), space for additional research still exists especially in the field of syndicated loans which undeniably has been one of the most important sources of debt financing for non-financial firms in the beginning of the 21st century. Expanding the sample to cover also the traditional bank loans would allow examining whether the syndicated loans have, for some reason, emerged as even more attractive means of capital raising than traditional bank borrowing and why. On the other hand, interesting would be to analyze whether the slow decay of the market of private debt placements in the last ten years is a result of weakening interest from the part of private lenders or is the reason in poor motivation of private borrowers.

Regarding the implications for practice, the most important contribution of the study is the broadened understanding of the drivers of the debt issue market. This is not a trivial issue amid the globally increasing importance of debt financing. The finding that companies are prone to opportunistic behavior regarding the timing of the issue and the choice of debt type gives debt investors an improved insight into the market. For example, the results indicate that a relatively large supply of debt issues, of syndicated loans in particular, should be expected in a counter-

cyclical (and high information asymmetry) period in the economy, which may pull down debt prices. The results also benefit equity investors. As the adverse selection costs were found to be high in the hot syndicated loan market, at that time investors should with caution invest in the shares of these issuers potentially subject to mispricing. Whether, in money terms, it actually is profitable for companies to issue in a hot debt market would require analyzing the prices paid for debt or the development of company value of hot debt issuers, an issue which is left for future research to examine.

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APPENDIX A.

Table A.1. Definition of adverse selection cost and macroeconomic variables used in regressions

This table presents the detailed definitions of adverse selection cost and macroeconomic variables used in regressions.

HOT	Hot-debt month dummy	Month ranked in top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 US dollars. Dummy takes value 1(0) if the issue made in hot (cold) month.
ADV1	Stock beta	Beta coefficient from the market model regressing issuing company's stock price on the equity index of S&P 500. The model is calculated on daily stock and index prices from 12 months prior to the issue
ADV2	Stock price synchronicity	R2 from the market model regressing issuing company's stock price on the equity index of S&P 500. The model is calculated on daily stock and index prices from 12 months prior to the issue
ADV3	Residual volatility	Volatility of error terms from the market model regressing issuing company's stock price on the equity index of S&P 500. The model is calculated on daily stock and index prices from 12 months prior to the issue
ADV4	Analysts' forecast dispersion	Standard deviation of analysts' EPS forecasts previous fiscal quarter prior to the issue divided by absolute value of median forecast
Rst-π	Real short-term interest rate	US Treasury 3-month bill rate minus actual inflation rate based on the change in US Consumer Price Index (All Urban Items)
Rlt-Rst	Term spread	US Treasury 10-year bill rate minus US Treasury 3-month bill rate
Rct-Rlt	Risk spread	Moody's Seasoned Baa corporate bond yield minus US Treasury 10-year bill rate
RS&P500	Equity market return	Monthly return on the S&P 500 index
ΔP/E	Change in price-to-earnings	Monthly change in the price-to-earnings ratio of the S&P 500 index

Table A.2. Definition of firm-specific variables used in regressions

This table presents the detailed definitions of firm-specific variables used in regressions.

D/At-1	Pre-issue debt ratio	Book debt (total liabilities + preferred stock - deferred tax - convertible debt) over total assets in the end of fiscal year prior to issue year (t-1)
M/Bt-1	Pre-issue market-to-book ratio	Book debt and market value of equity over total assets in the end of fiscal year prior to issue year (t-1)
RE/At-1	Pre-issue retained earnings	Retained earnings over total assets in the end of fiscal year prior to issue year (t-1)
EBITDA/At-1	Pre-issue profitability	Earnings before interest, taxes, depreciation and amortization over total assets in fiscal year prior to issue year (t-1)
SIZEt-1	Pre-issue sales	Natural logarithm of total sales in fiscal year prior to issue year (t-1)
PPE/At-1	Pre-issue tangible assets	Property, plant and equipment over total assets in the end of fiscal year prior to issue year (t-1)
RD/At-1	Pre-issue R&D expenditure	Expenses on research and development over total assets in fiscal year prior to issue year (t-1). The variable takes value 0 if the value was missing
RDDt-1	Pre-issue R&D dummy	Dummy variable for expenses on research and development in fiscal year prior to issue year (t-1). The dummy takes value 1 (0) if the value was not reported
INV/At-1	Pre-issue investments	Capital expenditure over total assets in fiscal year prior to issue year (t-1). The variable takes value 0 if the value was missing
DIV/Et-1	Pre-issue dividend payout	Common dividends paid over book equity in fiscal year prior to issue year (t-1)
Cash/At-1	Pre-issue cash reserves	Free cash reserves paid over book equity in fiscal year prior to issue year (t-1)
OCONt-1	Pre-issue ownership concentration	Number of common shareholders over number of shares in fiscal year prior to issue year
DOCONt-1	Pre-issue ownership concentration dummy	Dummy variable for ownership concentration in fiscal year prior to issue year (t-1). The dummy takes value 1 (0) if the value was not reported
D/At	Issue-year debt ratio	Book debt (total liabilities + preferred stock - deferred tax - convertible debt) over total assets in the end of issue year (t)
M/Bt	Issue-year market-to-book ratio	Book debt and market value of equity over total assets in the end of issue year (t)
RE/At	Issue-year retained earnings	Retained earnings over total assets in the end of issue year (t)
EBITDA/At	Issue-year profitability	Earnings before interest, taxes, depreciation and amortization over total assets in issue year (t)
SIZEt	Issue-year sales	Natural logarithm of total sales in issue year (t)
PPE/At	Issue-year tangible assets	Property, plant and equipment over total assets in the end of issue year (t)
RD/At	Issue-year R&D expenditure	Expenses on research and development over total assets in issue year (t). The variable takes value 0 if the value was missing
RDDt	Issue-year R&D dummy	Dummy variable for expenses on research and development in issue year (t). The dummy takes value 1 (0) if the value was not reported
INV/At	Issue-year investments	Capital expenditure over total assets in issue year (t). The variable takes value 0 if the value was missing
DIV/Et	Issue-year dividend payout	Common dividends paid over book equity in issue year (t)
Cash/At	Issue-year cash reserves	Free cash reserves paid over book equity in issue year (t)
OCONt	Issue-year ownership concentration	Number of common shareholders over number of shares in issue year
DOCONt	Issue-year ownership concentration dummy	Dummy variable for ownership concentration in issue year (t). The dummy takes value 1 (0) if the value was not reported

APPENDIX B.

Table B.1. Impact of hot debt market timing on change in leverage ratio in aggregate sample

*This table reports the results of the regressions of change in leverage ratio ΔD/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Variable	*HOTD*	*HOTD x ADV*	*D/At-1*	*M/Bt-1*	*RE/At-1*	*EBITDA/At-1*	*SIZEt-1*	*PPE/At-1*	*RD/At-1*
ADV1	0.003	-0.002	-0.155***	-0.000	-0.006**	-0.098***	-0.003**	-0.013*	0.192***
	(0.42)	(-0.24)	(-15.73)	(-0.26)	(-1.71)	(-3.75)	(-2.20)	(-1.37)	(2.93)
ADV2	0.001	-0.001	-0.155***	-0.000	-0.006**	-0.096***	-0.003**	-0.013*	0.193***
	(0.08)	(-0.21)	(-15.73)	(-0.25)	(-1.69)	(-3.77)	(-2.12)	(-1.35)	(2.95)
ADV3	-0.001	0.183	-0.155***	-0.00	-0.006*	-0.097***	-0.003**	-0.013*	0.194***
	(-0.16)	(0.41)	(-15.74)	(-0.24)	(-1.65)	(-3.78)	(-2.02)	(-1.34)	(2.96)
ADV4	0.001	0.002	-0.155***	-0.000	-0.006**	-0.096***	-0.003**	-0.013*	0.192***
	(0.33)	(0.61)	(-15.74)	(-0.25)	(-1.69)	(3.73)	(-2.17)	(-1.36)	(2.94)

	RDDt-1	*INV/At-1*	*DIV/Et-1*	*Cash/At-1*	*OCONt-1*	*DOCONt-1*	*Cons*	*R2*	*Obs.*
ADV1	0.004	0.044*	0.03***	0.068***	0.110*	0.012**	0.134***	0.102	3865
	(1.03)	(1.42)	(2.70)	(3.11)	(1.41)	(1.67)	(11.34)		
ADV2	0.004	0.043*	0.03***	0.068***	0.110*	0.0112**	0.133***	0.102	3865
	(1.04)	(1.40)	(2.70)	(3.10)	(1.40)	(1.67)	(11.20)		
ADV3	0.004	0.043*	0.03***	0.067***	0.109*	0.012**	0.133***	0.102	3865
	(1.06)	(1.39)	(2.71)	(3.08)	(1.40)	(1.68)	(11.05)		
ADV4	0.004	0.043*	0.03***	0.068***	0.111*	0.002*	0.133***	0.103	3865
	(1.04)	(1.40)	(2.70)	(3.11)	(1.41)	(1.65)	(11.32)		

Table B.2. Impact of hot debt market timing on change in net equity issuance in aggregate sample

*This table reports the results of the regressions of change in net equity issuance e/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Variable	*HOTD*	*HOTD x ADV*	*D/At-1*	*M/Bt-1*	*RE/At-1*	*EBITDA/At-1*	*SIZEt-1*	*PPE/At-1*	*RD/At-1*
ADV1	0.005	-0.017**	0.104***	-0.008***	0.023***	-0.171***	-0.001	-0.005	-0.075
	(0.60)	(-2.35)	(9.56)	(-4.28)	(5.96)	(-6.00)	(-0.67)	(-0.42)	(-1.03)
ADV2	-0.011*	0.002	0.105***	-0.008***	0.023***	-0.174***	-0.001	-0.004	-0.068
	(-1.50)	(0.44)	(9.57)	(-4.19)	(6.00)	(-6.13)	(-0.57)	(-0.41)	(-0.94)
ADV3	0.013*	-1.600***	0.106***	-0.008***	0.022***	-0.171***	-0.002	-0.006	-0.080
	(1.41)	(-3.27)	(9.69)	(-4.27)	(5.62)	(-6.02)	(-1.27)	(-0.55)	(-1.11)
ADV4	-0.014***	0.001	0.104***	-0.008***	0.024***	-0.174***	-0.001	-0.004	-0.068
	(-3.23)	(0.21)	(9.55)	(-4.19)	(6.03)	(-6.11)	(-0.49)	(-0.38)	(-0.94)

	RDDt-1	*INV/At-1*	*DIV/Et-1*	*Cash/At-1*	*OCONt-1*	*DOCONt-1*	*Cons*	*R2*	*Obs.*
ADV1	-0.012***	0.144***	-0.008	0.010	-0.188**	-0.004	-0.027**	0.069	3865
	(-2.64)	(4.19)	(-0.66)	(0.42)	(-2.17)	(-0.50)	(-2.10)		
ADV2	-0.012***	0.143***	-0.007	0.006	-0.185**	-0.004	-0.028**	0.067	3865
	(-2.55)	(4.16)	(-0.58)	(0.26)	(-2.13)	(-0.47)	(-2.15)		
ADV3	-0.012***	0.148***	-0.008	0.011	-0.178**	-0.004	-0.021*	0.070	3865
	(-2.70)	(4.33)	(-0.66)	(0.44)	(-2.05)	(-0.49)	(-1.56)		
ADV4	-0.012***	0.142***	-0.007	0.007	-0.186**	-0.004	-0.029**	0.067	3865
	(-2.56)	(4.14)	(-0.59)	(0.27)	(-2.14)	(-0.49)	(-2.24)		

Table B.3. Impact of hot debt market timing on change in retained earnings in aggregate sample

*This table reports the results of the regressions of change in retained earnings ΔRE/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Variable	*HOTD1*	*HOTD x ADV*	*D/At-1*	*M/Bt-1*	*RE/At-1*	*EBITDA/At-1*	*SIZEt-1*	*PPE/At-1*	*RD/At-1*
ADV1	-0.008	0.018***	0.044***	0.008***	-0.029***	0.192***	0.002	0.026***	0.104*
	(-0.95)	(2.50)	(4.15)	(4.46)	(-7.65)	(6.98)	(1.24)	(2.48)	(1.48)
ADV2	0.015**	0.002	0.044***	0.008***	-0.029***	0.196***	0.001	0.025***	0.096*
	(2.04)	(0.56)	(4.16)	(4.37)	(-7.74)	(7.12)	(0.95)	(2.40)	(1.36)
ADV3	-0.004	0.901**	0.043***	0.008***	-0.028***	0.194***	0.002*	0.026***	0.103*
	(-0.42)	(1.90)	(4.07)	(4.41)	(-7.45)	(7.06)	(1.49)	(2.53)	(1.47)
ADV4	0.012***	-0.005	0.044***	0.008***	-0.029***	0.194***	0.001	0.025***	0.097*
	(2.94)	(-1.22)	(4.18)	(4.35)	(-7.74)	(7.04)	(1.02)	(2.42)	(1.39)

	RDDt-1	*INV/At-1*	*DIV/Et-1*	*Cash/At-1*	*OCONt-1*	*DOCONt-1*	*Cons*	*R2*	*Obs.*
ADV1	0.009**	-0.188***	-0.013	-0.042**	0.054	-0.011*	-0.081***	0.054	3865
	(2.12)	(-5.68)	(-1.14)	(-1.79)	(0.64)	(-1.43)	(-6.40)		
ADV2	0.009**	-0.186***	-0.014	-0.038**	0.053	-0.011**	-0.078***	0.053	3865
	(2.04)	(-5.61)	(-1.21)	(-1.63)	(0.64)	(-1.43)	(-6.11)		
ADV3	0.009**	-0.190***	-0.014	-0.040**	0.047	-0.011*	-0.084***	0.054	3865
	(2.10)	(-5.73)	(-1.18)	(-1.72)	(0.57)	(-1.44)	(-6.51)		
ADV4	0.009**	-0.186***	-0.014	-0.038*	0.052	-0.011*	-0.078***	0.053	3865
	(2.03)	(-5.60)	(-1.21)	(-1.64)	(0.62)	(-1.39)	(-6.22)		

Table B.4. Impact of hot debt market timing on change in cash reserves in aggregate sample

*This table reports the results of the regressions of change in cash reserves ΔCash/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Variable	*HOTD*	*HOTD x ADV*	*D/At-1*	*M/Bt-1*	*RE/At-1*	*EBITDA/At-1*	*SIZEt-1*	*PPE/At-1*	*RD/At-1*
ADV1	-0.002	0.000	0.010**	-0.001	0.007***	-0.030**	0.002***	-0.019***	0.361***
	(-0.49)	(-0.01)	(1.99)	(-0.58)	(4.14)	(-2.3)	(3.19)	(-3.81)	(10.69)
ADV2	-0.004	-0.001	0.010**	-0.001	0.008***	-0.030**	0.002***	-0.019***	0.361***
	(-1.13)	(-0.62)	(1.97)	(-0.58)	(4.16)	(-2.3)	(3.26)	(-3.77)	(10.71)
ADV3	-0.008**	0.360*	0.010**	0.000	0.008***	-0.031***	0.002***	-0.019***	0.364***
	(-1.91)	(1.58)	(1.93)	(-0.55)	(4.29)	(-2.36)	(3.49)	(-3.73)	(10.77)
ADV4	-0.003**	0.007***	0.010**	0.000	0.008***	-0.028**	0.002***	-0.019***	0.359***
	(-1.72)	(3.56)	(1.89)	(-0.53)	(4.2)	(-2.1)	(3.31)	(-3.77)	(10.66)

	RDDt-1	*INV/At-1*	*DIV/Et-1*	*Cash/At-1*	*OCONt-1*	*DOCONt-1*	*Cons*	*R2*	*Obs.*
ADV1	0.002	0.042***	-0.008*	-0.322***	-0.061*	-0.008**	0.003	0.235	3865
	(0.76)	(2.61)	(-1.38)	(-28.55)	(-1.5)	(-2.07)	(0.56)		
ADV2	0.002	0.041***	-0.008*	-0.322***	-0.061*	-0.008**	0.003	0.236	3865
	(0.74)	(2.58)	(-1.39)	(-28.6)	(-1.52)	(-2.08)	(0.46)		
ADV3	0.002	0.040***	-0.008*	-0.323***	-0.062*	-0.008**	0.002	0.236	3865
	(0.82)	(2.52)	(-1.35)	(-28.66)	(-1.55)	(-2.06)	(0.24)		
ADV4	0.002	0.040***	-0.008*	-0.322***	-0.060*	-0.008**	0.003	0.238	3865
	(0.75)	(2.52)	(-1.4)	(-28.63)	(-1.5)	(-2.23)	(0.45)		

Table B.5. Impact of hot debt market timing on issue-year leverage ratio in aggregate sample

*This table reports the results of the regressions of issue-year leverage ratio D/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Variable	*HOTD*	*HOTD x ADV*	*D/At-1*	*M/Bt-1*	*RE/At-1*	*EBITDA/At-1*	*SIZEt-1*	*PPE/At-1*	*RD/At-1*
ADV1	0.003	-0.002	0.845***	0.000	-0.006**	-0.096***	-0.003**	-0.013*	0.192***
	(0.42)	(-0.24)	(85.76)	(-0.26)	(-1.71)	(-3.75)	(-2.2)	(-1.37)	(2.93)
ADV2	0.001	-0.001	0.845***	0.000	-0.006**	-0.096***	-0.003**	-0.013*	0.193***
	(0.08)	(-0.21)	(85.73)	(-0.25)	(-1.69)	(-3.77)	(-2.12)	(-1.35)	(2.95)
ADV3	-0.001	0.183	0.845***	0.000	-0.006*	-0.100***	-0.003**	-0.013*	0.194***
	(-0.16)	(0.41)	(85.68)	(-0.24)	(-1.64)	(-3.78)	(-2.02)	(-1.34)	(2.96)
ADV4	0.001	0.002	0.845***	0.000	-0.006**	-0.100***	-0.003*	-0.013*	0.192***
	(0.33)	(0.61)	(85.71)	(-0.25)	(-1.69)	(-3.73)	(-2.17)	(-1.36)	(2.94)

	RDDt-1	*INV/At-1*	*DIV/Et-1*	*Cash/At-1*	*OCONt-1*	*DOCONt-1*	*Cons*	*R2*	*Obs.*
ADV1	0.004	0.044*	0.030***	0.068***	0.110*	0.012**	0.134***	0.700	3865
	(1.03)	(1.42)	(2.7)	(3.11)	(1.41)	(1.68)	(11.34)		
ADV2	0.004	0.043*	0.030***	0.0678***	0.110*	0.012**	0.133***	0.700	3865
	(1.04)	(1.4)	(2.7)	(3.1)	(1.4)	(1.67)	(11.2)		
ADV3	0.004	0.043*	0.030***	0.067***	0.109*	0.012**	0.133***	0.700	3865
	(1.06)	(1.39)	(2.72)	(3.07)	(1.4)	(1.68)	(11.05)		
ADV4	0.004	0.043*	0.030***	0.068***	0.110*	0.012*	0.133***	0.700	3865
	(1.04)	(1.40)	(2.70)	(3.10)	(1.41)	(1.65)	(11.32)		

Table B.6. Impact of hot debt market timing on change in leverage ratio in the sample of syndicated loans

*This table reports the results of the regressions of change in leverage ratio ΔD/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD x ADV	D/At-1	M/Bt-1	RE/At-1	BITDA/At-	SIZEt-1	PPE/At-1	RD/At-1
ADV1	0.010	0.000	-0.132***	-0.004*	-0.002	-0.092***	-0.005***	-0.008	0.173**
	(0.88)	(-0.01)	(-9.36)	(-1.65)	(-0.25)	(-2.68)	(-2.85)	(-0.58)	(2.07)
ADV2	0.008	-0.001	-0.132***	-0.004*	-0.002	-0.092***	-0.005***	-0.008	0.173**
	(0.84)	(-0.30)	(-9.36)	(-1.65)	(-0.22)	(-2.69)	(-2.77)	(-0.56)	(2.08)
ADV3	0.008	0.116	-0.132***	-0.004*	-0.002	-0.092***	-0.005***	-0.008	0.174**
	(0.69)	(0.19)	(-9.36)	(-1.65)	(-0.22)	(-2.69)	(-2.74)	(-0.56)	(2.08)
ADV4	0.009**	0.005	-0.132***	-0.003*	-0.002	-0.090***	-0.005***	-0.008	0.173**
	(1.70)	(0.69)	(-9.38)	(-1.64)	(-0.23)	(-2.64)	(-2.82)	(-0.55)	(2.08)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	0.005	0.039	0.021*	0.084***	0.029	0.014*	0.135***	0.083	2507
	(0.9)	(0.92)	(1.48)	(2.88)	(0.23)	(1.47)	(8.24)		
ADV2	0.005	0.038	0.021*	0.084***	0.027	0.014*	0.135***	0.083	2507
	(0.89)	(0.91)	(1.48)	(2.89)	(0.22)	(1.46)	(8.13)		
ADV3	0.005	0.039	0.021*	0.084***	0.028	0.014*	0.135***	0.083	2507
	(0.9)	(0.91)	(1.48)	(2.88)	(0.23)	(1.47)	(8.05)		
ADV4	0.005	0.038	0.021*	0.084***	0.030	0.0143*	0.135***	0.083	2507
	(0.88)	(0.90)	(1.48)	(2.88)	(0.24)	(1.47)	(8.22)		

Table B.7. Impact of hot debt market timing on change in net equity issuance in the sample of syndicated loans

*This table reports the results of the regressions of change in net equity issuance e/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD x ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	-0.004	-0.019**	0.113***	-0.005**	0.054***	-0.314***	0.001	-0.023*	-0.013
	(-0.28)	(-1.89)	(7.17)	(-2.11)	(6.66)	(-8.22)	(0.31)	(-1.48)	(-0.14)
ADV2	-0.026***	0.000	0.113***	-0.005**	0.054***	-0.317***	0.001	-0.022	-0.005
	(-2.41)	(0.01)	(7.16)	(-2.05)	(6.67)	(-8.29)	(0.42)	(-1.43)	(-0.05)
ADV3	0.002	-1.603**	0.114***	-0.005**	0.052***	-0.314***	0.000	-0.025*	-0.021
	(0.17)	(-2.33)	(7.23)	(-2.12)	(6.35)	(-8.22)	(-0.11)	(-1.59)	(-0.22)
ADV4	-0.026***	0.003	0.112***	-0.005**	0.054***	-0.316***	0.001	-0.022*	-0.005
	(-4.23)	(0.38)	(7.14)	(-2.04)	(6.70)	(-8.25)	(0.44)	(-1.42)	(-0.05)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	-0.011**	0.246***	-0.007	0.007	-0.038	-0.003	-0.024*	0.082	2507
	(-1.71)	(5.23)	(-0.45)	(0.22)	(-0.27)	(-0.29)	(-1.32)		
ADV2	-0.011**	0.246***	-0.006	0.003	-0.034	-0.003	-0.026*	0.080	2507
	(-1.66)	(5.21)	(-0.40)	(0.09)	(-0.25)	(-0.29)	(-1.41)		
ADV3	-0.011**	0.250***	-0.007	0.007	-0.018	-0.003	-0.017	0.082	2507
	(-1.71)	(5.32)	(-0.41)	(0.22)	(-0.13)	(-0.31)	(-0.93)		
ADV4	-0.011**	0.245***	-0.006	0.003	-0.034	-0.003	-0.027*	0.080	2507
	(-1.67)	(5.20)	(-0.40)	(0.09)	(-0.25)	(-0.28)	(-1.44)		

Table B.8. Impact of hot debt market timing on change in retained earnings in the sample of syndicated loans

*This table reports the results of the regressions of change in retained earnings ΔRE/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD x ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	-0.003	0.017**	0.029**	0.007***	-0.047***	0.293***	-0.001	0.045***	0.102
	(-0.24)	(1.66)	(1.84)	(3.04)	(-5.80)	(7.55)	(-0.25)	(2.81)	(1.08)
ADV2	0.024**	0.005	0.030**	0.007***	-0.048***	0.296***	-0.001	0.043***	0.093
	(2.22)	(0.84)	(1.85)	(2.97)	(-5.89)	(7.62)	(-0.48)	(2.71)	(0.98)
ADV3	0.002	0.845	0.029**	0.007***	-0.046***	0.294***	0.000	0.045***	0.103
	(0.13)	(1.21)	(1.81)	(3.02)	(-5.63)	(7.57)	(-0.08)	(2.84)	(1.09)
ADV4	0.019***	-0.012*	0.030**	0.007***	-0.048***	0.291***	-0.001	0.043***	0.094
	(2.95)	(-1.49)	(1.90)	(2.94)	(-5.87)	(7.50)	(-0.42)	(2.70)	(1.00)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	0.010**	-0.292***	-0.006	-0.036	-0.007	-0.013	-0.071***	0.060	2507
	(1.54)	(-6.12)	(-0.37)	(-1.09)	(-0.05)	(-1.20)	(-3.81)		
ADV2	0.010*	-0.291***	-0.006	-0.033	-0.004	-0.013	-0.067***	0.059	2507
	(1.52)	(-6.07)	(-0.40)	(-0.99)	(-0.03)	(-1.20)	(-3.56)		
ADV3	0.010*	-0.294***	-0.007	-0.034	-0.018	-0.013	-0.074***	0.059	2507
	(1.52)	(-6.15)	(-0.41)	(-1.04)	(-0.13)	(-1.20)	(-3.89)		
ADV4	0.010*	-0.290***	-0.007	-0.032	-0.011	-0.013	-0.068***	0.060	2507
	(1.54)	(-6.06)	(-0.41)	(-0.96)	(-0.07)	(-1.22)	(-3.65)		

Table B.9. Impact of hot debt market timing on change in cash reserves in the sample of syndicated loans

*This table reports the results of the regressions of change in cash reserves ΔCash/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD x ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	0.000	-0.003	0.004	-0.001	-0.004	-0.030**	0.004***	-0.0208***	0.321***
	(-0.05)	(-0.73)	(0.52)	(-0.59)	(-0.98)	(-1.77)	(4.15)	(-2.95)	(7.65)
ADV2	-0.009**	-0.003	0.004	-0.001	-0.003	-0.031**	0.004***	-0.020***	0.323***
	(-1.77)	(-1.11)	(0.51)	(-0.56)	(-0.86)	(-1.81)	(4.32)	(-2.87)	(7.71)
ADV3	-0.010*	0.331	0.003	-0.001	-0.003	-0.031**	0.004***	-0.020***	0.325***
	(-1.64)	(1.07)	(0.49)	(-0.53)	(-0.82)	(-1.83)	(4.34)	(-2.86)	(7.75)
ADV4	-0.006**	0.010***	0.003	-0.001	-0.003	-0.028*	0.004***	-0.020***	0.323***
	(-2.14)	(2.91)	(0.4)	(-0.49)	(-0.89)	(-1.61)	(4.33)	(-2.81)	(7.71)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	0.000	0.045**	-0.006	-0.293***	-0.036	-0.010**	-0.003	0.189	2507
	(0.16)	(2.13)	(-0.9)	(-20.05)	(-0.58)	(-1.97)	(-0.3)		
ADV2	0.000	0.044**	-0.006	-0.293***	-0.039	-0.010**	-0.004	0.189	2507
	(0.14)	(2.09)	(-0.9)	(-20.12)	(-0.63)	(-1.97)	(-0.5)		
ADV3	0.001	0.044**	-0.006	-0.295***	-0.039	-0.010**	-0.005	0.189	2507
	(0.20)	(2.07)	(-0.88)	(-20.17)	(-0.63)	(-1.96)	(-0.56)		
ADV4	0.000	0.043**	-0.006	-0.294***	-0.035	-0.010**	-0.004	0.192	2507
	(0.09)	(2.04)	(-0.89)	(-20.2)	(-0.56)	(-1.95)	(-0.48)		

Table B.10. Impact of hot debt market timing on issue-year leverage ratio in the sample of syndicated loans

*This table reports the results of the regressions of issue-year leverage ratio D/At from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD x ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	0.010	0.000	0.868***	-0.004**	-0.002	-0.092***	-0.005***	-0.008	0.173**
	(0.88)	(-0.01)	(61.71)	(-1.65)	(-0.25)	(-2.68)	(-2.85)	(-0.58)	(2.07)
ADV2	0.008	-0.001	0.868***	-0.004*	-0.002	-0.092***	-0.005***	-0.008	0.173**
	(0.84)	(-0.30)	(61.7)	(-1.65)	(-0.22)	(-2.69)	(-2.77)	(-0.56)	(2.08)
ADV3	0.008	0.116	0.868***	-0.004*	-0.002	-0.092***	-0.005***	-0.008	0.174**
	(0.69)	(0.19)	(61.67)	(-1.65)	(-0.22)	(-2.69)	(-2.74)	(-0.56)	(2.08)
ADV4	0.009**	0.005	0.868***	-0.003*	-0.002	-0.090***	-0.005***	-0.008	0.173**
	(1.7)	(0.69)	(61.63)	(-1.64)	(-0.23)	(-2.64)	(-2.82)	(-0.55)	(2.08)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	0.005	0.039	0.021*	0.084***	0.029	0.014*	0.135***	0.670	2507
	(0.90)	(0.92)	(1.48)	(2.88)	(0.23)	(1.47)	(8.24)		
ADV2	0.005	0.038	0.021*	0.084***	0.027	0.014*	0.135***	0.670	2507
	(0.89)	(0.91)	(1.48)	(2.89)	(0.22)	(1.46)	(8.13)		
ADV3	0.005	0.039	0.021*	0.084***	0.028	0.014*	0.135***	0.670	2507
	(0.90)	(0.91)	(1.48)	(2.87)	(0.22)	(1.47)	(8.05)		
ADV4	0.005	0.038	0.021*	0.084***	0.030	0.014*	0.135***	0.670	2507
	(0.88)	(0.90)	(1.48)	(2.88)	(0.24)	(1.47)	(8.22)		

Table B.11. Impact of hot debt market timing on change in leverage ratio in the sample of public debt issues

*This table reports the results of the regressions of change in leverage ratio ΔD/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD*ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	0.003	0.003	-0.125***	0.007***	-0.008**	-0.019	-0.003**	-0.011	-0.199**
	(0.84)	(0.98)	(-10.16)	(2.68)	(-2.03)	(-0.50)	(-1.98)	(-1.10)	(-2.06)
ADV2	0.004**	-0.001	-0.127***	0.007***	-0.009**	-0.019	-0.003**	-0.012	-0.196**
	(1.74)	(-0.69)	(-10.29)	(2.52)	(-2.04)	(-0.52)	(-2.04)	(-1.14)	(-2.02)
ADV3	0.004	0.052	-0.127***	0.007***	-0.009**	-0.019	-0.003**	-0.012	-0.199**
	(1.24)	(0.37)	(-10.23)	(2.64)	(-2.02)	(-0.51)	(-2.00)	(-1.13)	(-2.05)
ADV4	0.006***	0.000	-0.126***	0.007***	-0.009**	-0.021	-0.003**	-0.011	-0.200**
	(2.64)	(-0.54)	(-10.2)	(2.63)	(-2.06)	(-0.56)	(-2.06)	(-1.09)	(-2.07)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	-0.011***	-0.005	0.006	0.082***	11.099**	0.010	0.106***	0.094	1527
	(-2.48)	(-0.14)	(1.25)	(2.61)	(2.16)	(1.13)	(6.32)		
ADV2	-0.012***	0.000	0.006	0.088***	10.826**	0.009	0.109***	0.094	1527
	(-2.66)	(-0.01)	(1.19)	(2.80)	(2.11)	(1.02)	(6.50)		
ADV3	-0.012***	-0.003	0.006	0.085***	11.012**	0.010	0.108***	0.094	1527
	(-2.59)	(-0.08)	(1.23)	(2.72)	(2.14)	(1.09)	(6.45)		
ADV4	-0.012***	-0.001	0.006	0.088***	10.870**	0.010	0.108***	0.094	1527
	(-2.58)	(-0.03)	(1.22)	(2.79)	(2.11)	(1.12)	(6.45)		

Table B.12. Impact of hot debt market timing on change in net equity issuance in the sample of public debt issues

*This table reports the results of the regressions of change in net equity issuance e/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD*ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	-0.007*	0.006*	0.081***	-0.013***	-0.005	0.005	0.001	0.009	0.542***
	(-1.54)	(1.48)	(5.08)	(-3.81)	(-0.89)	(0.11)	(0.34)	(0.65)	(4.34)
ADV2	-0.003	-0.001	0.078***	-0.013***	-0.005	0.004	0.000	0.008	0.545***
	(-0.82)	(-0.57)	(4.94)	(-3.95)	(-0.93)	(0.07)	(0.25)	(0.60)	(4.35)
ADV3	-0.033***	1.560***	0.061***	-0.012***	0.000	0.020	0.002	0.008	0.564***
	(-7.41)	(8.75)	(3.91)	(-3.60)	(-0.06)	(0.42)	(1.23)	(0.60)	(4.63)
ADV4	-0.002	0.001	0.078***	-0.013***	-0.005	0.006	0.000	0.007	0.542***
	(-0.69)	(0.95)	(4.88)	(-3.92)	(-0.98)	(0.13)	(0.25)	(0.55)	(4.34)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	0.014***	0.016	-0.008	-0.003	-10.968*	-0.004	-0.053***	0.044	1527
	(2.44)	(0.35)	(-1.23)	(-0.07)	(-1.65)	(-0.37)	(-2.46)		
ADV2	0.013**	0.024	-0.008	0.007	-11.429**	-0.006	-0.049**	0.043	1527
	(2.21)	(0.54)	(-1.28)	(0.16)	(-1.72)	(-0.49)	(-2.28)		
ADV3	0.014***	-0.023	-0.007	-0.021	-8.180	-0.005	-0.058***	0.089	1527
	(2.37)	(-0.50)	(-1.15)	(-0.52)	(-1.26)	(-0.46)	(-2.76)		
ADV4	0.013**	0.023	-0.008	0.001	-11.259**	-0.006	-0.049**	0.043	1527
	(2.30)	(0.52)	(-1.26)	(0.02)	(-1.70)	(-0.48)	(-2.27)		

Table B.13. Impact of hot debt market timing on change in retained earnings in the sample of public debt issues

*This table reports the results of the regressions of change in retained earnings ΔRE/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD*ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	0.004	-0.009***	0.036***	0.007**	-0.002	0.026	0.002*	0.002	-0.352***
	(0.99)	(-2.45)	(2.46)	(2.28)	(-0.38)	(0.58)	(1.45)	(0.14)	(-3.08)
ADV2	-0.001	0.001*	0.04***	0.008***	-0.002	0.028	0.003*	0.003	-0.358***
	(-0.49)	(1.33)	(2.73)	(2.57)	(-0.34)	(0.63)	(1.6)	(0.23)	(-3.12)
ADV3	0.029***	-1.654***	0.058***	0.006**	-0.007*	0.011	0.001	0.003	-0.375***
	(7.30)	(-10.22)	(4.06)	(2.04)	(-1.35)	(0.25)	(0.51)	(0.24)	(-3.38)
ADV4	-0.004*	-0.001	0.039	0.007***	-0.001	0.027	0.003**	0.003	-0.351***
	(-1.45)	(-0.57)	(2.70)	(2.44)	(-0.26)	(0.61)	(1.61)	(0.24)	(-3.06)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	-0.004	-0.02	0.003	-0.076**	0.209	-0.006	-0.049***	0.033	1527
	(-0.68)	(-0.47)	(0.53)	(-2.04)	(0.03)	(-0.56)	(-2.46)		
ADV2	-0.001	-0.033	0.004	-0.092***	0.961	-0.004	-0.056***	0.030	1527
	(-0.26)	(-0.79)	(0.64)	(-2.46)	(0.16)	(-0.33)	(-2.81)		
ADV3	-0.002	0.018	0.003	-0.061**	-2.576	-0.005	-0.045**	0.092	1527
	(-0.47)	(0.44)	(0.44)	(-1.69)	(-0.44)	(-0.46)	(-2.37)		
ADV4	-0.002	-0.031	0.003	-0.086	0.73	-0.005	-0.055***	0.029	1527
	(-0.44)	(-0.74)	(0.58)	(-2.3)	(0.12)	(-0.43)	(-2.76)		

Table B.14. Impact of hot debt market timing on change in cash reserves in the sample of public debt issues

*This table reports the results of the regressions of change in cash reserves ΔCash/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD*ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	-0.002	0.019***	-0.006	-0.002	0.003	-0.006	0.000	-0.016**	0.421***
	(-0.39)	(3.36)	(-0.61)	(-0.89)	(0.43)	(-0.21)	(-0.39)	(-2.3)	(6.24)
ADV2	0.019***	0.005***	-0.007	-0.001	0.000	-0.008	-0.001	-0.017***	0.407***
	(6.29)	(3.84)	(-0.72)	(-0.76)	(0.03)	(-0.29)	(-0.66)	(-2.46)	(6.03)
ADV3	0.003	0.525***	-0.009	-0.002	0.004	-0.008	0.000	-0.016	0.425***
	(0.54)	(2.53)	(-0.93)	(-0.99)	(0.63)	(-0.31)	(-0.34)	(-2.3)	(6.28)
ADV4	0.014***	0.001	-0.007	-0.002*	0.003	-0.006	-0.001	-0.017***	0.424***
	(4.89)	(0.46)	(-0.74)	(-1.3)	(0.49)	(-0.21)	(-0.57)	(-2.44)	(6.25)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	0.006**	-0.03	-0.002	-0.219***	-3.601	-0.005	0.024**	0.134	1527
	(1.93)	(-1.25)	(-0.7)	(-9.86)	(-1.18)	(-0.74)	(1.97)		
ADV2	0.007**	-0.025	-0.001	-0.22***	-3.818	-0.004	0.027**	0.137	1527
	(2.15)	(-1.05)	(-0.48)	(-9.91)	(-1.26)	(-0.68)	(2.29)		
ADV3	0.005*	-0.029	-0.003	-0.219***	-3.453	-0.005	0.026**	0.130	1527
	(1.54)	(-1.19)	(-1)	(-9.81)	(-1.13)	(-0.75)	(2.17)		
ADV4	0.005**	-0.021	-0.003	-0.213***	-3.879	-0.005	0.027	0.124	1527
	(1.71)	(-0.89)	(-1.08)	(-9.58)	(-1.27)	(-0.76)	(2.27)		

Table B.15. Impact of hot debt market timing on issue-year leverage ratio in the sample of public debt issues

*This table reports the results of the regressions of issue-year leverage ratio D/At from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD*ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	0.022***	-0.007	0.899***	0.009***	0.018*	-0.143***	-0.003**	-0.004	-0.375***
	(2.45)	(-0.80)	(57.3)	(3.03)	(1.64)	(-3.3)	(-1.89)	(-0.38)	(-3.43)
ADV2	0.012**	-0.004**	0.899***	0.009***	0.02**	-0.141***	-0.003**	-0.004	-0.362***
	(2.33)	(-2.00)	(57.46)	(2.85)	(1.85)	(-3.27)	(-1.82)	(-0.35)	(-3.31)
ADV3	0.021***	-0.234	0.9***	0.009***	0.017*	-0.142***	-0.003**	-0.004	-0.377***
	(2.47)	(-0.70)	(57.25)	(3.04)	(1.58)	(-3.27)	(-1.91)	(-0.39)	(-3.45)
ADV4	0.016***	0.002	0.899***	0.009***	0.018*	-0.142***	-0.003**	-0.004	-0.375***
	(3.38)	(0.47)	(57.33)	(3.14)	(1.65)	(-3.27)	(-1.79)	(-0.35)	(-3.44)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	-0.013***	0.006	0.000	0.042	11.673***	0.015*	0.101***	0.817	1527
	(-2.44)	(0.16)	(0.03)	(1.17)	(2.37)	(1.47)	(5.18)		
ADV2	-0.013***	0.006	-0.001	0.046	11.716***	0.015*	0.1***	0.818	1527
	(-2.61)	(0.15)	(-0.19)	(1.27)	(2.38)	(1.43)	(5.15)		
ADV3	-0.012**	0.006	0.000	0.043	11.589***	0.015*	0.1***	0.817	1527
	(-2.34)	(0.15)	(0.1)	(1.18)	(2.35)	(1.48)	(5.16)		
ADV4	-0.012***	0.003	0.001	0.04	11.841***	0.015*	0.099***	0.817	1527
	(-2.40)	(0.08)	(0.12)	(1.10)	(2.40)	(1.49)	(5.08)		

Table B.16. Impact of hot debt market timing on change in leverage ratio in the sample of private debt issues

*This table reports the results of the regressions of change in leverage ratio ΔD/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD*ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	-0.006	-0.010	-0.200***	0.002	0.002	-0.129**	-0.007**	-0.031*	-0.048
	(-0.43)	(-0.78)	(-9.35)	(0.41)	(0.56)	(-2.18)	(-2.22)	(-1.31)	(-0.16)
ADV2	-0.019*	-0.002	-0.202***	0.002	0.002	-0.124**	-0.007**	-0.030	-0.046
	(-1.39)	(-0.47)	(-9.42)	(0.39)	(0.51)	(-2.12)	(-2.19)	(-1.28)	(-0.16)
ADV3	-0.007	-0.256	-0.200***	0.002	0.002	-0.129**	-0.007**	-0.031*	-0.026
	(-0.43)	(-0.55)	(-9.25)	(0.45)	(0.49)	(-2.17)	(-2.20)	(-1.29)	(-0.09)
ADV4	-0.020**	0.061*	-0.204***	0.003	0.002	-0.122**	-0.006**	-0.030*	-0.061
	(-2.14)	(1.45)	(-9.52)	(0.53)	(0.49)	(-2.09)	(-2.15)	(-1.26)	(-0.21)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	-0.009	0.065	0.081***	0.190***	-27.815**	0.047***	0.209***	0.266	480
	(-1.00)	(0.77)	(2.41)	(3.26)	(-1.99)	(2.85)	(7.09)		
ADV2	-0.009	0.059	0.082***	0.184***	-27.439**	0.047***	0.209***	0.266	480
	(-0.97)	(0.70)	(2.46)	(3.20)	(-1.96)	(2.87)	(7.06)		
ADV3	-0.009	0.065	0.081***	0.183***	-27.425**	0.048***	0.208***	0.269	480
	(-0.98)	(0.76)	(2.43)	(3.20)	(-1.96)	(2.92)	(7.06)		
ADV4	-0.010	0.061	0.086***	0.182***	-27.086**	0.047***	0.209***	0.269	480
	(-1.11)	(0.73)	(2.56)	(3.20)	(-1.94)	(2.82)	(7.09)		

Table B.17. Impact of hot debt market timing on change in net equity issuance in the sample of private debt issues

*This table reports the results of the regressions of change in net equity issuance e/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD*ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	0.005	0.023**	-0.004	-0.021***	0.002	-0.123**	0.005**	0.018	-0.027
	(0.36)	(1.67)	(-0.17)	(-4.04)	(0.52)	(-2.07)	(1.79)	(0.75)	(-0.09)
ADV2	0.020*	-0.001	-0.002	-0.021***	0.003	-0.134**	0.005*	0.015	-0.064
	(1.42)	(-0.27)	(-0.08)	(-4.08)	(0.72)	(-2.25)	(1.65)	(0.64)	(-0.22)
ADV3	-0.023*	1.621***	-0.012	-0.022***	0.003	-0.100**	0.006**	0.020	-0.105
	(-1.47)	(3.47)	(-0.54)	(-4.24)	(0.61)	(-1.68)	(1.91)	(0.84)	(-0.36)
ADV4	0.024***	-0.019	-0.001	-0.021***	0.003	-0.134**	0.005**	0.016	-0.049
	(2.63)	(-0.44)	(-0.03)	(-4.09)	(0.69)	(-2.25)	(1.67)	(0.65)	(-0.17)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	-0.003	0.021	0.023	0.011	36.359***	0.020	-0.025	0.110	480
	(-0.37)	(0.25)	(0.68)	(0.18)	(2.58)	(1.21)	(-0.84)		
ADV2	-0.004	0.032	0.017	0.033	35.424***	0.018	-0.021	0.105	480
	(-0.47)	(0.38)	(0.51)	(0.57)	(2.51)	(1.07)	(-0.71)		
ADV3	-0.003	0.001	0.028	0.018	35.632***	0.017	-0.024	0.127	480
	(-0.33)	(0.01)	(0.83)	(0.31)	(2.55)	(1.02)	(-0.83)		
ADV4	-0.004	0.032	0.017	0.031	35.354***	0.019	-0.022	0.105	480
	(-0.42)	(0.37)	(0.50)	(0.53)	(2.50)	(1.12)	(-0.75)		

Table B.18. Impact of hot debt market timing on change in retained earnings in the sample of private debt issues

*This table reports the results of the regressions of change in retained earnings ΔRE/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD*ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	0.002	-0.013	0.186***	0.019***	-0.022***	0.275***	0.002	0.010	0.022
	(0.09)	(-0.78)	(7.22)	(3.00)	(-4.26)	(3.86)	(0.54)	(0.36)	(0.06)
ADV2	0.000	0.004	0.186***	0.019***	-0.023***	0.281***	0.002	0.012	0.059
	(0.00)	(0.65)	(7.20)	(3.06)	(-4.41)	(3.97)	(0.63)	(0.43)	(0.17)
ADV3	0.031**	-1.416***	0.194***	0.019***	-0.022***	0.251***	0.002	0.008	0.081
	(1.68)	(-2.53)	(7.50)	(3.13)	(-4.33)	(3.51)	(0.43)	(0.28)	(0.23)
ADV4	-0.004	-0.042	0.187***	0.018***	-0.022***	0.279***	0.002	0.012	0.057
	(-0.40)	(-0.84)	(7.23)	(2.95)	(-4.38)	(3.94)	(0.58)	(0.40)	(0.16)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	0.012	-0.088	-0.092**	-0.192***	-8.824	-0.069***	-0.178***	0.211	480
	(1.05)	(-0.87)	(-2.29)	(-2.73)	(-0.52)	(-3.45)	(-5.00)		
ADV2	0.012	-0.094	-0.088**	-0.209***	-8.243	-0.067***	-0.182***	0.211	480
	(1.11)	(-0.93)	(-2.19)	(-3.01)	(-0.49)	(-3.35)	(-5.10)		
ADV3	0.011	-0.067	-0.098***	-0.192***	-8.474	-0.067***	-0.178***	0.221	480
	(1.00)	(-0.66)	(-2.45)	(-2.80)	(-0.51)	(-3.36)	(-5.04)		
ADV4	0.013	-0.096	-0.091**	-0.204***	-8.530	-0.067***	-0.181***	0.211	480
	(1.18)	(-0.94)	(-2.27)	(-2.97)	(-0.51)	(-3.35)	(-5.08)		

Table B.19. Impact of hot debt market timing on change in cash reserves in the sample of private debt issues

*This table reports the results of the regressions of change in cash reserves ΔCash/A from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD*ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	-0.010*	0.017**	0.017*	0.006**	0.013***	-0.079***	0.000	-0.005	0.508***
	(-1.30)	(2.32)	(1.40)	(2.04)	(5.42)	(-2.41)	(0.02)	(-0.38)	(3.18)
ADV2	0.000	-0.002	0.018*	0.006**	0.013***	-0.087***	0.000	-0.007	0.475***
	(-0.03)	(-0.69)	(1.51)	(1.92)	(5.71)	(-2.66)	(-0.18)	(-0.54)	(2.95)
ADV3	-0.034***	1.333***	0.010	0.005**	0.013***	-0.059***	0.000	-0.003	0.446***
	(-4.00)	(5.28)	(0.85)	(1.84)	(5.69)	(-1.82)	(0.20)	(-0.26)	(2.86)
ADV4	0.004	-0.001	0.018*	0.006**	0.013***	-0.086***	0.000	-0.007	0.486***
	(0.79)	(-0.06)	(1.53)	(1.96)	(5.67)	(-2.64)	(-0.14)	(-0.51)	(3.02)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	0.001	0.086**	-0.029*	-0.332***	-4.954	0.024***	0.004	0.344	480
	(0.17)	(1.83)	(-1.58)	(-10.29)	(-0.64)	(2.61)	(0.27)		
ADV2	0.000	0.094**	-0.034**	-0.314***	-5.682	0.022***	0.008	0.337	480
	(0.03)	(2.01)	(-1.82)	(-9.81)	(-0.73)	(2.39)	(0.48)		
ADV3	0.001	0.068*	-0.025*	-0.327***	-5.497	0.021***	0.005	0.374	480
	(0.25)	(1.49)	(-1.38)	(-10.59)	(-0.73)	(2.38)	(0.31)		
ADV4	0.000	0.094**	-0.033**	-0.317***	-5.654	0.022***	0.007	0.336	480
	(0.05)	(2.01)	(-1.79)	(-9.97)	(-0.73)	(2.44)	(0.41)		

Table B.20. Impact of hot debt market timing on issue-year leverage ratio in the sample of private debt issues

*This table reports the results of the regressions of issue-year leverage ratio D/At from pre-issue year to issue year on hot market dummy, HOTD and adverse selection costs, ADV, controlling for firm-specific characteristics in the fiscal year prior to the issue year. ADV1 is stock price beta, ADV2 R^2 from the market model, ADV3 residual volatility and ADV4 dispersion of analysts' earnings forecast. Detailed definitions of the variables are in Appendix A. All coefficients are represented as decimal number. HOTD takes value 1 (0) if the issue is in hot (cold) month. Hot (cold) months are months with top (bottom) 30% of the monthly detrended 3-month centered moving average issue volume in December 2009 U.S. dollars. Figures in parentheses are t-values. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.*

	HOTD	HOTD*ADV	D/At-1	M/Bt-1	RE/At-1	EBITDA/At-1	SIZEt-1	PPE/At-1	RD/At-1
ADV1	-0.006	-0.010	0.800***	0.002	0.002	-0.129**	-0.007**	-0.031*	-0.048
	(-0.43)	(-0.78)	(37.33)	(0.41)	(0.56)	(-2.18)	(-2.21)	(-1.31)	(-0.16)
ADV2	-0.019*	-0.002	0.798***	0.002	0.002	-0.124**	-0.007**	-0.030	-0.046
	(-1.39)	(-0.47)	(37.30)	(0.39)	(0.52)	(-2.12)	(-2.19)	(-1.28)	(-0.16)
ADV3	-0.007	-0.256	0.800***	0.002	0.002	-0.129**	-0.007**	-0.031*	-0.026
	(-0.43)	(-0.55)	(37.07)	(0.45)	(0.49)	(-2.17)	(-2.20)	(-1.29)	(-0.09)
ADV4	-0.020**	0.061*	0.796***	0.003	0.002	-0.122**	-0.006**	-0.030	-0.061
	(-2.14)	(1.45)	(37.07)	(0.53)	(0.49)	(-2.09)	(-2.15)	(-1.26)	(-0.21)

	RDDt-1	INV/At-1	DIV/Et-1	Cash/At-1	OCONt-1	DOCONt-1	Cons	R2	Obs.
ADV1	-0.009	0.065	0.081***	0.191***	-27.813**	0.047***	0.209***	0.785	480
	(-1.00)	(0.77)	(2.41)	(3.26)	(-1.99)	(2.85)	(7.09)		
ADV2	-0.009	0.059	0.082***	0.185***	-27.436**	0.047***	0.209***	0.785	480
	(-0.97)	(0.70)	(2.46)	(3.21)	(-1.96)	(2.87)	(7.06)		
ADV3	-0.009	0.065	0.081***	0.183***	-27.422**	0.048***	0.208***	0.785	480
	(-0.98)	(0.76)	(2.43)	(3.20)	(-1.96)	(2.92)	(7.06)		
ADV4	-0.010	0.061	0.085***	0.182***	-27.084**	0.047***	0.209***	0.786	480
	(-1.11)	(0.73)	(2.56)	(3.20)	(-1.94)	(2.82)	(7.09)		