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The role of credit ratings on capital structure and its speed of adjustment in bank-oriented and market-oriented economies

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THE ROLE OF CREDIT RATINGS ON CAPITAL STRUCTURE AND ITS SPEED OF ADJUSTMENT IN BANK-ORIENTED AND MARKET-ORIENTED ECONOMIES

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THE ROLE OF CREDIT RATINGS ON CAPITAL STRUCTURE AND ITS SPEED OF ADJUSTMENT IN BANK-ORIENTED AND MARKET-ORIENTED ECONOMIES

by

WOJEWODZKI Michal

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ABSTRACT

The Role of Credit Ratings on Capital Structure and its Speed of Adjustment in Bank-Oriented and Market-Oriented Economies.

by

WOJEWODZKI Michal

Master of Philosophy

This study investigates both the direct and indirect roles of credit ratings (CR) on the capital structures of 1,513 firms operating in 19 countries with different financial orientations and levels of economic development over the 20-year period (1991-2010).

Until recently, it has been common place to classify countries into capital market-based oriented (MB) and bank-based oriented (BB) in terms of their financial systems' orientation (Antoniou et al. 2008). Traditionally, in MB economies (Australia, Canada, Hong Kong, South Korea, Mexico, the Netherlands, Sweden, Switzerland, Thailand, the U.K., and the U.S.) having a CR helps firms issue equity or bonds. In contrast, in BB economies (France, Germany, India, Indonesia, Italy, Japan, Russia, and Spain), companies tend to obtain loans from banks with which they maintain a long-term relationship. The creditworthiness of the firms is thus assessed by banks without much need for external CR.

I find that the CRs' impact on a capital structure is more significant and negative in countries with more MB oriented financial systems when quantified by the Financial Architecture variable (measuring the size, activity and efficiency of a stock market vis–à–vis the banking system of country annually), but not by the traditional division into MB and BB countries. This is consistent with the pecking order theory and information role of CRs in issuing equity, as well as the evidence of a rapid development of stock markets in many BB countries, which dulls the distinction between the traditionally defined MB and BB economies. Furthermore, the relation between the CRs and firms' leverage ratio is significantly stronger for companies operating in advanced countries than companies operating in developing economies. Moreover, my analysis shows that CRs play more significant role in the U.S. than in other countries.

In addition, I find that companies with poorer CRs display a faster speed of adjustment towards a desired level of gearing. This phenomenon takes place

regardless of financial orientation or economic development of a country and can be linked with a different degree of financial constraints across differently rated firms.

DECLARATION

I declare that this is an original work based primarily on my own research, and I warrant that all citations of previous research, published or unpublished, have been duly acknowledged.

(WOJEWODZKI Michal)
August 26, 2013

CERTIFICATE OF APPROVAL OF THESIS

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Master of Philosophy

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Chapter 1. Introduction

The Big Three credit rating agencies (CRAs): Standard & Poor's Ratings Services (S&P), Moody's Investors Service (Moody's), and Fitch Ratings (Fitch) have an immense power over the capital markets worldwide. According to U.S. Securities and Exchange Commission (SEC), a CRA *"provides its opinion on the creditworthiness of an entity and the financial obligations (such as, bonds, preferred stock, and commercial paper) issued by an entity."* (SEC, 2011a). The role of credit ratings (CRs) issued by the CRAs on the investment decisions has been rising rapidly along with the dramatic growth of the global financial markets (especially during the last three decades).

CRs highly influence issuers' access to and cost of funds. By changing a security's or borrower's CR, the CRA sends a signal to investors about this security's or borrower's altered creditworthiness, which in turn affects the investors' required rate of return. Moreover, higher CRs improve the marketability of the securities issued, partially due to restrictions imposed on many institutional investors (prohibited them from purchasing speculative-grade offerings). Due to their regulatory importance and de facto oligopoly in the credit rating industry[1], they strongly influence firms' and countries' fund-raising abilities and costs.

However, despite the prestige seemingly bestowed on the major CRAs by certain sectors of the media, there are critics of the CRAs and the power they enjoy. The history of the CRA critique is rich especially during the last 15 years. Many academics argue that rating agencies failed in predicting the financial turmoil such as the Southeast Asia crisis in 1997 (Gonzalez et al., 2004). Furthermore, despite the

[1] See Appendix B for the number of ratings in existence as of year-end 2010 and reported by each of 10 CRAs registered as Nationally Recognized Statistical Rating Organizations (NRSROs).

CRAs' claims of non-cyclicality of their ratings[2], a number of researchers find evidence to the contrary (Ferri et al., 1999; Monfort and Mulder, 2000). Amato and Furfine (2003) assert:

> *However, when rating agencies do make a change, they overreact relative to present conditions, and the nature of this overreaction is positively correlated with the state of the aggregate economy. This could be the consequence of excessive optimism (pessimism) during upturns (downturns) on the part of the rating agencies* (p.12).

More recently the IMF (2010) analyzes the smoothing methodologies used by the rating agencies in order to maintain CRs stability. Its findings indicate that in times of stress, this method only delays the inevitable, spurring even larger CR adjustments (than otherwise would have happened).

In the early 2000s a number of significant rating mistakes occurred (e.g., Enron, WorldCom and Global Crossing scandals), which damaged the agencies' reputations and attracted researchers' attention alike (Altman and Rijken, 2004, 2006; Danvers and Billings, 2004; Hill, 2004; Partnoy, 2006). It is widely acknowledged that the recent financial crisis of 2008 has its roots in the U.S. sub-prime mortgage debacle of 2007 in which the CRAs were largely involved (Duff and Einig, 2009). Due to that fact, the CRAs have suffered from a fresh wave of criticism from investors, regulatory bodies and politicians. The public opinion accused CRAs of failing to recognize the coming financial tsunami and misguiding the investors by issuing/assigning triple-A CRs to companies and structured securities (e.g. AIG or mortgage-backed assets) shortly before they collapsed or turned "*toxic*" (Benmelech and Dlugosz, 2009; Blinder, 2007). Rating agencies are blamed for producing procyclical firms' and sovereigns' CRs which prolonged and strengthened the recent global recession or failed to warn investors about Greece's government-debt crisis (Chakrabortty, 2012).

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[2] See S&P (2010a, 2010b).

In addition, the CRAs were accused of not being transparent (Parker et al., 2008), using flawed credit scoring models (IOSCO, 2008), lack of communication, serious conflict of interest in the CRAs way of doing business, and so-called *"ratings shopping"* due to their revenues coming predominantly from the fees from rating issuers (Deb et al., 2011; US Senate Committee, 2008), producing inflated, low-quality or unreliable ratings (Calomiris, 2009), failing to find enough qualified employees (CESR, 2008), and lack of ratings diversity[3] (Partnoy, 1999). Partnoy (2006) indicates that CRAs bear no direct liability for mistakes in their judgments, claiming that their ratings are merely *"opinions"*[4]. The above-mentioned flaws undermine CRAs' claim of the accuracy and non-cyclicality of their services and have negatively affected the agencies' reputation in the eyes of many.

The CRAs counter-argue that their reputation and credibility play a pivotal role in ensuring that their services are of high quality. They typically assert that once reputation is lost or harmed, CRs would become unreliable making their products worthless. This kind of reasoning can only apply in an environment in which CRAs and their performance can be effectively monitored, and with a real competition. However, Camanho et al. (2010), Mathis et al. (2009), and others point out that due to high barriers to entry and lack of data availability and the CRAs liability for their mistakes, these features (monitoring and competition) are not met in the rating industry.

Despite these critiques, in the light of the recent capital structure literature, both the regulatory and informatory function of CRs force the managers from the market-based economies of the U.S. and the U.K., as well as from mainly

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[3] This strand of criticism takes place with respect to both CRs grading at a particular point in time and the extent of synchronicity in CRs revisions amongst major CRAs.

[4] Until recently in the U.S., Nationally Recognized Statistical Rating Organizations (NRSROs) were exempted from experts' liability under section 11 of the Securities Act (Deb et al., 2011).

bank-based economies of Continental Europe, to consider their firms' CRs as one of the most important factors when making financing decisions (e.g., Bancel and Mittoo, 2004; Brounen et al., 2004; Graham and Harvey, 2001; Servaes and Tufano, 2006). Deb et al. (2011) argue forcefully that *"hardwiring of ratings is now so pervasive that market participants could not ignore them even if they did not consider them reliable"* (p.3). In addition to that, they address the potential problem of crowding out private information gathering. In a similar vein, the extensive use of CRs in regulation, investment process and financial contracts may lead to a common misperception that the ratings issued by CRAs are to some extent official, and therefore truth, triggering overreliance on CRs. Consequently, it is obvious that the investigation of capital structure changes of a rated company and the understanding of it cannot be complete without an inclusion of this entity's CR. However, prior research has left untouched a number of important issues.

First, papers that include CRs among the determinants of capital structure are conducted with respect to samples of U.S. companies (Byoun, 2011; Faulkender and Petersen, 2006; Hovakimian et al., 2009; Kisgen, 2006, 2009; Leary and Roberts, 2005; Sufi, 2009).

To the best of my knowledge, there has been no such study undertaken with respect to other economies. This seems most surprising taking into consideration the documented importance of CRs on financing decisions and the global presence of the CRAs and their services[5]. Furthermore, the existing U.S. literature gives mixed results[6]. In my study I hope to fill this gap in the literature by including a set of

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[5] According to Djankov et al. (2007), in 2003 at least one private CRA was present in 71 out of 129 countries examined in their study. In addition, they find a strong, positive relation between the existence of a CRA and the level of private credit to GDP.

[6] Hovakimian et al. (2009), Kisgen (2009), and Tang (2009) argue that the higher the CRs, the higher the firm's gearing ratio. Arguments for the opposite are presented by Byoun (2011), Frank and Goyal

variables capturing the impact of CRs on firms financing[7] in 19 countries with different financial orientations, economic development, and from various geographical regions (four continents). As such, it has by far the most comprehensive international coverage.

Second, despite the rapidly growing literature on dynamic capital structure (Fama and French, 2002; Hovakimian et al., 2001; Huang and Ritter, 2009; Öztekin and Flannery, 2012), there are only two studies (Faulkender et al., 2012; Kisgen, 2009)[8] that examine the influence of CRs on the speed with which firms rebalance their debt ratios towards target levels. Kisgen (2009) focuses on CRs' changes (downgrades and upgrades), based on the idea of firms having minimum target ratings along with optimum gearing ratios. He finds that downgrades carry additional substantial costs[9] which are higher than the costs associated with the adjustment towards a desired leverage ratio which in turn makes firms adjust faster. However, in case of an upgrade he finds no significant change in companies' speed of adjustment (hereafter SOA). Faulkender et al. (2012) compare the SOAs of rated and non-rated companies and argue that when firms are over- (under-) levered, and have bond CRs, they adjust substantially slower (faster) than non-rated firms. They assert that the fact of having or not a CR *"affect leverage adjustment speeds so greatly that they can reverse the usual finding (...) that under-levered firms adjust less rapidly than over-levered firms"* (p.643). They also find that the companies adjust with faster

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(2009), and Leary and Roberts (2005).

7 I employ a set of interaction variables between the CRs and firm lagged leverage ratio, country's financial orientation, economic development, and the bond market development, which capture the second order effects of CRs on firms' capital structure and on its adjustment speed towards the optimum level of gearing.

8 Both of these papers analyze the U.S. market.

9 Among others, lower CRs are associated with higher costs of borrowing.

speed when the costs of doing so are sunk relative to when these costs are incremental.

I add to these two studies by investigating the impact of different-grade CRs on the SOAs of companies operating in the U.S. and 18 other countries. The results suggest that regardless of financial systems' orientation or the economic development of a country, firms with poorer CRs enjoy faster SOAs. This evidence can be explained by the different degrees of financial constraints (Byoun, 2011; Faulkender et al., 2012; Korajczyk and Levy, 2003) experienced by firms with different CRs.

Third, in the light of the aforementioned criticism of CRAs and their products, there is the ongoing policy debate in regards to the assumed liability of CRAs, reliability of ratings, overreliance on CRs by financial market participants, and the so called "*cliff effect*[10]". This debate has led to a series of reforms in the credit rating industry undertaken by regulators in the U.S. since 2006[11]. These reforms coincide with the last 5-year period of my sample which offers me an opportunity to investigate if it affected the relation between CRs and the capital structure of firms.

My analysis shows that the impact of CRs on capital structure fluctuations was more significant during the first decade (1991-2000) as compared with the second decade (2001-2010) of the sample (the second period being the period of growing criticism of CRAs and their services) in MB and American samples of firms. In addition, my results suggest that the recent series of rating industries' reforms in the U.S. (2006-2010) carried no significant impact on the relation between CRs and capital structure.

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[10] The *"cliff effect"* occurs when a CRA downgrades a firm from an investment- to a speculative-grade, which can trigger discontinuous growths in the cost of borrowing, as well as, disastrous selloffs of this firm's securities (Deb et al., 2011). This in turn can drive the firm further into difficulties, (not enough cash to meet its current financial obligations, another downgrades, and increases in the funding costs), and finally even into the firm's insolvency.

[11] With the *Credit Rating Agency Reform Act of 2006* passed by the U.S. Congress.

Fourth, there is ample evidence showing that in the MB oriented U.S. firms with better credit ratings are more prone to issue equity instead of debt (e.g., Frank and Goyal, 2009). On the one hand, this phenomenon stems from the change in a degree of both information asymmetry and adverse selection costs of equity vis-à-vis debt (the main factors standing behind the pecking order theory (POT)). Since companies with high CRs are informationally more transparent than firms with low CRs, they experience lower information asymmetry and adverse selection problems in the process of issuing equity[12]. Consequently the CRs are negatively related to underpricing of equity offerings and according to Liu and Malatesta (2007) "*improving credit rating levels before SEOs can significantly reduce the cost of equity capital*" (p.7). On the other hand, companies with high CRs are usually those with large internal funds exceeding their investment needs (Byoun, 2011) and in line with the POT they use extra cash to retire existing debt rather than equity[13] (Myers, 2003). In addition, existing literature documents that firms' CRs is considered to be one of the most important factors for CFOs in deciding about current level of leverage, or why not add more debt in capital structure (e.g., Brounen et al., 2004; Servaes and Tufano, 2006). Highly rated companies enjoy good market reputation and have easier access to cheap debt (according to the trade-off theory (TOT), e.g., Tang, 2009). However, the better the CR, the less debt could be issued before the CR dropped[14], forcing companies to maintain low leverage ratios (e.g., Shivdasani and Zenner, 2005).

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[12] A number of studies suggest that lower information asymmetry diminishes firms' cost of equity financing causing a change in the preference ranking over financing sources (predicted by the POT), and leading to lower leverage ratios (Agarwal and O'Hara, 2007; Easley and O'Hara, 2004).

[13] This in turn effects in decreased debt-to-equity ratios.

[14] When CRAs assess firms' creditworthiness, they pay close attention to firm indebtedness. In other words, the higher the company's leverage, the higher the default probability and a possibility of a lower CR

Up until recently, according to the prior literature (Antoniou et al., 2008), countries were typically categorized into MB and BB in terms of the orientation of their financial systems. Traditionally, in BB countries, companies tend to obtain loans from banks with which they maintain a long-term relationship. The creditworthiness of the firm is thus assessed by the bank without much need for the external CR provided by the CRA. In other words, the financial orientation of a country can also change the magnitude of firm-specific determinants' impact on debt-equity ratios.

In order to capture this indirect relation I split the overall sample into two subsamples (MB and BB oriented economies) based on the traditional division of a country's financial system orientation. Additionally, I interact firms' CRs with the market-based dummy variable (*MBDUM*)[15]. To the best of my knowledge, there has been no study devoted to this issue.

Fifth, a number of studies investigating the disparities in debt levels of companies operating in MB and BB countries present contrasting results even when the same countries are examined[16]. Until the beginning of 1980s, the widely accepted arguments claimed that due to differences in the size and development of financial intermediation, the leverage levels were higher in the BB economies such as Japan and continental Europe as compared to MB countries, e.g., the U.K or the U.S. (Schmukler and Vesperoni, 2000). However, during the last two decades of the twentieth century the stock markets in many countries that are regarded as BB expanded more than 13 times in terms of market capitalization, whereas equity

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[15] *MBDUM* is a dummy variable equal to 1 if the economy has the market-based (MB) financial system and zero if the economy's financial system is bank-based (BB).

[16] While Borio (1990) and Antoniou et al. (2008) report German companies (operating in a bank-based country) as more highly geared than Canadian firms (from a market-based economy), Rajan and Zingales (1995) find evidence for the opposite.

financing grew more than 16 times (Rajan and Zingales, 2003). During the same period, in the MB oriented U.S. and U.K. the corresponding growths were roughly fourfold. In the light of the aforementioned evidence, a number of scholars question the validity of the distinction drawn between the BB and MB financial orientation, especially in regards to firms' financing decisions (Rajan and Zingales, 1995; Tadesse, 2006). Nonetheless, relevant studies still utilize the crude division of financial systems into MB and BB.

My thesis is the first which employs an additional and alternative way to classify a country's corporate financing type: the Financial Architecture (*FINARCH)* variable[17]. This variable is the first principal component of three indices measuring the size, activity and efficiency of a stock market vis–à–vis the banking system of country annually. The more MB-oriented financial system is represented by the higher values of the *FINARCH* determinant. Tadesse (2002) argue that such a variable more adequately "*measures the degree of market orientation of a financial system*" (p. 763). In order to assess the influence of an economy's financial orientation on the relation between CRs and companies' capital structure I incorporate the interaction term between firms' credit ratings and the *FINARCH* variable.

I find that except for Japanese companies, the impact of CRs on a capital structure is more significant in more market-oriented financial systems (measured by the *FINARCH* variable), whereas the simple division into MB and BB countries, has no significant influence on the CR effect.

Sixth, there is evidence (Deb et al., 2011; Li et al., 2006) outlining the pivotal importance of Nationally Recognized Statistical Rating Organizations (NRSROs)

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[17] See section 2.2.2 in the literature review chapter for more detailed explanation of the *FINARCH* variable.

and their services in the U.S. Furthermore, the CRs assigned for the Japanese firms by the CRAs based in the U.S. are deemed to be downwardly biased as compared with American firms[18] (e.g., Behr and Güttler, 2008; Nickell et al., 2000; Packer and Reynolds, 1997). This fact may lead to a diminish reliability of CRs' informatory role on the process of issuing equity and bonds from the perspective of Japanese investors and firms alike. However to this date there has been no study devoted to the examination of differences between the CRs effects on a firm's capital structure in the U.S. and Japan.

Finally, my panel data set spans 20 years which is more than most other relevant studies (Antoniou et al., 2008; de Jong et al., 2008; González and González, 2008; Öztekin and Flannery, 2012 which investigate periods of 14, 5, 10, and 16 years respectively). This longer timespan allows for a better perspective on the firms' capital structure policies and their fluctuations over time.

Summarizing, the objectives of my thesis are:

1. To assess the CRs' impact on firms' capital structure, speeds with which they adjust towards the optimum levels of leverage, and their fluctuations over time.
2. To examine disparities in CRs' effect on capital structure between companies operating in bank-based (BB) and market-based (MB) countries, and in particular between the U.S. and Japan.
3. To examine disparities in CRs' effect on firms' capital structure between advanced and developing countries.

The rest of the thesis is structured as follows. Chapter 2 provides a brief review of literature related to three major issues addressed in my study: firm's capital

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[18] This ignites strong criticism of CRs issued by the major U.S. CRAs in Japan (Fairchild and Shin, 2006). Both Japanese firms and authorities suspect that the reason for this kind of "*unfair*" treatment is intentional and has its roots in an attempt to hamper their credibility and competitiveness.

structure, the financial orientation of a country, and credit ratings. In Chapter 3, I develop hypotheses, econometric models and elaborate on variables and data used in the statistical analyses. All the results and their implications are described in the following Chapter 4. Chapter 5 is a summary of my main findings.

Chapter 2. Literature Review

This chapter offers a summary of the studies relevant to three major topics combined in this paper: the theoretical background of firm financing, orientation of a country's financial system, credit rating agencies (CRAs), credit ratings (CRs), and the credit rating industry's reform in the U.S.

2.1 Theories of Capital Structure

Since Modigliani and Miller (1958) formulated their influential irrelevance theory, a number of papers have been written that extend or critique their work and more theorems have been developed. From the previous literature one can distinguish among three major strands of capital structure studies: the trade-off theory (TOT), the pecking order theory (POT), and market timing. All these efforts were undertaken in order to answer the fundamental question: how do firms choose their source of financing? Over fifty years later, Huang and Ritter's (2009) statement that *"No single theory of capital structure is capable of explaining all of the time-series and cross-sectional patterns that have been documented."* (p.238) reflects perfectly the current situation in the field of capital structure.

The TOT (Kraus and Litzenberger, 1973) claims that the firms' capital structure is chosen based on the idea of achieving an optimal level of leverage. This value-maximising debt ratio is achieved by balancing the costs and benefits of debt financing. Each company has its own target leverage which it endeavors to maintain by adjusting its ratios towards this target. The speed of this adjustment depends on the adjustment's costs as compared to costs of being away from the optimum leverage. On the one hand, we have the advantages of leverage such as the reduction of corporate tax. On the other hand, firms incur the costs of financial distress both direct and indirect (Modigliani and Miller, 1963) and various agency costs (Jensen, 1986; Jensen and Meckling, 1976; Lin et al., 2011; Myers, 1977; Stulz, 1990). Finally, there are the advantages and drawbacks of signaling through increasing the firm's leverage as enunciated by Ross (1977). Among the studies that support the TOT a survey by Graham and Harvey (2001) finds that over 80 per cent of firms do target their debt ratios. More recently, Frank and Goyal (2003) present the evidence consistent with the TOT.

According to the POT formulated by Donaldson (1961), and further developed by Myers and Majluf (1984) and Myers (1984), companies do not aim at any specific debt-equity ratio. Due to the asymmetric information between managers and investors, markets usually underprice the issued shares. Hence, to minimise the adverse selection problem, firms give preference to internal financing (retained earnings) over debt and then to debt over equity when firms need to raise funds for investment. Moreover, in the POT, in contrast to the TOT, companies have no target debt ratios. Their leverage levels are just the outcomes of the imbalances between retained earnings and firms' investment activities. Consequently, the speed of adjustment (SOA) is expected to be insignificant and close to zero. The POT enjoyed a period of ascendancy in the 1990s. In their study, Shyam-Sunder and Myers (1999) argue for the validity of the POT over TOT.

The market timing theory also eschews the idea of an optimal capital structure. Instead, as Baker and Wurgler (2002) argue, management is more prone *"to issue equity when their market values are high, relative to book and past market values, and to repurchase equity when their market values are low"* (p.1). Firms minimize the cost of financing by timing the market. Akin to the POT, firms do not have target leverage ratios to which they would adjust their capital structure. Relating to the market timing theorem, Zwiebel (1996) introduces a managerial entrenchment theory in which managers' stubbornness, due to their firms' good performance, causes them to refuse new debt issues to rebalance their capital structure.

One way to reconcile the TOT and the POT was developed by Fischer et al. (1989), who use dynamic modeling in capital structure analysis. It allows the firms to follow the POT in the short run and the TOT in the long run. Whenever the adjustment costs of rebalancing towards the optimal level of leverage outweigh the cost of being outside of the aforementioned optimum, the managers will allow their firm's leverage to divert temporarily from it and make the adjustments into their debt ratios only occasionally (when the benefits of doing so exceed the costs associated with it). Due to these market frictions, the lagged debt ratios have an impact on the SOA, which is expected to be less than one and greater than zero. The research supporting a dynamic capital structure has been growing quickly and can be categorized into two groups as follows.

The first category of studies (Bayless and Chaplinsky, 1991; Hovakimian et al., 2001; Mackie-Mason, 1990) employs qualitative dependent variables to investigate how firm-specific determinants influence company's decisions to issue or repurchase its equity and debt. Supporting the TOT, they document that firms are more likely to issue stocks or repurchase debt when their current gearing ratio is above their target. Furthermore, Hovakimian et al. (2001) argue that *"the deviation between the actual and the target ratios plays a more important role in the repurchase decision than in the issuance decision."* (p.1). They explain this phenomenon by a larger degree of discretion enjoyed by firms when their capital is repurchased than when capital is issued. Therefore, target capital structure can play a greater role in the repurchase of equity or debt.

The second (and more voluminous) category of research analyzes the average

SOA with which companies converge towards their desired leverage levels using partial-adjustment models of capital structure. Employing this approach, Alti (2006), Fama and French (2002), Frank and Goyal (2004), Harford et al. (2009), Huang and Ritter (2009), Leary and Roberts (2005), Lemmon et al. (2008), and Strebulaev (2007), document that firms rebalance their debt financing with various SOA toward their target debt levels.

As Hovakimian and Li (2011) observe, the pace of this adjustment has significant consequence for the validity of TOT. For example if a firm closes between 7 and 18 percent of the gap between its actual and target gearing within one year (Fama and French, 2002), it will take between ten and a half and three and a half years to close half of the gap between companies' current and target levels of debt. In such case, an optimal level of debt plays only a secondary role in the financing decision-making of the firms, consistent with the hypothesis that factors proposed by other capital structure theories (the POT and the market timing) outweigh the costs of being away from target debt ratio. If however the annual magnitudes of SOAs are found to be much faster (approximately 34 and 36 percent for market and book gearing ratios respectively) as in Flannery and Rangan (2006), then the target debt is of pivotal importance for firms suggesting that the POT and market timing are not the dominant factors.

Prior studies report different SOAs over time and different SOAs for firms of different size (Antoniou et al., 2008; Faulkender et al., 2012; Flannery and Rangan, 2006). Moreover, the existing literature finds evidence that depending on the degree of financial constraints it faces, a company exhibits different rates of convergence towards its desired level of debt. Over-leveraged (under-leveraged) firms should adjust relatively faster (slower) (Byoun, 2008; Faulkender et al., 2012).

Recently, a number of studies undertake an international comparison of SOAs and document that the speeds with which firms converge towards their target leverage levels vary substantially. Antoniou et al. (2008) find evidence that companies based in France (Japan) display the fastest (slowest) SOAs of approximately 40 and 11 percent within one year, whereas those operating in the U.S. or the U.K. fall in between those numbers. They argue that different SOAs among countries may be an outcome of their financial systems and their orientation (market-based and bank-based). González and González (2008) examining a sample of 39 countries, find support for a presence of target leverage and SOAs in 37 of them[19]. They report much faster and roughly similar SOAs of 40 percent for the U.S. and the U.K. in contrast to very fast adjustment ratios of over 50 percent a year for Japan and France. Öztekin and Flannery (2012) claim that an economy's legal and financial institutions significantly influence the SOAs due to distinct costs and/or benefits associated with the adjustment process. Furthermore they document that on average firms based in MB oriented countries adjust with greater speed towards their target gearing ratios as compared with companies based in BB countries. They argue that their results *"suggest that a market-based structure imposes lower costs of adjusting or higher benefits of converging to a firm's optimal capital ratio, or both"* (p.103).

The capital structure debate becomes even more complex with inclusion of the inertia hypothesis (Welch, 2004). Similar to Baker and Wurgler (2002), Welch discounts both the TOT and the POT. Instead, he argues that a profitable company will enjoy a rise in the price of its stock, which in turn will lead to an increased market value of a firm. Welch states that lagged stock returns are the best tool in forecasting company's capital structure. Rauh and Sufi (2010) find that debt

[19] The two exceptions are Argentina and Norway.

heterogeneity explains a non-negligible portion of differences in capital structures. Graham (2000) argues against the TOT, and states that firms often tend to be under-leveraged, which according to Faulkender and Petersen (2006) is due to the limited access to the debt market. They assert that the TOT model, while focusing on the demand side of debt financing fails to include the variables that measure the constraints on a firm's ability to increase its leverage (the supply side) such as a presence of credit ratings (CRs).

All in all, an extensive literature has formed during the last fifty years or so that investigates the main forces driving the firms' capital structure. Most of these studies focus on a number of the firm-specific determinants with regard to the agency costs, information asymmetry, and taxes.

2.2 Countries' Financial Orientations

2.2.1 Market-Based and Bank-Based Financial Systems

For over a century policymakers and researchers have argued about the merits and demerits of BB vis-à-vis MB systems and their relative superiority in terms of the economic growth, firms' survival, and degree of ease in raising capital. According to Schmukler and Vesperoni (2000) "*In bank-based systems, banks provide most of the credit to the economy. In market-based systems, firms raise funds in capital markets (bond and equity markets)"* (p.4). This phenomenon stems from the fact that the BB structure is characterized by the banking system being relatively more developed as compared to the stock market. The opposite is the case of the MB economies where stock markets are larger and more liquid (Demirgüç-Kunt and Levine, 1999). Existing research traditionally focuses on four countries. Japan and

Germany are considered as a benchmark for the BB economies, whereas the U.S. and the U.K. are considered as the benchmark for the MB economies (e.g. Antoniou et al., 2008; Borio, 1990; Rajan and Zingales, 1995).

The BB view emphasizes the beneficial role of financial intermediaries in gaining and interpreting the information about companies and their managements, enhancing capital allocation and corporate governance (Diamond, 1984). Allen and Gale (1999) claim that the BB environment is more efficient in dealing with the firms' liquidity risk, which in turn promotes better investment decisions. Boot and Thakor (1997) point out that a coalition of banks often cooperate when lending to big companies, and do much better than the uncoordinated market investors in terms of monitoring and mitigating moral hazard inherent in the borrowers. The supporters of the BB orientation argue that more liquid markets in the MB countries result in low costs and ease of trading, therefore, investors do not devote adequate effort to monitoring, which in turn may lead to a lower level of monitoring of borrowers (Bhide, 1993).

The proponents of market-oriented (MB) financial systems mention, among others, its positive role in improving liquidity (Holmstrom and Tirole, 1993) and fostering stronger corporate governance (Jensen and Murphy, 1990). Moreover, Levine (2002) asserts that the MB environment is more efficient in promoting effective risk management. Tsoukas (2011) concludes that the more developed the stock market, the greater the chance of survival for the firms in the given country[20]. Likewise, the more the economy depends on the banking system as a financing source, the lower the chance of a firm's survival. This is particularly the case during

[20] In his study, Tsoukas focuses on five Asian economies: Indonesia, South Korea, Malaysia, Singapore, and Thailand.

times of recession[21]. In a recent study, Öztekin and Flannery (2012) observe that the MB structure is associated with lower costs and greater benefits of being close to the targeted level of debt for firms (faster SOAs). As a result, companies in MB countries as compared to firms in the BB countries adjust much faster towards target leverage ratios (annually by 19 and 3 per cent respectively). Morck and Nakamura (1999) and Weinstein and Yafeh (1998) argue that banks do not provide enough funding for innovative projects due to their inherent risk aversion and conservatism. Thus, they argue for the superiority of MB financial structure in terms of firms' financing. This argument is confirmed by studies of Bencivenga and Smith (1991) and Saint-Paul (1992) who also find that market oriented financial systems promote financing of long term projects, which in turn fosters new technologies with long development stages.

Tadesse (2002) argues that when a country is financially under-developed or has a majority of small firms, the BB system is more efficient in fostering economic growth. For financially developed countries or for those dominated by large companies, the MB system is superior. Antoniou et al. (2008) assert that firms operating in the bank-oriented Japan and Germany maintain higher levels of leverage compared to companies from MB countries, e.g., the U.S. and the U.K. Furthermore, Japanese and French firms encounter the slowest and the fastest SOA, respectively. Giannetti (2003) documents a higher degree of firms' leverage in European countries with less developed stock markets. However, Schmukler and Vesperoni (2000) come to the opposite conclusion. As a possible explanation for their findings, they propose higher liquidity constraints in the BB economies with the banking system not providing enough credit to the companies.

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[21] Additionally, the chance of a company's survival depends on bankruptcy law (e.g., Chapter 11 in the U.S.) that prevails in a country.

2.2.2 Financial Architecture

A number of studies examining the disparities in debt levels of firms operating in MB and BB countries present contrasting findings. Antoniou et al. (2008) and Borio (1990) report German companies (BB country) as more highly geared than British firms (MB country). However, Rajan and Zingales (1995) arrive at a different conclusion. Due to these diverse results and a rapid development of stock markets in many of BB countries during last three decades (Rajan and Zingales, 2003), many scholars criticize the traditional differentiation between BB or MB economies as being inaccurate. Tadesse (2006) concludes *"There is no uniformly accepted empirical definition of whether a given country's financial system is market- or bank-based"* (p. 764). I employ an additional and alternative way[22] of capturing the financial orientation of country's financial system by using the *FINARCH* variable measuring a financial system's activity, size, and efficiency developed and used by Čihák et al. (2012), Levine (2002), and Tadesse (2002, 2006).

In a nutshell, *FINARCH* is an index of the degree of stock market orientation in the given country. This index is formed by taking the first principal component of three other indices measuring the size, activity and efficiency of stock market vis–à–vis the banking system of economy. The more MB-oriented financial system (represented by the higher values of *FINARCH* variable) should make equity financing cheaper and more easily available for the companies. This in turn, according to the pecking order theory (POT), would induce firms to raise their funds via stock markets rather than by bond issuance or bank loans.

[22] The traditional differentiation between MB and BB financial systems is achieved by dividing the countries into two samples (MB and BB), as well as, employing a dummy variable *MBDUM* (mentioned in the introduction and further described in Appendix E).

Following Tadesse (2006), the size index measures the size of equity markets as compared with that of banking industry in each of the countries. The stock markets' size is captured by the ratio of the market capitalization of domestic stocks to the GDP of the economy, whereas the size of banking industry is given by the bank credit ratio[23]. This size index merges these two measures into one ratio (first divided by the second) such that the larger the ratio, the more MB-oriented the financial system. Activity index is formed by dividing the total value of shares traded to the GDP by the bank credit ratio. Like before, the higher the value of index, the greater the degree of MB financial orientation of a country. The efficiency index is calculated as the product of the turnover ratio (ratio of the value of total shares traded to average real market capitalization) and banks' overhead ratio[24].

Summing up, The *FINARCH* variable enables me to measure the level of the stock markets development relative to the banking industry in three dimensions: size, efficiency and activity, as well as their annual fluctuations. In contrast to the questionable MB/BB differentiation, it captures the different pace of overall development of stock markets across groups of countries.

2.3 Credit Ratings

2.3.1 Capital Structure and Credit Ratings

Another strand of research relates to the significance of credit ratings in the process of the firms choice between debt and equity financing. A credit rating agency (CRA) provides information about financial instruments and their issuers in

[23] For the detailed definition of the (*FINARCH*) and each of the three indices see Appendix E.

[24] This ratio is defined as a bank's overhead costs as a share of its total assets.

the form of a credit ratings corresponding to the assessed creditworthiness of the issuing body. Consequently, credit ratings (CRs) can be seen as a proxy for the probability of firms' defaults. Thus, they enable institutional and individual investors to value the financial instruments and set the required yield on them accordingly to their level of default risk. The CRAs by downgrading (or upgrading) a certain financial asset, such as a corporate bond, have the power to create (or destroy) the value of that asset. According to Estrella et al. (2000), in 2000, the number of CRAs was somewhere between 130 and 150 worldwide, out of which 26 were based in the G10 countries[25] (except Luxembourg). In regards to NRSROs in the U.S. at the end of 2012, eleven CRAs were operating. However, both the U.S. and global credit rating industries are overwhelmingly dominated by three major rating agencies: Standard & Poor's, Moody's, and Fitch. The immense power of the largest CRAs is described by Friedman (1996):

> *There are two superpowers in the world today in my opinion. There's the United States and there's Moody's Bond Rating Service. The United States can destroy you by dropping bombs, and Moody's can destroy you by downgrading your bonds. And believe me, it's not clear sometimes who's more powerful.*

Ingram et al. (1983) find evidence for bond price fluctuations as a reaction to changes in the CRs. Hand et al. (1992) document a significant impact of changes in CRs on bond and stock excess returns. Kashyap et al. (1994) use bond CRs to distinguish between financially constrained (those without bond CRs) and unconstrained companies (those having bond CRs). Graham and Harvey (2001) through a survey carried on the U.S. firms' CFOs document that CR is the second most important factor (nearly on the par with financial flexibility) when making

[25] All twelve member countries of G10 group (Initially the group had consisted of ten countries. However, after its enlargement the name G10 remained unchanged.) listed in an alphabetical order are: Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States.

financing decisions. According to their survey, over 57 percent of managers find their company's CR very important. Bancel and Mittoo (2004) find even stronger evidence for the importance of credit ratings from a survey of European companies' managers: firms' CR and financial flexibility being very important for roughly 91 and 73 percent of CFOs respectively. Leary and Roberts (2005) divided their sample into two portfolios: companies with above and below speculative-grade CRs. Their results show a negative association between the investment CRs and a debt issuance. The presence of CRs is used as a proxy for a firm's access to the public debt markets by Faulkender and Petersen (2006). In their research, they document that firms with CRs have on average debt ratios 35 per cent higher. This relation is confirmed by Sufi (2009) who examines the effect of the commencement of bank loan ratings in the U.S. in 1995.

Kisgen (2006) undertakes the first thorough investigation of credit ratings by introducing his Credit Rating-Capital Structure Hypothesis (CR-CS Hypothesis) and argues that a better CR is beneficial for a firm. He concludes that companies expecting changes in their CRs tend to issue equity instead of bonds in order to avoid the extra costs of downgrade or later capitalize from an upgrade. These findings are contrary to the pecking order theory (POT). Kisgen and Strahan (2010) argue that CRs influence investors' willingness to lend, since they often include non-public information provided by companies to CRAs. Hovakimian et al. (2009) report that a decrease in CRs triggers a fall in firms' leverage, but the same firms on average do not respond to CRs upgrades. They asserted that this evidence could result from targeting a certain minimum CR by the companies. Frank and Goyal (2009) observe a significant and positive (negative) impact on the total debt to book (market) assets ratios if a firm has a debt with an investment-grade rating. Tang (2009) utilizes the Moody's CR refinement introduced in 1982. His study shows that firms with an enhancement in ratings (e.g. from Aa to Aa1), gain better access to the credit market. Hence, they react with increasing debt financing relative to equity financing. Moreover, Tang documents that companies upgraded by the CRA on average invest more, grow faster, and keep less retained earnings than downgraded firms.

Kisgen (2009) claims that a *"complete model of capital structure must include credit ratings along with standard tax, information, agency, and financial distress factors"* (p.1324), and that using a dummy variable for a downgrade better explains the firm's capital structure than its Z-score, profitability, and even leverage. He documents the positive relationship between the CRs and firms' gearing levels. In addition, his results show that downgraded firms adjust significantly faster towards their target levels of gearing. Lemmon and Roberts (2010) show that downgrades to below-investment grade substantially alter firms' investment and financing decisions. Byoun (2011), according to his Financial Flexibility Hypothesis (FFH), finds evidence of an inverted-U shaped association between leverage and CRs. He argues that due to the different stage of a firm's development, there is a negative relationship between the CRs and gearing ratios, but non-rated companies have lower debt-equity ratios than rated firms. Most recently, Faulkender et al. (2012) use bond ratings[26] to distinguish between financially constrained (without bond CRs) and unconstrained companies (with bond CRs). They find that over- (under-) levered companies with debt CRs adjust substantially slower (quicker) towards their target leverage ratios than non-rated firms.

[26] They use a dummy variable (*RATED*) equals 1 if the company has a bond CR and zero otherwise.

2.3.2 Credit Rating Industry's Reforms in the U.S. (2006-2010)

As mentioned in Chapter 1, during the last 15 years or so, there has been a growing discontent with the CRAs and their CRs leading to severe criticism from investors, scholars, and government bodies alike. The current reforms of the credit rating industry undertaken by regulators in the U.S. endeavor to tackle five broad categories of problems identified in the ongoing debate (Deb et al., 2011). These five areas of focus listed by them are: (1) lack of diversity in ratings, (2) regulatory and mechanistic reliance (3) conflicts of interest and ratings shopping, (4) faulty methodologies and inadequate risk models applied by CRAs, and (5) misperception of what ratings represents.

These reforms are relevant to my study. First, American firms account for the majority of my global sample. Second, in my thesis I use the CRs issued by S&P which is one of the Nationally Recognized Statistical Rating Organizations (NRSROs) based in the U.S. Thus, both S&P and its CRs are directly affected by the series of regulatory changes described in this section. Third, the U.S. is a traditional benchmark for a MB country where CRs are expected to have a significant impact on capital structure. Finally, the reforms coincide with the last five years of the period analyzed in my thesis (2006-2010)[27] which offers a unique opportunity to examine the impact of CR industry's reform on the relation between CRs and firms' debt ratios.

On the 29th of September 2006, Congress enacted the Credit Rating Agency Reform Act (CRARA), which among other things, gave a definition of a *"Nationally Recognized Statistical Rating Organization"* (NRSRO) and the rules of its

[27] In addition, according to the existing literature (Antoniou et al., 2008) a 5-year period is long enough to conduct a valid Two-Step System GMM econometric procedure employed in this study.

registration process. According to SEC (2007), CRARA gives:

> *authority for the Commission to implement registration, recordkeeping, financial reporting, and oversight rules with respect to registered credit rating agencies, and directs the Commission to issue final implementing rules no later than 270 days after its enactment (or by June 26, 2007).* (p.1).

These goals were achieved by adding Section 15E and amending Section 17 of the Securities Exchange Act of 1934. By the 26th of June 2007, the U.S. Securities and Exchange Commission (SEC) implemented Exchange Act Rules 17g-1 through 17g-6. Appendix A offers the detailed explanation of those Rules.

[Insert Appendix A here]

Following the implementation of the NRSRO Rules in 2007, the SEC commenced granting registrations to applicants (CRAs). By the 23rd of June 2008, 10 registrations were granted[28]. Based on the number of ratings in existence as of year-end 2010 reported by each of 10 CRAs registered as NRSROs and summarized in Appendix B, it is clear than by far the largest two CRAs are S&P and Moody's with roughly 1.2 and 1 million CRs respectively. Together with the third largest NRSRO they accounted for over 97 percent of ratings issued by all registered CRAs.

[Insert Appendix B here]

In addition to the above-mentioned Rules, the SEC amended a number of them in February and December 2009 as described by SEC (2011b): *"with the goal of further increasing the transparency of NRSRO rating methodologies, strengthening the disclosures of rating performance, prohibiting NRSROs from engaging in certain*

[28] Since then one more CRA applied and was granted a status of NRSRO (HR Ratings de México, S.A. de C.V. on the 5th of November 2012).

practices, and enhancing NRSRO record keeping." (p.1)

Finally, on the 22nd of July 2010 the so-called *"Dodd-Frank Wall Street Reform and Consumer Protection Act"* was signed into law. First, it amended Section 15E in order to improve the regulation and oversight of registered CRAs by forcing new reporting, disclosure and examination rules. It obliges the SEC's staff to undertake an investigation of all NRSROs at least once a year. Moreover, under Section 15E, the SEC is required to publicize a yearly report written in an understandable manner and summing up the main findings of the examination conducted, the relevant responses by the CRAs to any significant regulatory inadequacies detected, and whether the CRAs implemented the recommendations of the SEC from the prior reports. The Dodd-Frank Act also strengthens the SEC's oversight prerogatives by establishing an Office of Credit Ratings (Deb et al., 2011). Lastly, one more reform of the Dodd-Frank Act will have a substantial impact on firms using CRs in their filings with the SEC. This reform was a repeal of Rule 436(g) which was effectively insulating NRSROs from the liability as experts under Section 11 of the Securities Act (Carbone, 2010).

Summarizing, the ongoing current reform of a credit rating industry in the U.S. started with the Rating Agency Reform Act in 2006 and was followed by implementation and a series of amendments of rules in 2007 and 2009, and later in 2010 by the passage of the Dodd-Frank Act. All of these regulatory efforts were suppose to alleviate CRAs and CRs-related deficiencies.

Chapter 3. Methodology

This chapter describes the hypotheses development, data sources, variables' explanations, basic model, and methods of estimation.

3.1 Hypotheses development

Up until recently, according to the prior literature (Antoniou et al. 2008), countries were categorized into capital market-based (MB) oriented and bank-based (BB) oriented in terms of the orientation of their financial systems. Traditionally in BB countries, the banking industry supplies the majority of credit to firms (Schmukler and Vesperoni, 2000). Ties between companies and the banking sector, such as loan commitments (Mishkin, 2005) are stronger than in the market-based (MB) countries. Due to the close long-term relation between lenders and the borrowing firms, banks enjoy the advantages of inside monitoring. This in turn decreases the information asymmetry and allows banks to assess the creditworthiness of a borrower using either their own internal credit ratings or some other credit scoring systems, without a need for external credit ratings (CRs).

Companies that operate in the countries regarded as MB do not have such a close relationship with a bank and may suffer from a greater degree of information asymmetry. The individual or institutional lenders cannot assess the quality of borrowing firms and their investments. A credit rating agency (CRA) can bridge this gap by providing CRs which can highly influence companies' access to and cost of funds. By changing a firm's CR, the CRA sends a signal to investors about this firm's altered creditworthiness, which in turn affects the investors' required rate of return.

In my thesis I apply a twofold approach in order to capture this higher importance of CRs in economies traditionally regarded as MB. First, I divide the overall sample into two sub-samples: MB and BB oriented countries, Second, I interact firms' CRs with the market-based dummy variable (*MBDUM*)[29] proxying for a country's financial system orientation.

Hypothesis 1. The effect of a credit rating on a firm's capital structure is more significant in MB than in BB countries.

Over ten years ago, Ferri et al. (1999) pointed out, that in the developing economies there are not enough external CRs and their quality is poor due to their short history. While the latter claim cannot be empirically confirmed or rejected, the former argument finds support in the data collected for this study. Roughly 4 percent of firms (or 14 after exclusion of the U.S. and Japan from the sample) and 3 (17) percent of annual observations in the sample are from developing countries[30].

In addition, in developing countries there is a strong causal relation between sovereign and firms' CRs documented by recent studies (e.g. Borensztein et al., 2007; Williams et al., 2013). Therefore, frequent historical downgrades and volatility for sovereign ratings of developing economies regarded as excessive by a number of scholars (Ferri et al., 1999; Monfort and Mulder, 2000) lead to increased volatility of firms' CRs. Due to the aforementioned, the information role of CRs in the process of issuing equity (Frank and Goyal, 2009) or debt (Tang, 2009) loses importance. In other words, one would expect that capital markets' investors from developing countries do not attach as much weight to the CRs as their peers from

[29] *MBDUM* is a dummy variable equal to 1 if the economy has the market-based (MB) financial system and zero if the economy's financial system is bank-based (BB).

[30] See Appendix D for the number of firms and observations for advanced and developing countries.

advanced countries.

Moreover, there is ample evidence indicating that the comparative importance of banks and capital markets in developing and advanced economies is quite different. Basically, the more economically developed is a country, the more important become stock and bond markets relative to banks (Allen and Gale, 1995, 1999; Boot and Thakor, 1997, 2000; Boyd and Smith, 1998; Demirgüç-Kunt, Feyen and Levine, 2012; Morck and Nakamura, 1999; Song and Thakor, 2010). Consequently, in developing countries firms finance a larger share of their investment needs with various forms of bank lending than their counterparts from advanced economies. Thus, as in Hypothesis 1, a weaker effect of CRs on a capital structure is expected.

To examine the idea formulated below in Hypothesis 2, I split the overall sample into advanced and developing sub-samples of countries. Second, I apply the interaction term between the CRs and the dummy variable (*DEVDUM*)[31] proxying for a country's economic development.

Hypothesis 2. The effect of a credit rating on a firm's capital structure in developing economies is less significant than in advanced economies.

According to the trade-off theory (TOT) the positive role of better credit ratings on availability of debt at lower price should result in easier and cheaper access to the credit market. Hence, firms react by increasing debt financing relative to equity financing (e.g. Tang, 2009). de Jong et al. (2008) make a logical argument that in a country with a more developed bond market, firms enjoy more alternatives to

[31] *DEVDUM* is a dummy variable equal to 1 if the country is classified as advanced economy and zero otherwise (IMF, 2012).

borrow funds, and lenders are more prone to provide financing. Due to that fact, the importance of CRs as an important signaling tool for borrowers (in line with the TOT) should rise with the level of credit market development.

In my study I use the interaction between firms' CRs and a proxy for bond market development level (*BOND*). If the development of bond market strengthens the positive effect of CRs on firms' debt ratio, the coefficient of my interaction variable should be significant and positive. I test for this relation in my third hypothesis formulated below.

Hypothesis 3. A credit rating has a more positive effect (or a less negative effect) on a firms' capital structure in economies with more developed bond markets.

Due to diverse results in the literature (Antoniou et al., 2008; Borio, 1990; Rajan and Zingales, 1995) and a rapid development of stock markets in many BB countries during last three decades (Beck and Demirgüç-Kunt, 2009; Rajan and Zingales, 2003), many scholars criticize the traditional differentiation between BB or MB economies as inaccurate. A financial architecture variable (*FINARCH)* measures a country's financial system orientation, its annual fluctuations, and is an additional and alternative proxy[32] for the MB versus BB differentiation between economies (Čihák et al., 2012; Levine, 2002; Tadesse, 2002, 2006).

Thus, in line with the argument used in the development of Hypothesis 1, one would expect, that the higher the value of *FINARCH* (indicating a more market-oriented financial orientation of the country), the more significant the effect of CRs on the firm's capital structure. In order to investigate this relation, I interact

[32] Additional to the market-based (*MBDUM*) dummy variable equal to one if an economy is MB and zero otherwise.

companies' CRs with the *FINARCH* variable.

Hypothesis 4. The effect of a credit rating on a firm's capital structure is more significant in countries with more market-oriented financial architecture.

Assuming that companies have a target leverage ratio, in a perfect market with no frictions and costs impeding the speed of adjustment (SOA), in case of any deviation from a target gearing ratio, a company would instantaneously return to its optimal level of leverage. The existing literature shows that the firm's SOA towards its target level of gearing depends on the costs and benefits stemming from such an adjustment (e.g. Drobetz and Wanzenried, 2006; Faulkender et al., 2012; Korajczyk and Levy, 2003). An excellent example of direct adjustment costs are transaction costs of issuing/repurchasing debt and equity incurred by a firm when it converges to its desired gearing ratio which can significantly impede the realization of target capital structure and cause a company to divert from its optimal leverage periodically (Fischer et al., 1989; Leary and Roberts, 2005; Flannery and Rangan, 2006). Öztekin and Flannery (2012) classify the adjustment costs into three categories: the above-mentioned direct transaction costs of accessing capital markets, information asymmetry between inside and outside investors, and the government laws/regulations constraining firms' financial flexibility. Cook and Tang (2010) document that firms operating in favorable macroeconomic environments have faster SOAs towards their target debt ratios. They use term and default spreads, GDP growth, and dividend rate as proxies for access to capital markets.

Faulkender et al. (2012) forcefully argue that the assumption of a same speed of adjustment for different firms employed in most of prior research is unreasonable. They document that the rate of adjustment is substantially different for under- and over-levered companies (29.8 and 56.4 percent respectively). They explain such a discrepancy

> *Even if adjustment costs were equal for under- and over-levered firms, the benefits may be asymmetrical. Under-levered firms forego tax benefits of leverage and have little concern with financial distress costs. Yet potential financial distress costs loom quite large for over-levered firms.* (p.636).

In addition, they compare the SOAs of rated and non-rated companies and argue that when firms are over- (under-) levered, and have a CR, they adjust substantially slower (faster) than non-rated firms. They propose that this is associated with the different degree of financial constraints of two types of companies due to the different ease of access to financial markets and costs of doing so for rated (less financially constrained) and non-rated firms (more financially constrained). They argue that the fact of having or not having a CR is so important that it can reverse the findings of faster (slower) SOAs for over- (under-) levered companies.

Kashyap et al. (1994) use bond CRs to distinguish between financially constrained (those without bond CRs) and unconstrained companies (those having bond CRs). Korajczyk and Levy (2003) document that financially unconstrained firms are more likely to deviate from their target gearing ratio in an attempt to time the markets by issuing/repurchasing securities when macroeconomic conditions are most favorable. In their sample, out of 565 firm events labeled as *"financially constrained"* only 8 had investment-grade CRs issued by S&P and the rest of events had either speculative-grade CRs or were not rated.

According to Byoun (2011) firms with low CRs have insufficient internal funds and therefore are forced to engage in capital market transactions in order to fund their investment needs. This in turn enables them to adjust their debt ratio at relatively low marginal cost[33]. On the other hand, companies with high CRs, only

[33] While conducting capital market transactions in order to raise funds (by issuing debt or equity), a

rarely tap capital markets due to internal funds large enough to pay for their investment needs. In other words, the adjustment of their capital structure would require from firms an additional *"trip"* to either the stock or the bond market, thus, incurring extra costs. His findings are confirmed by Faulkender et al., (2012) who also find that the companies adjust with faster speed when adjustment costs are sunk (when in order to raise funds, a firm has already borne transaction costs and can simultaneously converge towards its target debt ratio) relative to when these costs are incremental.

To test for the idea formulated below in Hypothesis 5, I use two approaches. First, I interact CRs with *LAGLEV* variable and check if the obtained estimates are significant[34]. Second, I divide the samples of firms with respect to their CRs into two groups: companies with investment-grade CRs versus firms with speculative-grade CRs.

Hypothesis 5. Firms with high credit ratings (less financially constrained) adjust towards their optimal debt-equity ratios at a slower speed than firms with poor credit ratings (more financially constrained).

In addition to hypothesized disparities between the effects of CRs on a company's capital structure in different groups of countries (categorized with respect to economies' financial orientations or economic development), credit ratings may have different impact on firm's leverage ratio across countries. Furthermore, this effect may be quite different even if economies belong to the same previously

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company can simultaneously converge towards its target debt ratio without incurring a significant additional cost.

[34] Following the methodology used by Cook and Tang (2010), positive (negative) coefficients mean relatively slower (faster) speed of adjustment towards target debt ratios.

defined group (e.g., the U.S. and Japan are both classified as advanced countries).

There is evidence (Li et al., 2006) indicating to particularly important role of Nationally Recognized Statistical Rating Organizations (NRSROs) and their services in the U.S. CRs have been a part of the regulatory system of American banking industry since 1931[35]. Moreover, according to the SEC report (SEC, 2008), as of June 2008 there were at least 44 kinds of forms and rules applying CRs issued by NRSROs into financial regulations and contracts. Poon (2003) argues that *"most companies in the US believe that having a rating from the two major rating agencies, S&Ps and Moody's, is desirable, indeed indispensable for an issuer in capital markets."* (p.594). Also the fact that most relevant studies examining the effect of CRs on capital structure have focused on the American market (e.g. Byoun, 2011; Frank and Goyal, 2009; Hovakimian et al., 2009; Kisgen, 2009; Leary and Roberts, 2005; Tang, 2009) may indicate that CRs are more important in the U.S. than in other economies.

Recent literature (Behr and Güttler, 2008; Packer and Reynolds, 1997) indicates that Japanese firms receive lower credit ratings (CRs) in comparison with American companies. Investigating Moody's long-term issuer and sovereign bond ratings, Nickell et al. (2000) document that *"Highly rated Japanese issuers (...) possess somewhat more volatile ratings than their US counterparts in that down-grades are more likely"* (p.211). Consequently the criticism of CRs issued by the major CRAs based in the U.S. is strong in Japan (Fairchild and Shin, 2006). Actually, both Japanese firms and authorities suspect that the reason for this kind of treatment is intentional and has its roots in an attempt to hamper their credibility and

[35] In 1931, the Office of the Comptroller of the Currency (OCC) announced that the book value of national banks' bond portfolios will depend on the CRs (banks were required to carry speculative-grade bonds at a discount to cost, as compared with investment-grade bonds carried at cost).

competitiveness versus American companies (since S&P and Moody's are both U.S.-based CRAs). In addition, in the 1990s S&P entered the Japanese rating industry using aggressive policy by issuing a number of unsolicited CRs. This modus operandi was seen as a "*financial blackmail*" that put a pressure on Japanese companies to order and pay for the solicited CRs (Deb et al., 2011). For these reasons, the perceived reliability of CRs in eyes of Japanese investors and/or firms may be diminished, and therefore, the information role of CRs in the process of issuing equity (Frank and Goyal, 2009) or debt (Tang, 2009) loses importance. In other words, one could expect that capital markets' investors and companies from Japan do not attach as much weight to the S&P's CRs as their peers from other advanced countries.

In addition, the U.S. and Japan are traditional benchmarks for the MB and BB economy used in prior studies (e.g. Antoniou et al. 2008). Therefore, according to my Hypothesis 1, there is another reason to expect that the effect of CRs on companies' capital structure is more significant for firms based in the U.S. than in Japan. Due to the above-mentioned arguments, I hypothesize that CRs issued by S&P play more significant role on firms' capital structure in the U.S. than in other countries and that this difference is even more pronounced with respect to Japanese companies.

Hypothesis 6. The effect of a credit rating on a firm's capital structure is more significant in the U.S. than in other economies (especially Japan).

3.2 Data Sources

My initial intention was to use a world-wide and comprehensive set of economies in regards to different financial systems, bond market sizes, and their global economic importance (e.g., in terms of global gross national product, world trade and the world population). To test for the ideas formulated in Hypotheses 1 to 6, in my sample all firms have to have CRs. Consequently, due to the limited availability of S&P's long-term domestic issuer credit ratings[36], the final sample includes just 19 economies. I eliminated countries with less than 7 covered firms in the period of study[37]. The remaining set of economies largely coincides with the G-20 group members: Australia, Canada, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, South Korea, the U.K., and the U.S. In addition, it includes other major European economies (the Netherlands, Spain, Sweden and Switzerland), and countries growing in importance in the Southeast Asian region (Hong Kong and Thailand). Appendix C lists the sample countries and classifies them as being market-based (MB) or bank-based (BB), and as being advanced or developing economies.

[Insert Appendix C here]

The whole sample is an unbalanced panel of 17,046 annual observations (323 for Australia, 551 for Canada, 394 for France, 327 for Germany, 86 for Hong Kong, 53

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[36] The poor CR firms' coverage is especially the case in developing countries, and is in line with Ferri et al.'s (2001) statement that in developing economies "*ratings are by far less widespread for banks and corporations"* (p.115). Despite the already pivotal and growing global importance of Chinese economy, due to the insufficient data, the sample does not include Chinese firms. The S&P share of Chinese credit rating market seems to be negligible.

[37] A similar approach is applied by de Jong et al. (2008).

for India, 86 for Indonesia, 132 for Italy, 1,823 for Japan, 144 for Korea, 170 for Mexico, 133 for the Netherlands, 111 for Russia, 109 for Spain, 186 for Sweden, 129 for Switzerland, 55 for Thailand, 505 for the U.K., and 11,729 for the U.S.) and 1,513 distinct, major non-financial companies (27 Australian, 55 Canadian, 40 French, 35 German, 11 Hong Kong, 8 Indian, 13 Indonesian, 16 Italian, 240 Japanese, 19 Korean, 16 Mexican, 13 Dutch, 18 Russian, 10 Spanish, 16 Swedish, 13 Swiss, 7 Thai, 53 British, and 904 American). Each firm is represented by at least three consecutive annual observations[38] in the sample, for which it was rated by S&P, listed on a major stock exchange of the sample countries and had no missing variables.

In accordance with the existing studies, all firms have total assets greater than one million US dollars (Hovakimian et al., 2009), leverage ratios less than one (Huang and Ritter, 2009), and market-to-book ratios greater than zero but less than ten (Leary and Roberts, 2005). To diminish the influence of outliers, all firm-specific factors are winsorised at the first and ninety-ninth percentile (Faulkender et al., 2012). In addition, all financial companies (SIC codes 6000-6999) are removed from the sample (Fan et al., 2012). This is due to the nature of financial firms' liabilities which significantly differ from those of non-financial entities. The annual observations are defined based on the fiscal year-ends (Flannery and Rangan, 2006). The final sample covers a period of 20 years (1991 to 2010)[39]. Appendix D presents a number of sample observations by year and by country.

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[38] Minimum three consecutive annual observations are required to conduct the GMM estimation procedure (Arellano and Bond, 1991).

[39] In case of the developing economies, due to insufficient CRs coverage, the sample covers a period of 17 years (1994-2010). For the sample of firms from BB countries (excluding Japan) the study period starts in 1992.

[Insert Appendix D here]

Apart from the separate regressions with respect to both financial orientation and economic development of countries, I conduct an individual analysis for the U.S. and Japan. The reason for doing so is threefold. First, the pivotal economic importance of both countries and their financial markets for the global economy (stock and bond markets alike) requires particular attention.

Second, due to the limited S&P's issuer credit ratings there is a huge disparity in the numbers of total country observations between some of the economies. As we can observe in Appendix D, Thai, Indian, Japanese, and American companies represent about 0.46, 0.53, 15.86, and 59.75 percent of the total sample firms, respectively. This phenomenon can create so called *"over-representation bias"* in the regression analysis by the economies with the most observations. Consequently, the results obtained could lack in a reliability and give rise to criticism. That is why in all of the statistical analyses for the panel of all countries, separate regressions for the groups of MB and BB countries, as well as, for a group of advanced economies were rerun after excluding firms from the U.S. and Japan.

Third, there is evidence (Li et al., 2006; Deb et al., 2011) indicating a particularly important role of Nationally Recognized Statistical Rating Organizations (NRSROs) and their services in the U.S.[40] On the other hand, the CRs assigned for Japanese firms by the biggest three CRAs are deemed to be downwardly biased as compared with their peers from other countries. Behr and Güttler (2008) based on the Moody's rating data find that CRs issued for Japanese firms are lower than CRs for American companies (after controlling for firms risk and other characteristics)[41].

[40] See the development of Hypothesis 6 in section 3.1.

[41] There are other papers with similar findings (e.g. Packer and Reynolds, 1997).

Nickell et al. (2000) find that Japanese firms with high CRs are more likely to be downgraded as compared to the companies based in the U.S. Consequently, the criticism of CRs issued by the major CRAs is particularly strong in Japan (Fairchild and Shin, 2006).

Appendix D gives the number of observations with respect to years and countries of the sample. Looking at the figures, we can observe that the annual observations of firms based in MB and advanced economies (as compared to the companies based in BB and developing countries) represent roughly 82 and 97 percent of all observations, respectively[42]. This unequal share, as mentioned before, is an outcome of the CRs data availability from the databases used in the collecting data process.

3.3 Explanations of Variables

3.3.1 Firm-Specific Determinants

As a benchmark dependent variable I employed long-term leverage to the market value of total assets ratio (*MLEV*)[43]. There are a number of reasons supporting this choice. First, in terms of a debt's maturity, de Jong et al. (2008) suggest "*Since the short-term debt consists largely of trade credit which is under the influence of completely different determinants, the examination of total debt ratio is likely to generate results which are difficult to interpret*" (p.1956). Second, market leverage is

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[42] These differences are somehow smaller (65 vs. 35 percent and 86 vs. 14 percent respectively) after excluding American and Japanese firms.

[43] In line with the prior studies (de Jong et al., 2008; Giannetti, 2003; Öztekin and Flannery, 2012), three additional measures of a firm's leverage ratio are used as a robustness check: total leverage to the market value of total assets ratio (*MLEVT*), long-term leverage to the book value of total assets ratio (*BLEV*), and total leverage to the book value of total assets ratio (*BLEVT*).

mostly used in the relevant research (e.g. Antoniou et al., 2008; Demirgüç-Kunt and Maksimovic, 1999; Fama and French, 2002; Hovakimian et al., 2001; Leary and Roberts, 2005). Moreover, Welch (2004) points out the theories of target ratios are implicitly about market gearing.

The existing studies document the importance of a similar set of factors affecting firms' debt-equity ratios (e.g. Kisgen, 2009; Lemmon et al., 2008; Lemmon and Roberts, 2010; Rajan and Zingales, 1995; and Ratti et al., 2008). In their recent paper, Frank and Goyal (2009) identify six core determinants for market leverage ratio. In my thesis I closely follow their paper and use all of the six factors: *profitability* (*EBIT/TA*), *growth opportunities* (*MTB*), *relative tangible assets (TANG/TA), firm size (SIZE)*, *median industry leverage* (*MEDLEV*), and *annual inflation rate (INFL).* Appendix E lists all dependent and independent variables, their definitions and data sources.

[Insert Appendix E here]

According to the pecking order hypothesis (POT) formulated by Donaldson (1961), and developed later by Myers and Majluf (1984) and Myers (1984), *Profitability* (*EBIT/TA*) has an inverse relationship with leverage. The POT states that firms prefer to finance their investments first from their internal funds (retained earnings) and use debt capital only when their internal resources are exhausted, whereas equity financing is the least preferred (due to the asymmetric information and adverse selection problems). Because the ability to accumulate earnings largely depends on profitability, more profitable firms should be less leveraged. Thus, a negative association is expected. Demirgüç-Kunt and Maksimovic (1994), Faulkender and Petersen (2006), Hovakimian and Li (2011), Leary and Roberts

(2005), Mittoo and Zhang (2008), and Rajan and Zingales (1995), confirm the negative relationship. However, an opposite relationship is suggested by the proponents of Kraus and Litzenberger's (1973) trade-off theory (TOT). The more profitable the firm is, the higher the tax shield benefits from using debt. Therefore, there is an incentive for the companies to increase their gearing. The evidence for such an association was found by Hovakimian et al. (2004), Jensen (1986), and Korteweg (2010).

There are two main reasons for the negative relation between the *growth opportunities* (*MTB*) and debt-equity ratios. The first one stems from the TOT, which claims that the expected growth raises the cost of financial distress. The second is consistent with the prediction of the market timing theory (Baker and Wurgler, 2002) which suggests the tendency for firms to issue stock when their stock price is overvalued (high market-to-book ratios (*MTB*)). The inverse relation has been documented by Byoun (2008), Faulkender and Petersen (2006), Hovakimian et al. (2004), Hovakimian and Li (2011), and Myers (1984). On the other hand, a fast growing entity needs more funding and is more likely to exhaust its retained earnings (González and González, 2008). Thus, in line with the POT, firms will seek external funds and borrow more in the form of debt rather than equity. Therefore, an increase in gearing might occur (Antoniou et al., 2008). It is not uncommon for scholars to find this kind of relation (MacKay and Phillips, 2005; Öztekin and Flannery, 2012).

Larger firms are more transparent (Flannery and Rangan, 2006), diversified (Titman and Wessels, 1988), and have stable earnings (Fama and French, 2002). All of the mentioned features make them less prone to fall into financial distress or go bankrupt, which according to the TOT allows companies to increase their leverage. Moreover, bigger companies enjoy easier access to the debt markets thanks to lower information asymmetry (Ferri and Jones, 1979). Thus, *firm size* (*SIZE*) and gearing should be positively related as confirmed by the majority of papers (e.g., Lemmon et al., 2008; Mittoo and Zhang, 2008).

Relative tangible assets (TANG/TA) can serve as collateral for the secured debt. Therefore the agency problem is less severe and the external loans are easier to obtain (Scott, 1977; Williamson, 1988). Among others, Harris and Raviv (1991) and Titman and Wessels (1988) point out that firms with more relative tangible assets in times of financial difficulties will suffer a lower loss in market value (a larger loss is more likely in the case of intangible assets). Consequently, the scope for asset substitution is decreased and the risk for lenders is smaller. The positive relationship between the relative tangible assets and leverage is documented by Antoniou et al. (2008), Flannery and Rangan (2006), González and González (2008), Hovakimian et al. (2004), Hovakimian and Li (2011), and Öztekin (2011). On the other hand, the POT states that higher adverse selection pushes firms to issue debt rather than equity. Therefore, companies which are smaller or have less relative tangible assets and are more likely to experience adverse selection costs should have higher gearing ratios (Leary and Roberts, 2005; Schmukler and Vesperoni, 2000). Appendix F summarizes the expected relations between leverage ratio and various determinants.

[Insert Appendix F here]

3.3.2 Industry-Specific Determinants

Median industry leverage (*MEDLEV*) has been widely used as a proxy of the omitted industry specific factors (e.g. product market interactions or the nature of competition) influencing the capital structure of a firm operating in it. Frank and

Goyal (2009) find that including the median industry leverage makes a number of firm specific determinants insignificant (e.g. intangible assets or research and development expenses of a company). Previous research find evidence for the positive relation between industry and firm leverage ratios (Byoun, 2008; Frank and Goyal, 2004; González and González, 2008; Hovakimian et al., 2004; Lemmon et al., 2008). I create the *MEDLEV* variable based on the U.S. Standard Industrial Classification (SIC) four-digit code system, according to which I group the firms into 12 broad categories[44]. Appendix G provides the list of all industries falling within each category and their corresponding SIC codes.

[Insert Appendix G here]

3.3.3 Credit Rating-Related Determinants

Similar to Gande and Parsley (2005) and Cheng and Neamtiu (2009), this research assigns ordinal numerical values to all S&P's credit rating letter grades. I employ the CR variable (*RATING*) by coding all S&P's long-term domestic issuer credit ratings as 22 ordinal values (from 1 to 22) where AAA = 22, AA+ = 21, AA = 20, AA- = 19, A+ = 18, A = 17, A- = 16, BBB+ = 15, BBB = 14, BBB- = 13, BB+ = 12, BB = 11, BB- = 10, B+ = 9, B = 8, B- = 7, CCC+ = 6, CCC = 5, CCC- = 4, CC = 3, SD = 2, D = 1.

In a relation between firms' CRs and gearing ratios, two sources of endogeneity occur: unobservable heterogeneity and simultaneity (for a detailed explanation see section 3.5.1). One way to reduce the possibility of the endogeneity between independent and dependent variables is based on the usage of the first lag of the

[44] This approach is similar to the one used by de Jong et al. (2008).

independent variables (in my thesis the first lag of the *RATING* variable). This approach is commonly used in the finance literature and seems particularly crucial to follow it when dealing with the relation between CRs and capital structure (e.g. Kisgen, 2009). For this reason in all regression analyses I use the CRs lagged one year (*RATINGL1*) as compared with the remaining variables. Appendix H summarizes the whole spectrum of the firms' issuer credit ratings used by S&P along with corresponding ordinal coding system.

[Insert Appendix H here]

Since this study emphasizes the importance of CRs, seven more credit rating-related variables are included: (*RATINGL1*FINARCH, RATINGL1*MBDUM, RATINGL1*DEVDUM, RATINGL1*BOND, RATINGL1*LAGLEV, RATINGL1*US,* and *RATINGL1*JAPAN)* [45]. These seven interaction terms according to my best knowledge have never before been used in the literature and their job is to test for the proposed Hypotheses 1 to 6. In addition, in order to examine the potential effect of the credit rating industry's reform in the U.S. (initiated in 2006) on the relation between firms' CRs and their debt ratios, I interact the *RATINGL1* and the dummy variable (*REFORM*). This dummy variable equals one for the years 2006 to 2010 (the period of the reform) and zero otherwise and does not enter the model itself (included only as the interaction with the *RATINGL1* variable). As mentioned, this reform took place in the U.S., and thus, it is not expected to have any bearings on the relation between the CRs and a firm's capital structure in other countries.

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[45] All of the listed interaction variables incorporate the first lag of the credit rating variable (*RATINGL1*) in order to minimize a threat of CRs' intrinsic endogeneity (as explained in section 3.5.1).

3.3.4 *Macroeconomic Variables*

In addition to firm-level factors, some macroeconomic variables are used. To capture the countries' financial orientation in line with the traditional approach (Schmukler and Vesperoni, 2000), a dummy variable (*MBDUM)* equals one when company operates in a market capital oriented environment (Australia, Canada, Hong Kong, Korea, Mexico, the Netherlands, Sweden, Switzerland, Thailand, the U.K, and the U.S.), and equals zero otherwise (France, Germany, India, Indonesia, Italy, Japan, Russia, and Spain). Antoniou et al. (2008) find that firms functioning in the BB Japan and continental Europe (France and Germany) have higher leverage ratios as compared to the firms from the U.S. and the U.K. They argue that debt ratios are affected by the financial arrangements of a country.

Due to the mixed results in existing research and the questionable validity of the crude division of countries into two groups, MB and BB, this study employs an additional and alternative, continuous variable (*FINARCH)*, measuring the degree of market orientation of an economy (Beck and Levine, 2002; Čihák et al., 2012; Demirgüç-Kunt and Levine, 1999; Tadesse, 2002, 2006). This variable is a first principal component of an aggregate of three indices representing country's financial orientation: the relative size of stock markets to the banking industry, the relative degree of activity in stock markets to that in banking sector, and the relative efficiency of stock markets to banks. Basically, the higher is the value of *FINARCH*, the more market-oriented is the financial system of a particular country (Levine, 2002; Tadesse, 2006). In contrast to the questionable MB/BB differentiation, The *FINARCH* variable is measured annually, therefore, it captures the different pace of overall development of stock markets across countries.

Another dummy variable (*DEVDUM*) differentiates between advanced and developing economies according to the classification proposed by the IMF (2012). This variable is equal to one when an entity resides in advanced country (Australia, Canada, France, Germany, Hong Kong, Italy, Japan, Korea, the Netherlands, Spain, Sweden, Switzerland, the U.K., and the U.S.), and is equal to zero otherwise (India, Indonesia, Mexico, Russia, and Thailand).

(*BOND*) is a proxy for the importance of bond market defined as the sum of public and private bond market capitalization over GDP (de Jong et al., 2008). It is expected that there exists a positive relation between the *BOND* variable and firms' leverage ratio, since the more developed the market, the more ways for companies to borrow[46].

A higher inflation rate (*INFL*) is usually linked with higher interest rates thus a larger cost of borrowing. Hence, managers are less inclined to raise a new capital in the form of debt, and an inverse relation is expected (Öztekin and Flannery, 2012). On the other hand, if higher inflation is expected (and assuming the interest rate does not increase much), then firms will time the market by raising funds in a form of debt, hoping to repay it later at lower price (Frank and Goyal, 2009). Moreover, the higher the expected inflation, the higher the real value of benefits stemming from the tax deduction (Jõeveer, 2013).

3.4 The Basic Model

3.4.1 The Autoregressive Model

The popularity of dynamic modeling for capital structure has been growing fast (Fama and French, 2002; Ju et al., 2005; Hovakimian et al., 2001; González and

[46] However, at least to some degree, bond and bank financing can be substitutes.

González, 2008; Huang and Ritter, 2009; Korajczyk and Levy, 2003). This study's results are built based on the Generalized Method of Moments (GMM) estimation method developed by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998).

Devereux and Schiantarelli (1990) argue that in order to obtain a valid dynamic model, which takes into account the possibility of the autoregressive (AR) process on an error term and the influence of adjustment costs on the firm SOA towards its target level of gearing, a one-period lagged dependent variable ($Leverage_{i(t-1)}$) is required. Furthermore, it is expected that firms have fixed unobserved effects (μ_i) influencing their capital structure e.g., reputation or management performance. These time-invariant effects also must be included in the model (e.g., Flannery and Rangan, 2006). The autoregressive model is specified below.

$$Leverage_{it} = \alpha_0 + \alpha_1 Leverage_{i(t-1)} + \sum_{k=1}^{11} \varphi k\, X_{k,it} + \mu_i + \upsilon_t + \varepsilon_{it} \qquad (1)$$

Where ($Leverage_{it}$) stands for the leverage ratio for company i in year t, (α_0) is a constant term, (α_1) and (φ_k) are the coefficients of true unknown parameters to estimate. ($Leverage_{i(t-1)}$) is the first lag of the dependent variable (to capture the dynamic aspect of capital structure). (X) is a vector of explanatory variables of firm capital structure[47] composed of k-factors (k = 1,…, 11). These determinants and their corresponding abbreviations are listed below:

1) *EBIT/TA* = earnings before interest and taxes to the book value of total assets ratio (used as a proxy for profitability)

[47] All of the aforementioned variables (1-11), their definitions, sources and expected signs are listed and described in Appendices E and F.

2) *MTB* = market-to-book ratio (used as a proxy for growth opportunities)

3) *SIZE* = natural logarithm of book value of total assets (used as a proxy for firm size)

4) *TANG/TA* = property, plant and equipment to the book value of total assets ratio (used as a proxy for the relative tangibility of firm assets)

5) *RATINGL1* = first lag of S&P's long-term domestic issuer credit rating (a proxy for the probability of default of a firm)

6) *MEDLEV* = industry median leverage (a proxy for the industry effects)

7) *INFL* = inflation rate (a proxy for the macroeconomic conditions)

8) *BOND* = public plus private bond market capitalization over GDP (a proxy for the importance of a country's credit market)

9) *FINARCH* = country financial architecture: the larger value, the more MB-oriented is financial system (an annually measured additional and alternative proxy for the degree of financial systems' market orientation)

10) *MBDUM* = dummy variable equals one when company operates in a market capital oriented environment and zero otherwise (a traditional, time-invariant proxy for a country's market orientation)

11) *DEVDUM* = dummy variable equal to one when an entity resides in an advanced country and zero otherwise (a proxy for the level of economic development)

Term (μ_i) stands for time-invariant unobserved firm fixed effects (reputation or management performance) which influence firms' capital structure. Term (υ_t) represents the time-specific shocks which can fluctuate over time and affect all the firms in one or more countries (e.g., demand shocks). The error term (ε_{it}) has a mean equal to zero, constant variance σ^2, and does not suffer from serial correlation.

After plugging in all the determinants listed above, equation (1) gives the base model used in Tables 3 to 8.

3.4.2 The Dynamic Model

The traditional dynamic approach used in the literature on capital structure tests for a presence of an optimal debt-equity ratio, and how fast firms rebalance towards it. The annual changes between years *t* and *t-1* in leverage ratios of company *i* ($Leverage_{it}$ - $Leverage_{i(t-1)}$) partly absorb the gap between its lagged leverage in year *t-1* ($Leverage_{i(t-1)}$) and the optimal leverage of the firm *i* in year *t* ($Leverage_{it}$*). Assuming that this optimal gearing ratio is also a function of *k* determinants from equation (1), then:

$$Leverage_{it}* = \sum_{k=1}^{11} \Psi_k X_{kit} + \omega_{it} \quad (2)$$

Where (Ψ_ks) are coefficient estimates which are the same for all companies, (*X*) is a vector of *k*-determinants (like in the first equation) and (ω_{it}) is a serially correlated error term suspected of heteroskedasticity, and with a mean equal to zero. Whenever the adjustment costs of rebalancing towards the optimal level of leverage outweigh the cost of being outside of the aforementioned optimum, the managers will allow their firm's leverage to divert temporarily from it. Due to the costs related to the adjustment process (e.g., transaction costs), companies are restricted from making too frequent adjustments towards their target debt ratios. Leary and Roberts (2005) estimate that firms rebalance their gearing roughly once a year by either issuing or repurchasing securities (debt and/or equity). Equation (3) presented below shows how firms adjust towards their desired debt levels.

$$Leverage_{it} - Leverage_{i(t-1)} = \alpha\,(Leverage_{it}^{*} - Leverage_{i(t-1)}) \qquad (3)$$

Where again the degree of adjustment coefficient (α) takes any value between zero and one and represents the transaction costs obstructing the full adjustment towards the firm's optimal leverage ($Leverage_{it}$*). There is an inverse relation between the coefficient (α) and the adjustment costs. If (α) equals one (no transaction costs), firm's current debt ratio and its target ratio are equal: ($Leverage_{it}$ = $Leverage_{it}$*). If (α) equals zero, no adjustment occurs. This may be the case when the costs of adjustment are too high, or staying of the target level of gearing carries lower costs than adjusting towards it. Equation (3) after simple rearrangements of terms can be rewritten as equation (4) below.

$$Leverage_{it} = \alpha Leverage_{it}^{*} + (1-\alpha) Leverage_{i(t-1)} \qquad (4)$$

Substituting equation (2) into (4), I get:

$$Leverage_{it} = (1-\alpha) Leverage_{i(t-1)} + \sum_{k=1}^{11} \alpha \Psi_k X_{kit} + \alpha \omega_{it} \qquad (5)$$

Where (α) measures how fast firms adjust towards their desired debt ratios. Moreover, equation (5) assumes that (α) is less than one but greater than zero (Antoniou et al., 2008) and that all companies eventually converge their current gearing ratios to their desired optimal levels. Simply replacing vector (X) with all 11 independent variables listed in section 3.4.1, taking notice of the panel nature of regression estimates and time-invariant unobservable firm-specific effects (μi) explained in equation (1), I obtain:

$$Leverage_{it} = \alpha\Psi_0 + (1-\alpha)Leverage_{i(t-1)} + \alpha\Psi_1\text{EBIT/TA}_{it} + \alpha\Psi_2\text{MTB}_{it}$$
$$+ \alpha\Psi_3\text{SIZE}_{it} + \alpha\Psi_4\text{TANG/TA}_{it} + \alpha\Psi_5\text{RATINGL1}_{i(t-1)}$$
$$+ \alpha\Psi_6\text{MEDLEV}_{jt} + \alpha\Psi_7\text{INFL}_{mt} + \alpha\Psi_8\text{BOND}_{mt}$$
$$+ \alpha\Psi_9\text{FINARCH}_{mt} + \alpha\Psi_{10}\text{MBDUM}_{m} + \alpha\Psi_{11}\text{DEVDUM}_{m}$$
$$+ \sum_{m=1}^{18}\alpha C_m + \sum_{t=1992}^{2010}\alpha Y_t + \alpha\mu_i + \alpha\omega_{it} \qquad (6)$$

Where in addition to firm-, industry-specific and macroeconomic variables, I also incorporate the set of country-dummy variables $\sum_{m=1}^{18}\alpha C_m$ (González and González, 2008; Öztekin and Flannery, 2012). These dummies capture legal, financial and economic differences between economies. In addition, $\sum_{t=1992}^{2010}\alpha Y_t$ is a set of 19 time-dummy variables used in line with the prior literature and capturing unobservable time-specific shocks (represented by the term (υ_t) in equation (1)) which affect all the firms and fluctuate over time.

3.5 Methods of Estimation

3.5.1 Unsolved Endogeneity Problem Using The Ordinary Least Squares (OLS) and The Within Groups (Fixed Effects)

In a relation between CRs and an entity's capital structure, two sources of endogeneity take place: unobservable heterogeneity and simultaneity. The former phenomenon occurs when some unobservable factors cause a change in both the dependent and independent variables. The simultaneity arises when the explanatory variable is affected by the dependent variable or its lags. It can be easily argued that some unobservable determinants (company's reputation or management performance) affect both a company's capital structure and a CR issued by a CRA

(Kisgen, 2009). If these changes have the same (different) direction for both the CR and a debt ratio, the OLS finds a positive (negative) relationship between them.

Moreover, when CRAs assess firms' creditworthiness, they pay attention to the firm's current and past levels of debt. Since the CR can be seen as a proxy for a default probability therefore the higher the company's leverage, the higher the default probability and a possibility of a lower CR. On the other hand, it is obvious that as the CR improves, the firm's costs of debt financing are lower, and thus the managers of that entity could borrow cheaper and increase its leverage in the future, which in turn could cause a CR downgrade. This suggests a simultaneity problem and therefore the Within Groups technique would yield biased, possibly even spurious and yet statistically significant results (Wintoki et al., 2012).

One approach used to reduce the possibility of the aforementioned endogeneity between a firm's CR and its gearing ratio is to use the first lag of the CR. This method is widely used in the finance literature (whenever there is a thread of endogeneity between a dependent variable and one or more independent variables) and seems particularly crucial to follow it when dealing with the relation between credit rating and capital structure (e.g., Kisgen, 2009). For this reason in all regression analyses presented in this study I use the CR lagged one year (*RATINGL1*) as compared with the remaining variables. However, using this approach does not guarantee that the endogeneity problem will be solved.

3.5.2 Biased Speed of Adjustment (SOA) Using The Ordinary Least Squares (OLS) and The Within Groups (Fixed Effects)

In addition to the described endogeneity problem, it has been empirically proven that in case of firms' capital structure, estimation results for the SOA obtained from either the OLS or the Within Groups[48]modeling are highly biased (both methodologies) and inconsistent (in case of the Within Groups the results become consistent as sample period approaches infinity (Lemmon et al., 2008)). In the OLS procedure unobserved heterogeneity occurs (see the previous section), resulting in biased coefficients because firm fixed unobserved effects (μ_i) used in equations (1) and (6) are omitted and correlated with explanatory regressors. In addition, since the dependent variable $Leverage_{it}$ is a function of the fixed effects (μ_i), therefore, the inconsistent estimates of the coefficients are an outcome of the correlation between the lagged dependent variable ($Leverage_{i(t-1)}$) and the fixed effects (μ_i). As a result, the lagged leverage's coefficient is inflated in the OLS dynamic models. Since a firm's SOA is obtained by subtracting the coefficient on lagged leverage ratio from one, thus, the SOA from the OLS model is downward-biased (deflated).

It has been shown that on the one hand, using the Within Groups estimation technique eliminates the aforementioned unobserved heterogeneity from the model. On the other hand, the model would still suffer from a correlation between the transformed lagged leverage and the transformed error term[49]. Consequently, the lagged leverage's coefficient is deflated and a firm's SOA inflated when using the Within Groups method. The bias however decline with panel length[50] (hence it is

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[48] The Within Groups is simply the OLS model using the deviations of each dependent observation from its time average regressed on the deviations of all the independent variables from their respective within-group means (for each firms separately). This method is equivalent to the Least Squares Dummy Variable (LSDV) which creates a dummy variable for each cross-section unit (firm) to proxy for the time invariant unobserved firm fixed effects.

[49] Where the transformed lagged leverage is ($Leverage_{i(t-1)}$) - ($Leverage_{i,-1}$) and transformed error term is ω_{it} - ω_i. Since the average error term ω_i includes $\omega_{i(t-1)}$, the mentioned correlation arises.

[50] In their paper, Huang and Ritter (2009) investigated a time period from 1963 to 2001 (twice as long as in my thesis) and the Within Groups coefficient estimates for the lagged leverage were still

called the short panel bias). Huang and Ritter (2009) document biased coefficients for lagged debt ratios and a huge discrepancy between the two aforementioned approaches (inflated coefficient equal to 0.844 using the OLS and deflated coefficient equal to 0.262 using the Within Groups technique).

3.5.3 The Difference Generalized Method of Moments

One estimation technique that is able to handle problematic unobserved heterogeneity (OLS), simultaneity (OLS and Within Groups), and the short panel bias (Within Groups) outlined in sections 3.5.1 and 3.5.2 is the Difference Generalized Method of Moments (GMM) methodology (Arellano and Bond, 1991). Wintoki et al. (2012) assert that the GMM procedure successfully accounts for the dynamic nature of dependent variable, while accounting for any potential sources of endogeneity. In the first-differencing approach, one takes a generic dynamic equation (5) for companies' capital structure and rewrites it in the first-differenced (hereafter transformed) form such that:

$$\Delta Leverage_{it} = (1-\alpha)\Delta Leverage_{i(t-1)} + \sum_{k=1}^{11} \alpha \Psi_k \Delta X_{kit} + \alpha \Delta\omega_{it} \qquad (7)$$

Where Δs represent first differences of respective terms. This transformed equation handles the unobserved heterogeneity by simply eliminating firm fixed effects (μ_i). However, the differenced lagged dependent variable $\Delta Leverage_{i(t-1)}$ is still correlated with the differenced error term $\Delta\omega_{it}$[51]. Thus, just like in case of the Within Groups model, the estimated SOA is inflated and the bias decline with panel

biased downward.

[51] Due to the correlation between $\omega_{i(t-1)}$ and $Leverage_{i(t-1)}$.

length (short panel bias). A traditional instrumental variables (IV) approach could be a remedy, provided that a set of reliable instruments could be identified (which in practice is often unachievable).

As a solution to this problem, Arellano and Bond (1991) propose the Difference Generalized Method of Moments (GMM) technique to obtain valid instruments (IVs). In their approach, after first-differencing equation (5) into transformed equation (7), they show that under the assumption of no second-order serial correlation in residuals ω_{it}, the moment (orthogonal) conditions exist between the $\Delta\omega_{it}$ and the dependent/independent variables lagged two or more periods. Thus, the lagged values of regressors are valid instrumental variables (IVs) for their first differences from equation (7) (Huang and Ritter, 2009).

However, the Difference GMM technique suffers from four major shortcomings. First, as Beck et al. (2000) point out: if the true theoretical model is in levels, a differencing could diminish "*the signal to noise ratio*" and lessen the reliability of the tests. Second, the lags of explanatory variables could be weak IVs of the first-differenced variables, especially if they are serially correlated (Arellano and Bover, 1995; Blundell and Bond, 1998; Bond et al., 2001)[52]. Third, the influence of measurement errors on the explained variable could be aggravated (Griliches and Hausman, 1986). Fourth, it suffers from a significant sample bias when the autoregressive lagged leverage parameter is highly persistent i.e. close to one (which is exactly the case of the capital structure dynamic modeling (e.g., Antoniou et al., 2008)).

[52] One potential signal of such weak instruments can be spotted when the autoregressive parameter α is near to or even less than the one obtained from the Within Groups estimation.

3.5.4 The System Generalized Method of Moments

Previous research suggests that the system GMM procedure developed by Arellano and Bover (1995) and Blundell and Bond (1998) can deal with the unobserved heterogeneity (OLS), simultaneity (OLS and Within Groups), the short panel bias (Within Groups), as well as the above-mentioned problems arising when the Difference GMM technique is applied (see section 3.5.3). The System GMM includes both equations (5) and (7). In addition to the lagged values of variables used as instruments for their first differences from transformed equation (7), the System GMM utilizes the lagged first differences as instrumental variables (IVs) for the regressors from a non-transformed/levels equation (5). Therefore, we have a system of two equations: the transformed (7) and the levels (5).

In my thesis I use a Two-Step System GMM procedure[53] with orthogonal deviations, since first-differencing magnifies gaps which in turn lead to a loss of observations in unbalanced panels (Roodman, 2006, 2008). Among others, Antoniou et al. (2008) state that *"in most cases the two-step GMM-SYS estimates are more efficient than the one-step estimators"* (p.71). The same estimation technique (Two-Step System GMM) is found to be the most appropriate when dealing with the dynamic capital structure (where the estimated lagged coefficient of leverage is known to be highly persistent) of firms and data obtained from the Compustat database[54] (Flannery and Hankins, 2013). In their empirical paper, the authors compare among seven most popular applied methodologies according to the recent literature.[55] According to their thorough comparative examinations, each of the

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[53] Specifically, I use the program "*xtabond2*" written by David Roodman for STATA users.

[54] In my thesis I also use the Compustat database to obtain firm- and industry-specific determinants.

[55] The seven techniques are listed by the authors as follow: OLS, Fixed Effects, Difference GMM, System GMM, two different ways of Long Differencing, and Corrected Least-Squares.

methodologies has some shortcomings, however the Corrected Least Squares Dependent Variable (LSDVC) and Two-Step System GMM (Blundell and Bond, 1998) appear to be the most accurate when dealing with the censored and clustered data. The main drawback of the former one is an assumption of exogenous regressors and the latter one is a second order correlation[56]. Because a CR is a variable of the main interest in my paper and due to its intrinsic endogeneity the LSDVC method is less appropriate to use. Therefore, the best choice seems to be the Two-Step System GMM. Flannery and Hankins (2013) come to a similar conclusion and state that for unbalanced panels, Two-Step System GMM by Blundell and Bond (1998) *"remains the best option for higher levels of endogeneity if the lagged dependent variable is of interest."* (p.13). One more aspect worth mentioning is related to the statistical power of coefficient estimates. Namely, while using the Two-Step System GMM (and a One-Step System alike) the t-values for estimated regressors are particularly sensitive to the number of firms, observations and the length of sample analysed i.e., the shorter is the length of a sample and the less observations are in it, the smaller the t-statistics. In addition, the Two-Step System GMM methodology tends to report downward-biased standard errors[57]. To alleviate this drawback I apply the Windmeijer's (2005) small-sample corrected standard errors.

The author of STATA program "*xtabond2*" Roodman (2006, 2008) argues elegantly that the GMM methodology has a tendency to proliferate the number of instrumental variables (IVs). The instruments count is quadratic with regards to time dimension (T). Furthermore, Roodman (2008) points out that if there are too many

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[56] Flannery and Hankins (2013) argue however, that even in the presence of a second order serial correlation the estimates from Two-Step System GMM are still consistent and perform much better than OLS or FE. In addition, this methodology produces coefficients that are least affected by panel imbalances (especially important in case of the lagged leverage. The coefficients for the lag of a dependent variable (gearing ratio) are almost identical for time periods of 30, 12, and 6 years.

[57] This problem is especially severe in case of relatively small samples.

IVs, invalid results appear to be valid i.e. false positive results. In other words, a large number of instruments would overfit the instrumented regressors and bias their estimated coefficients e.g., Tauchen (1986), Windmeijer (2005), and Ziliak (1997). In addition, a Hansen J-test of over-identification also known as the test for instruments validity (Hansen, 1982) used in Two-Step System GMM models would be weakened, yielding implausibly high p-values equal to one. This kind of problem has been documented in Andersen and Sørensen (1996) and Bowsher (2002).

Thus, while using the GMM procedure a rule of thumb to follow is to keep the number of IVs below the number of firms[58] (Roodman, 2006, 2008). The prior research applies two techniques to control for the instruments proliferation. The first way, which is the one more commonly applied, uses employment of a "*certain*" limited number of lags[59]. Second way, is the application of collapsing instruments as explained by Roodman (2008) who argues that *"collapsed instruments are straightforward conceptually: one is made for each lag distance, with 0 substituted for any missing values"* (p.17). This simple trick makes the instruments count linear in regards to time (T), dramatically reducing the number of instruments (e.g., Beck and Levine, 2004). Moreover, he advocates a simultaneous use of both techniques when necessary. Hence, in order to achieve this goal and in line with Roodman's remedy, throughout my study a minimum feasible number of lags (from 2 to 6 depending on the size of samples) and when necessary also collapsed instruments are used in order to keep the number of instruments below the number of firms in the sample.

Throughout this thesis, when applying the Two-Step System GMM estimation technique, I control for the potential endogeneity of all four firm-specific

[58] In my thesis I conform to this rule rigorously.

[59] This number is always kept below the maximum number of lags and varies depending on the time dimension and number of firms in the samples.

determinants (*EBIT/TA*, *MTB*, *SIZE*, and *TANG/TA*), as well as the firms' CRs[60]. In a similar vein, to deal with a potential endogeneity of interaction terms and *MEDLEV* variable I employ their second and further lags as instruments. Following previous studies (González and González, 2008), I treat all macroeconomic variables as exogenous.

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[60] Also all of the CR-related interaction variables (*RATINGL1*MBDUM*, *RATINGL1*FINARCH*, *RATINGL1*DEVDUM*, *RATINGL1*BOND*, *RATINGL1*LAGLEV*, *RATINGL1*US*, *RATINGL1*JAPAN*, and *RATINGL1*REFORM)* in Table 5 are treated as endogeneous.

Chapter 4. Discussion of the Results

This chapter discusses the descriptive statistics, determinants of firms' leverage ratios, estimation results of the OLS, Within Groups, and the Two-Step System GMM models.

4.1 Summary Statistics

In Table 1, I investigate the disparities between leverage ratios and firm-specific characteristics (all winsorised at first and ninety-ninth percentile)[61], industry-specific factors, and macroeconomic variables in samples with different financial systems and level of economic development. In general, most of the variables used in my study differ statistically in terms of their average and median values across market-based oriented (MB) and bank-based oriented (BB) countries, as well as across advanced and developing economies. This lends support to the claim that the financial systems and economic environments in which firms exist, has a large impact on their major characteristics (e.g., profitability, growth opportunities, size, and relative tangible assets).

Panel A shows that two out of four measures of companies leverage ratios are significantly lower for firms operating in MB countries, one significantly higher and one roughly the same as in BB countries. Such mixed results are not surprising in light of the relevant studies. The traditional view of firms based in a BB environment being more geared (Antoniou et al., 2008; Borio, 1990) clashes with a number of papers providing evidence for the opposite phenomenon (e.g. Rajan and

[61] When not winsorised, all of debt ratios' (*MLEV*, *MLEVT*, *BLEV*, and *BLEVT*) maximum values are much closer to one.

Zingales, 1995; Schmukler and Vesperoni, 2000). One explanation might stem from excessive costs of bank debt (Diamond, 1991; Rajan, 1992; Sharpe, 1990). The other reasoning is highlighted by Rajan and Zingales (1995) who point out that in BB economies, the banking industry "*provide both debt and equity finance to firms so the greater availability of financing does not reflect in the leverage ratio."* (p.1448). Schmukler and Vesperoni (2000) argue that consistently higher gearing ratios observed in MB countries might be an outcome of the banking system's inability to provide enough credit to firms in BB economies. Finally, since in MB countries capital markets tend to be more developed, thus, not only stock but also bond markets alike are responsible for greater share of firms' financing while the latter kind of funds representing debt in a capital structure of companies. Figures 1 (2) show annual plot of means of the *MLEV* (*BLEV*) dependent variable and their corresponding logarithmic trends over time. In general, looking at Figures 1 and 2, I conclude that both samples (MB and BB) display an increasing trend in gearing ratios over the years.

[Insert Figures 1 and 2 here]

In line with recent studies (Fan et al., 2012) Panel B indicates that firms operating in developing markets display higher debt-to-equity ratios (and a decreasing trend over the years) than their counterparts from advanced economies which exhibit fairly stable leverage ratios over the time-period of investigation. In addition, the difference between the long-term debt ratios (*MLEV* and *BLEV*) and total debt ratios (*MLEVT* and *BLEVT*) is more pronounced in developing sample, similar to Booth et al. (2001).

Panel C shows a comparison between the U.S. and Japan. It is clear, that in three cases (except for *MLEVT*) gearing ratios of companies based in the U.S. are significantly higher. These results are surprising only from the above-mentioned traditional view that firms based in a BB environment are more highly geared. However, some recent studies report roughly equal leverage ratios for American and Japanese firms (Öztekin and Flannery, 2012) or even substantially lower for Japanese companies (de Jong et al., 2008; Nguyen and Shekhar, 2007).

Moreover, line charts of debt ratios' annual mean values (Figures 1 and 2) indicate an increasing (decreasing) trend for American (Japanese) sample of firms. Borio (1990) documents a similar phenomenon and argues that unlike other economies[62] *"US companies have retired substantial amounts of equity, substituting them with debt."* (p.4). Nishioka and Baba (2004) point out that since late 1990s Japanese companies have been reducing their debt ratios in order to regain their creditworthiness and/or due to lack of investment opportunities.

Figure 3 presents comparison of average *FINARCH* values for different samples between two periods: 1991-2000 and 2001-2010. Additionally, Figures 4 and 5 show yearly plots of average and median *FINARCH* values for different samples. Looking at those Figures, I can conclude that falling leverage ratios in the Japanese market can be associated with a relatively faster rise in values of the *FINARCH* variable (according to Figures 3 through 5). In 2003, the degree of MB orientation of Japanese financial system (measured as the relative size, efficiency and activity of stock markets vis-à-vis country's banking system) caught up with that of the U.S.[63]

In general, leverage ratios in all samples demonstrate the same feature with respect to their fluctuations over time, namely the debt ratios (book and market alike)

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[62] His study examines the firms' leverage levels from G7 countries (Canada, France, Germany, Italy, Japan, the U.K., and the U.S.).

[63] However, it remains an empirical question to what degree this was caused by the development of stock markets and to what it was an outcome of diminishing role of Japanese Keiretsus.

tend to increase during crises and drop during economic prosperity periods[64] (Booth et al., 2001; Demirgüç-Kunt and Maksimovic, 1999).

[Insert Figures 3, 4, and 5 here]

In case of the credit ratings (CRs), the MB oriented sample of firms enjoys ratings higher by approximately 0.6 and one notch (in terms of both mean and median values respectively) than the firms from BB oriented countries. Moreover, the comparison of standard deviations indicates greater variation in credit ratings issued for companies operating in BB environment.

As expected, CRs are fewer and have lower grades in the developing countries as compared with their advanced peers (with the difference of roughly 3.5 and four notches for means and medians). Moreover, despite the maximum CR assigned in developing sample being 5 notches lower, the standard deviation of CRs in this sample (3.185) is still higher than that of advanced sample (3.074). This evidence suggests considerably greater variability of CRs in developing economies as highlighted in the development of Hypothesis 2.

In case of Panel C of Table 1, the Japanese sample presents an average and median CRs two notches better than in the U.S.

[Insert Table 1: Panels A, B, and C here]

Correlation analysis indicates to a negative and statistically significant association between CRs and firms' debt ratios in all samples (not reported but available on request). These correlations are significant at one percent level in all

[64] See Figures 1 and 2.

samples, have the largest absolute values in the U.S. sample and the smallest in Japanese followed by developing sample.

Table 2 presents mean values of dependent variables (*MLEV, MLEVT*, *BLEV*, and *BLEVT*) and their firm-specific determinants by different credit ratings. Corresponding Figures 6 to 9 show plots of dependent variables' means by different credit ratings. Concluding, from the average values of debt-to-equity ratios and their plots, it is clear that in general, the least leveraged firms are those with the highest CRs. Moreover, for all of the Table 2's Panels, as the companies' rating increases, so do firms' profitability, its growth opportunities, size and relative tangible assets.

[Insert Table 2: Panels A to F and Figures 6 to 9 here]

Figure 10 presents a yearly plot of mean values for firms' CRs in all of the analyzed samples. When CRAs assess firms' creditworthiness, they pay close attention to firm indebtedness. In other words, the higher the company's leverage, the higher the default probability and a possibility of a lower CR. Therefore, the rising average gearing ratios in the MB, BB, advanced and American samples (see Figures 1 and 2) correspond to decreasing means of CRs for those four samples over time (see Figure 10). Likewise, falling average gearing ratios in the developing and Japanese samples[65] correspond to increasing average CRs for those samples[66] as exhibited in Figure 10.

[Insert Figure 10 here]

[65] See Figures 1 and 2.

[66] Even in the developing and Japanese samples, the average CRs were falling during 1991 to 1999 period.

4.2 The Determinants of the Firm Leverage Ratio

In order to investigate the relations between the independent variables and firm capital structure, in particular to test for Hypotheses 1 and 2, I run a set of regressions using three different methodologies: OLS, Within Groups, and Two-Step System GMM. The last one, is used in accordance with the most relevant and recent studies (Antoniou et al., 2008; Flannery and Hankins, 2013; Öztekin and Flannery, 2012) and in order to eliminate problems stemming from the endogeneity and dynamic (autoregressive) nature of a firm's gearing policy[67] leading to unreliable and biased results[68]. OLS and Within Groups (Fixed Effect methodology) are conducted for two reasons. First, they provide me with a simple and reliable (although only approximate) indication whether the SOAs obtained in the GMM estimation process are correct. Second, it is a common procedure and a form of robustness check. In my thesis, I rely on a System GMM estimation technique.

In each of the Table 3 Panels (A, B, and C), I present seven columns of estimation coefficients and their corresponding t-values. Companies from all countries are pooled in column 1. Firms from market-oriented (MB) and bank-oriented (BB) countries are presented in columns 2 and 3 respectively. Columns 4 and 5 represent the regression results for firms operating in advanced and developing economies, and columns 6 and 7 correspond to the U.S. and Japanese samples of firms.

When Two-Step System GMM procedure is applied in Panel C, *LAGLEV* coefficients are in between OLS and Within Groups (being closer to those from Panel A) i.e., which is where they should be as pointed out in the relevant studies (Bond et

[67] For a comprehensive review of problems with dynamic modeling associated with different methods of estimation see Flannery and Hankins (2013).

[68] The endogeneity problem and its proposed solutions are briefly discussed in section 3.5.1.

al., 2001; Roodman, 2006). Moreover, in Panel C the m1, m2, and the Hansen tests[69] indicate that Two-Step System GMM specification is correctly specified for each of the samples. This is achieved by strictly following Roodman (2008), who points out that if there are too many IVs, false results seem valid while using the GMM procedure, and the rule of thumb to follow is to keep the number of instruments below (or within a close range) that of firms in the sample. This in turn is achieved by using an appropriate number of lags (from 2 to 6) and *"collapsed instruments"* when necessary (in case of the developing sample). Thus, in the following analyses I rely on the System GMM estimation technique.

Panel C indicates positive and statistically significant (at the highest level) coefficients for *LAGLEV*[70] regardless of country's financial orientation and economic development. Such a positive effect is consistent with results of e.g., Flannery and Rangan (2006) and González and González (2008). The coefficients on *LAGLEV* are between zero and one which according to Antoniou et al. (2008) implies that:

> *The estimates are stable and the leverage ratio converges to its desired level over time. This confirms the existence of dynamism in the capital structure decision in the sense that firms adjust their leverage ratios to achieve their target.* (p.82).

In addition, the degree of explanatory power of the estimated models falls dramatically after exclusion of the *LAGLEV* variable from the analysis[71]. All

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[69] The tests for the first (m1) and second (m2) order correlations test the null hypotheses of no first or second order serial correlation of in the first-differenced residuals, respectively. The Hansen test of over-identification tests the null hypothesis of the validity of instrumental variables used in the model.

[70] In accordance with the recent trend in existing research, the results presented are based on long-term leverage to the market value of total assets ratio (*MLEV*). All estimates were also conducted using three alternative proxies for firms' leverage ratios (not reported but available on request). Any significant discrepancies than occur in the results are discussed.

[71] The estimated results based on the static models of the capital structure are not presented but

columns in Panel C, display results confirming the applicability of capital structure partial adjustment models and broadly consistent with the prior literature (Antoniou et al., 2008; Öztekin, 2011). The coefficients on the lagged leverage ratio (*LAGLEV*) in columns (1, 2, and 4) indicate roughly equal and rapid SOAs. For example, the coefficient from column 2 (0.6402) implies that on average rated non-financial firms based in the MB countries close 36 percent (=1- 0.6402) of the gap between their actual and target gearing within one year. At this speed it takes only about 18 months[72] to close half the gap between companies' current and target levels of debt. Likewise, firms based in the BB countries converge towards their desired leverage level by 32 percent a year. This suggests that rated firms in BB countries adjust at a slower speed towards their optimal capital structures than their peers from MB countries (Öztekin and Flannery, 2012). This evidence suggests that firms in the MB environment is characterized by lower costs of adjustment or larger benefits of convergence towards the optimum gearing ratio (or both) than firms in the BB financial orientation. In a similar vein, Japanese firms adjust at more sluggish pace as compared with their American counterparts. Antoniou et al. (2008) document similar divergence in the SOAs and argue that because of the stronger ties and close long-term relation between companies and creditors (banks) in BB economies, the costs of being away from optimum capital structure are lower than the costs of adjustment[73]. Therefore, firms can adjust slowly towards desired level of debt ratio. Moreover, unlike their peers from market-oriented countries (the U.K. or the U.S.), in bank-oriented countries (Germany or Japan) firms depend less on the signaling

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available on request.

[72] This calculation is simply ln(0.5)/ln(1- 0.3598) (e.g., Öztekin and Flannery, 2012).

[73] Among others, the agency costs associated with being off the desired level of leverage ratio are expected to be lower in BB countries.

mechanism of debt to manifest their quality to a big group of investors in equity or bond markets.

Furthermore, Panel C exhibits the fastest speed of adjustment (in order to calculate a firm's SOA, I subtract the value of the coefficient on *LAGLEV* from one) for companies based in developing economies (Mexico, India, Indonesia, Russia, and Thailand). These companies, on average, approach their desired debt ratios by 48 percent within one year and it only takes just over a year to close half of the distance separating their actual and target leverage ratios. Similar to Flannery and Rangan (2006) and González and González (2008), my estimates suggest that in all samples, especially in developing economies, the target market debt ratios are of pivotal importance for companies, therefore, the POT and the market timing are not the dominant factors.

As for the disparities in the SOAs between samples, they might be explained by various costs and benefits of the adjustment process stemming from a different source of financing in MB, BB, and developing countries. There is evidence showing that in MB economies, capital markets are more developed, thus, firms when in need of financing raise funds by issuing bonds (public debt) or equity. As pointed out in the development of Hypotheses 1 and 2, in BB but also developing countries, firms are much more inclined (or have no other choice) but to finance their investments with private debt (bank lending). Flannery and Rangan (2006) argue that since bonds traditionally have few covenants, the pressure for firms using bonds to converge towards their targets is smaller than those imposed by banks on their borrowers (via a number of tight covenants).

My results from the developing sample indicate that firms from these countries adjust towards their target capital structure at a faster speed (roughly 48 percent annually) than firms operating in advanced countries (about 36 percent annually).

Such a rapid SOAs in developing economies are in line with the those reported by González and González (2008), who document very fast SOAs (approximately 50 percent and above). However my estimates of SOAs are much higher than those documented by Öztekin and Flannery (2012) who estimate 30 to 22 percent of annual convergence towards target gearing ratios for companies based in developing countries[74].

One issue worth mentioning with regards to SOAs is the fact that using three alternative dependent variables (*MLEVT*, *BLEV*, and *BLEVT*) as proxies for firms leverage ratios, all the main results remains broadly unchanged, but in all samples, the adjustment speeds are faster using *MLEV* than *BLEV* (a similar trend is observed in Öztekin and Flannery, 2012), or when using *MLEVT* rather than *BLEVT* (same regularity documented in González and González, 2008). Thus the slowest SOAs are reported in models of *BLEVT* (total leverage to the book value of total assets ratio) and the fastest in models of *MLEV*.

Additional support for the applicability of a partial adjustment models and the importance of target debt ratios on firms' capital structure policies is presented in Appendix I. In it I summarize the annual percentage SOA estimates for gearing ratios (proxied by *MLEV* variable) of firms based in 17 countries using One-Step System GMM technique separately for each country (in the case of U.S. and Japanese firms I present the results from Two-Step System GMM as in Panel C of Table 3). I apply a One-Step System GMM due to a small samples size, in which case the two-step option should be avoided (Hayashi, 2000; Roodman, 2008[75]).

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[74] The difference in the SOAs for developing countries between my thesis and Öztekin and Flannery's (2012) estimates may stem from the different samples used (e.g., time-period, countries, number of observations and firms, as well as the fact that I restrict my sample to only rated companies).

[75] For a more detailed interpretation, Roodman (2008) explains that:

Moreover, in order to minimize the number of instruments I only use 2 to 3 "*collapsed*" lags of independent variables as instruments. The estimated SOAs are positive in all samples and statistically significant at the 1 or 5 percent level in 15 countries.

[Insert Appendix I here]

The estimated relation between *EBIT/TA* and market leverage ratio is negative for all estimations on Table 3 and statistically significant in five columns. In columns 6 and 7 of Table 3 (for the U.S. and Japanese sample regressions) the coefficients on *EBIT/TA* are (-0.1691 and -0.2513), respectively. Given the sample average values of *EBIT/TA* (0.091 and 0.053) and *MLEV* (0.215 and 0.174), a 10 percent rise in profitability ratio of American (Japanese) firm brings about a similar decrease in its debt-to-equity ratio i.e. 0.72 (0.74) percent, ceteris paribus[76]. This inverse relation is consistent with the POT and similar to the results obtained by González and González (2008) indicating that firms prefer their internal funds to debt financing and equity (more expensive external sources of funding). Basically, according to the POT higher profitability of a company, leads to more internal resources available for funding new investments (subject to dividends).

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*The two-step variants use a weighting matrix that is the inverse of an estimate, **S**, of Var[**z**' ε], where **z** is the instrument vector. This 'optimal' weighting matrix makes two-step GMM asymptotically efficient. However, the number of elements to be estimated in **S** is quadratic in the number of instruments, which in the present context can mean quartic in T. Moreover, the elements of the optimal matrix, as second moments of the vector of moments between instruments and errors, are fourth moments of the underlying distributions, which can be hard to estimate in small samples.*(p.8).

[76] This calculation is simply 0.091*0.1*(-0.1691)/0.215 and 0.053*0.1*(-0.2513)/0.174 for the U.S. and Japanese samples, respectively (following Firth et al. (2012) and Guariglia (2008)).

Coefficients for *MTB* are significant and negative[77] for columns 1, 2, 4, and 6, which is consistent with the TOT, as well as de Jong et al. (2008), Flannery and Rangan (2006), and Rajan and Zingales (1995). Basically, the costs of financial distress and the agency costs of gearing are larger for fast growing companies. Consequently, investors ask for a higher rate of return which is parallel to a higher cost of debt financing for firms (Antoniou et al., 2008). For columns 3, 5, and 7 coefficients are not statistically significant.

In case of the *SIZE* and *TANG/TA* variables, the coefficients have mixed signs and lack of statistical significance. In addition, the estimation results exhibit positive and very significant coefficients on *MEDLEV* variable, which controls for industry effects[78]. This is consistent with prior studies (Byoun, 2008; Frank and Goyal, 2004) and supports Frank and Goyal's (2009) argument of its unique importance possibly being a proxy for a number of factors. Negative and statistically significant coefficients on *BOND* in the MB and American samples are puzzling[79].

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[77] When Book leverage ratios (*BLEV* and *BLEVT*) are used as the dependent variable, the coefficients on *MTB* either lose their significance (columns 1, 2, 4, and 6) or switch their signs and remain statistically insignificant (column 7). This evidence indicates that an inverse relation between a proxy for firms' growth and its market gearing ratios is mechanical (regardless of the TOT). The market value of a firm's equity appears simultaneously in the numerator of *MTB* regressor and in the denominator of the dependent variable (*MLEV* or *MLEVT*). Thus, as market value of equity rises, so does the *MTB* variable, whereas the firm's market leverage ratio falls.

[78] Except for the BB and Japanese samples.

[79] In case of the U.S. sample, during the first decade (1991-2000) the ratio of public (private) bond markets to the GDP was falling (growing). The *BOND* variable is composed of the market capitalization of public bond market (all bonds issued by government), as well as private bond market (all bonds issued by financial institutions, and non-financial firms) as a share of the GDP. As a robustness check I ran a regression replacing *BOND* variable with *BONDPRIV* variable which includes only a private bond market. The coefficient on *BONDPRIV* changed to positive and remained statistically significant, while all other estimates were unchanged.

4.3 Tests of Hypotheses 1 and 2

The main object of interest in this thesis is the relation between firm credit rating (CR) and leverage ratio, in other words, the coefficients for *RATINGL1* variable. From Panel C of Table 3, I can conclude that the results for this determinant are robust[80] and confirm Hypotheses 1 and 2. There is a negative and statistically significant relation between CRs and firms' debt-equity ratio for the overall, MB, advanced, and the U.S. panels[81]. For the U.S. sample the coefficient on *RATINGL1* is -0.0037. This means that a CR upgrade (or downgrade) by 4 notches (e.g., from A to AA+ or vice versa) in year *t* would lead to a 1.48 percent drop (or increase) of company's debt-to-equity ratio in year *t+1*, all else equal. This evidence is consistent with negative and significant correlations between CRs and debt ratios described in the previous section. Negative and statistically significant coefficients on the *RATINGL1* variable inform that on the one hand, higher CRs make firms more transparent in the eyes of investors. This in turn leads to lower information asymmetry and adverse selection problem (two major factors standing behind the formulation of the POT), thereby decreasing the cost of equity financing (e.g., Liu and Malatesta, 2007). Frank and Goyal (2009) conclude that in line with the pecking

[80] I also conduct a large number of regression analyses: exclusion of regulated industries, zero-debt observations, alternative measures of *TANG/TA*, *SIZE*, and firm leverage ratios (3 more alternative measures applied: *MLEVT*, *BLEV*, and *BLEVT*). Moreover, I used the CRs from the same period as the leverage, as well as the First-Difference GMM and the One-Step System GMM methodologies with different number of lags for instrumental variables, without orthogonal differencing, and with collapsed instruments. In most of the cases the results were robust and indicate an inverse and statistically significant relation between the firms' gearing ratios and their credit ratings for MB, advanced and the U.S. panels of companies as in Panel C.

[81] Only when *BLEVT* is used as the dependent variable, the coefficient on *RATINGL1* is positive but statistically insignificant. Similar evidence was reported by Frank and Goyal (2009) who observe a significant and positive (negative) impact on the total debt to book (market) assets ratios if a firm has a debt with an investment-grade rating.

order theory (POT):

> *(...) possessing a credit rating involves a process of information revelation by the rating agency. Thus, firms with higher ratings have less of an adverse selection problem. Accordingly, firms with such ratings should use less debt and more equity.* (p.10).

On the other hand, companies with high CRs are usually those with large internal funds (Byoun, 2011) and in line with the POT they use excess cash to pay back existing debt rather than repurchase their equity (Myers, 2003). Furthermore, the negative relation between CRs and the firms' capital structure might stem from the fact that despite potentially easier access to cheap debt, highly rated companies do not issue it in order not to be downgraded[82].

In addition, my estimates are broadly in line with the financial flexibility hypothesis (FFH) formulated by Byoun (2011). He finds that due to the different stage of development and financial constraints, there is a negative relationship between the CRs and gearing ratios (the better the CRs, the lower the debt ratio). A similar relation was found by Leary and Roberts (2005). Moreover, the same coefficients are insignificant for the BB and Japanese samples of companies, which give support for Hypothesis 1.

Regarding Hypothesis 2, the coefficient on *RATINGL1* in column 5 (developing economies) is positive but not statistically significant at satisfactory level[83]. This evidence is contrasting with the coefficient in column 4 (the advanced sample). Such a result is consistent with my Hypothesis 2 stating that "*The effect of a credit rating*

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[82] When CRAs assess firms' creditworthiness, they pay close attention to firm indebtedness. In other words, the higher the company's leverage, the higher the default probability and a possibility of a lower CR. Therefore, the higher the CR, the less debt could be issued by a firm before its CR dropped, which in turn forces companies to maintain low leverage ratios (e.g., Shivdasani and Zenner, 2005).

[83] As Flannery and Hankins (2013) point out, the System GMM results have low statistical significance when the size of sample is small and its length short. However, these estimates are not biased.

on a firms' capital structure in developing economies is less significant than in advanced economies" (p.24) .

In case of the BB and especially the developing samples, one important point has to be made. Namely, the lower significances at least to some extent might be linked to the small number of observations and companies as compared to the MB or the advanced samples of firms. However, this kind of problem is an intrinsic part of all capital structure studies conducted for the panel of many countries e.g. de Jong et al. (2008), Fan et al. (2012), Flannery and Hankins (2013), González and González (2008), and Öztekin and Flannery (2012).

It is obvious that a big part of the overall, advanced and MB samples size is composed of firms based in the U.S. (this is also the case for Japanese firms in the BB sample)[84]. Looking at the estimates shown in Table 3, I observe a high degree of similarity in coefficient estimates and their corresponding t-values for American, overall, MB, and advanced samples. This fact in conjunction with the over-representation of the U.S. and Japan gives a reason to suspect that the U.S. and Japan drive the results exhibited in columns 1 through 4.

In this thesis I apply a twofold solution to this drawback. First, I conduct additional analyses with American and Japanese firms excluded from the four potentially affected samples. Second, in the following paragraph I present the results of analyses in which I include four interaction variables *RATINGL1*MBDUM, RATINGL1*DEVDUM, RATINGL1*US,* and *RATINGL1*JAPAN* capturing the hypothesized different impacts of CRs on firms financing policies. These interaction terms not only allow me to preserve a bigger sample by retaining all observations and firms which in turn leads to more reliable results, but also, serve as a proxy for the test of equality of coefficients between different samples (Institute for Digital

[84] See Appendix D for the exact number of observations, firms, and their percentage share.

Research and Education, 2013). In both cases the results reconfirm my suspicion of the U.S. (and Japan to much lesser extent) driving the results and that a different impact of CRs on firms' capital structure is much more pronounced between the U.S. and Japan than between market-based and bank-based financial environments in general.

[Insert Table 3: Panels A, B, and C here]

In Table 4 I present the regression estimates of the overall, MB, BB, and advanced panels (columns 1 through 4) truncated by dropping American and Japanese firms, in order to investigate for any significant disparities in comparison with the results from Panel C of Table 3. Columns 5 through 7 exhibit the same estimates as in Table 3.

First, as expected and in line with Flannery and Hankins (2013) due to diminished sizes of truncated samples, the statistical significances of coefficients are smaller in general. With respect to the SOAs, the changes go in the same direction. In columns 1 through 4 the exclusion of U.S. and Japanese firms result in relatively faster rates of adjustments. These differences amount to approximately 5, 5, 8, and 1.5 percent respectively, meaning that on average rated non-financial firms from 17 (12 advanced) analysed countries close roughly 41 (37.5) percent of the gap between their actual and target gearing within one year respectively. Likewise, at this speed it takes only about 15 (18) months[85] to close half the gap between companies' current and target debt ratios in columns 1 and 4.

Moreover, in line with the results from Table 3, the SOAs in the BB sample are

[85] This calculation is simply ln(0.5)/ln(1-0.4098) and ln(0.5)/ln(1-0.3756) (e.g., Öztekin and Flannery, 2012).

relatively slower when compared with the MB sample (although the difference narrowed down to just about one percent). The firms operating in MB environment close approximately 41 percent of the distance between their desired and actual leverage ratios within one year, whereas their counterparts from the BB sample 40 percent.

Looking at the firm-specific coefficients, some significant changes occurred with respect to *MTB* and *SIZE* regressors. The results for MB (BB) samples suggest that there is a positive and statistically insignificant (significant) influence of *MTB* on companies' capital structure. These estimates are consistent with Edwards and Nibler (2000) who find that in BB oriented Germany large shareholders are able to impose stricter monitoring, thus, the mitigation of agency costs occurs (conflict between the managers' and shareholders' interests is diminished). Consequently, the effect of growth opportunities cannot be explained by the TOT. Instead, in line with the POT, perhaps in order to finance their growth, firms in need of more funding (after exhausting their internal funds) seek external forms of financing. Moreover, according to the POT firms are more likely to tap the bond rather than the stock market. It is not uncommon for the scholars to find this kind of relation (Demirgüç-Kunt and Maksimovic, 1994; MacKay and Phillips, 2005).

Also the coefficients on *SIZE* variable switch sign to positive in all three panels when U.S. firms are excluded (columns 1, 2, and 4). These estimates offer a support to the TOT. In addition, they indicate that indeed the results in the mentioned samples were previously driven by over-representation of American firms (as in Table 3). Finally, in all truncated samples a substantial rise in importance of the industry effect emerges.

According to my Hypothesis 6, after inspecting coefficients on *RATINGL1*, it becomes clear that both the economic and statistical importance fell in the case of columns 1, 2, and 4, but increased in column 3. On the one hand, these changes suggest that a negative impact of CRs on a firm's leverage ratio was upward-biased (in absolute values) in columns 1, 2, and 4 by the sheer number of companies from the U.S. In other words, the effect of a CR on a firm's capital structure is more significant in the U.S. as compared with the other countries. On the other hand, the coefficient on *RATINGL1* in column 3 of Table 4 is more statistically significant and has higher absolute value (as compared with column 3 of Table 3). These estimates indicate that the effect of a CR on a company's debt ratio in Japan is weaker than in other BB oriented countries. In fact, in comparison with evidence from Table 3, the influence of CRs on a capital structure remained statistically significant (at the highest 1 percent level) only in the advanced sample (column 4) but its absolute value dropped by 0.006 (from -0.0044 in Table 3 to -0.0038 in Table 4). This may suggest that (when a traditional division of countries' financial orientation into MB and BB is applied), there is no significant difference in CRs impact on firms' debt ratios between MB and BB environment. In other words, estimates from Table 4 do not support the idea formulated in Hypothesis 1. However, the results are consistent with Hypotheses 2 and 6.

[Insert Table 4 here]

4.4 Tests of Hypotheses 1 to 6 (Using the Interaction Terms)

Table 5 (Panels A to G) exhibits additional set of variables which are used to capture the interactions between *RATINGL1* and other independent variables (*MBDUM*, *FINARCH*, *DEVDUM*, *BOND*, and *LAGLEV*). In column 1 (and 2) of each of Panels (Panels A, D, and E), I present interactions between *MBDUM*, *FINARCH*, *DEVDUM*, and *BOND* regressors and the *RATINGL1* variable, to deal with Hypotheses 1 and/or 4, 2, and 3 respectively[86]. In addition, in order to control for the over-representation bias of American and Japanese firms, as well as, to assess the validity of Hypothesis 6 I include two interaction variables (*RATING*US* and/or *RATING*JAPAN*) in column 1 (Panels A through D) and 2 (Panels A and D).

The next column examines the validity of Hypothesis 5. In the last column (two columns) of Panels A to C, and F (Panel D), in line with a commonly applied procedure I reintroduce all significant interaction terms simultaneously as robustness measure[87] (González and González, 2008). Finally, in the case of the U.S. sample (Panel F) in column 3, I use the interaction term between the *RATINGL1* variable and the dummy variable *REFORM*[88].

4.4.1 Hypothesis 1

The coefficients on *RATINGL1*MBDUM* shown in column 1 (1 and 4) of Panels A and E (panel D) indicate that there is no significant difference in the CRs' effect on firms' capital structure between the MB and BB countries. This evidence is consistent with the existing studies (Rajan and Zingales, 1995, 2003; Tadesse, 2006) which document that during the last two decades of the twentieth century the stock markets in many BB economies expanded rapidly in terms of both market

[86] The *MBDUM* and *FINARCH* variables are two alternative proxies capturing the different financial orientation of countries' financial systems. Thus, with respect to the overall, advanced, and developing samples corresponding to Panels A, D, and E, I apply the interaction between *MBDUM* (*FINARCH*) and *RATINGL1* separately in column 1 (2).

[87] Furthermore, this procedure can be applied since my hypotheses are not mutually exclusive (e.g., Mittoo and Zhang, 2008).

[88] As a robustness measure, the same interaction terms were included in all other Panels of Table 5 and just like in the U.S. sample were found to be insignificant. Due to the lack of significance and for the brevity of this thesis the relevant results are not presented but available on request.

capitalization and equity financing. This in turn, finds support in Figures 3 to 5 showing among others, that by 2000, BB countries managed to catch up with MB countries in terms of the average and median values of *FINARCH* variable (measuring the size, activity and efficiency of stock markets as compared with banking industries corresponding features). Therefore, statistically insignificant coefficients on *RATINGL1*MBDUM*[89] are less of a surprise than would otherwise be (holding strictly to the traditional MB/BB line of argument highlighted in Hypothesis 1).

Consequently, the arguments in favor of greater importance of CRs in countries traditionally regarded as MB, as well as, simply categorizing economies into MB and BB (Antoniou et al., 2008) do not hold in my study. On the one hand, this calls for an additional analysis of samples divided with respect to the two above-mentioned decades[90]. On the other hand, these estimates support the need of employment of the *FINARCH* variable as an additional and alternative measure of financial systems' orientation[91] affecting the relation between CRs and a capital structure.

4.4.2 Hypothesis 2

To analyze whether CRs influence firms' capital structure in a different way based on the level of economic development of a country in which they are based, I interact *RATINGL1* with *DEVDUM* in Panels A, B, and C of Table 5. The

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[89] In case of Panel D, the coefficient on *RATINGL1*MBDUM* is significant but not robust (statistically significant in column 1, but insignificant in column 4).

[90] See section 4.5.2.

[91] It can capture the fluctuations of relative size, efficiency and activity of stock markets vis-à-vis the banking industry in each of in the samples' countries.

coefficients on *RATINGL1*DEVDUM* in column 1 (1 and 2 in case of Panel A) are consistent with the idea expressed in Hypothesis 2.

In general, my estimates suggest that there is a significant difference in the CRs effect depending on the economic development of an economy. This result informs that in the advanced countries, the link between higher CRs and increased equity issuance (in line with the POT) outweighs the positive role of ratings on availability of credit at lower price (according to the TOT). In a similar vein, in case of developing countries the former effect is less (or the latter more) prominent or both.

4.4.3 Hypothesis 3

The coefficients on *RATINGL1*BOND* are proxying for the different importance of a CR, depending on the size of bond market as a share of GDP in a given country. Looking at column 1 (and 2 in case of Panels A, D, and E), in all but two panels[92] the coefficients are positive and statistically significant. This evidence initially confirms the idea stated in Hypothesis 3 that "*A credit rating has a more positive effect (or a less negative effect) on a firms' capital structure in economies with more developed bond markets*".

However, after reintroducing all of the significant interaction terms in the last column, only in Panels A and D (the overall and advanced samples) do the results provide strong statistical support the claim that a larger and more developed bond market fosters a positive relation between CRs and firms' debt ratios. In other words, the results are not robust suggesting that the effect of a CR on a company's capital structure is independent of bond market development. Therefore, in my thesis I do not find the support for Hypothesis 3.

[92] The Japanese and developing samples are those exceptions.

4.4.4 Hypothesis 4

The last prediction tested in column 1 (or column 2 of Panels A, D, and E) is stated in Hypothesis 4 which is closely linked to and based on a similar line of arguments as in Hypothesis 1. In order to check if the influence of a CR on companies' gearing ratios grows together with the degree of financial system's market orientation, I interact two relevant variables: *RATINGL1* with *FINARCH*. The *FINARCH* variable enables me to measure the level of the stock markets development relative to the banking industry in three dimensions: size, efficiency and activity (Levine, 2002; Tadesse, 2006) and their annual fluctuations. In contrast to the MB/BB differentiation, it captures the overall development of stock markets in all groups of countries (being relatively faster in bank-based economies). Inspecting Figures 4 and 5, we can observe three major peaks and inflection points: 1997/1998 (the Southeast Asia crisis influencing mainly developing economies), 2000/2001 (the dotcom bubble outburst affecting to some extent all samples' plots) when BB financial architecture's yearly means caught up with their MB counterparts and 2007/2008 (the recent global financial crisis impacting all samples' plots).

The estimates in six out of seven Panels (except for the Japanese sample) are broadly in line with Hypothesis 4 i.e., they display the negative signs for coefficients on *RATINGL1*FINARCH* and are statistically significant at standard levels (in Panels A, B, D, and F). The interpretation of these results confirms a higher dependence of firms' capital structure on their CRs when companies operate in an environment with more developed stock markets (more MB oriented). A likely explanation for this evidence can be the ability of the annually measured *FINARCH* to capture the fluctuations in size, activity and efficiency of the stock markets relative to banks.

The negative relation between CRs and a capital structure is consistent with the pecking order theory (POT)[93]. In other words, firms with better CRs have smaller problems with asymmetric information/adverse selection leading to lesser degree of equity underpricing which is equivalent with cheaper cost of capital (Liu and Malatesta, 2007). Thus, they issue more equity and less debt (Frank and Goyal, 2009). Consequently, the more developed equity market, the more significant this effect. Despite relatively high *FINARCH* values, this relation does not take place in Japanese sample, possibly due to mistrust of local investors and firms in CRs issued by U.S.-based credit rating agencies (CRAs) such as S&P.

4.4.5 Hypothesis 5

In column 2 (3) of the Table 5 Panels B, C, F, and G (A, D, and E), I interact *RATINGL1* with *LAGLEV*. Except for the developing sample of firms, the coefficients reported are uniformly positive in terms of signs. Furthermore they are statistically significant (one or five percent levels) in five panels (the overall, MB, BB, advanced, and U.S.). These results suggest that the better (worse) the CR, the slower (faster) the speed of adjustment (SOA) towards a target level of leverage. As mentioned in the previous sections, in order to calculate a firm's SOA, I subtract the value of the coefficient on *LAGLEV* from one. For the MB sample (Panel B), the coefficient on *RATINGL1*LAGLEV*, is 0.0093. This means that a company with AA credit rating closes almost 1 percent less of the gap between its actual and target gearing within one year than its counterpart with AA- credit rating. In a similar vein,

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[93] See page 74 in section 4.3 for more detailed explanation of the inverse relation between the firms' leverage ratios and their CRs.

the difference in the SOAs between the firms with the highest and the lowest investment-grade CR (AAA versus BBB-) amount to over 8 percent.

This evidence suggests that CRs are a proxy for the degree of firms' financial constraints (Byoun, 2011; Faulkender et al., 2012; Kashyap et al., 1994). According to Byoun (2011) firms with low CRs have *"great need of external funds utilize available financial resources"*(p.35). Therefore, even though a firm with poorer CR (Firm A) faces higher costs of accessing capital markets as compared to a firm with better CR (Firm B), due to lack of internal earnings to fund investment opportunities, Firm A often engages in capital market transactions. This in turn enables it to adjust its debt ratio at relatively low marginal cost (Faulkender et al., 2012). On the other hand, Firm B with high CR, only rarely taps capital markets due to sufficient internal funds (enough to pay for its investment needs). Therefore, the adjustment of its capital structure would require from it an additional *"trip"* to either the stock or the bond market, and thus, extra costs. In other words, the companies adjust with faster speed when the costs of this process are sunk (when in order to raise funds, a firm has already borne transaction costs and can simultaneously converge towards its target debt ratio) relative to when these costs are incremental.

My estimates are also consistent with Korajczyk and Levy (2003), who document that financially unconstrained firms more likely deviate from their target gearing ratio in an attempt to time the markets by issuing/repurchasing securities when macroeconomic conditions are most favorable[94]. In their sample, out of 565 firm events labeled as *"financially constrained"* only 8 had investment-grade CRs issued by S&P and the rest of events had either speculative-grade CRs or were not rated.

[94] A good example of such a firm is Apple.

A statistically insignificant coefficient on *RATINGL1*LAGLEV* in Panel G can be associated with Hypothesis 6's argument of a particularly forceful criticism of CRs issued by the U.S.-based CRAs in Japan (Fairchild and Shin, 2006). This estimate indicates that despite the documented high degree of MB orientation proxied by the *FINARCH* variable shown in Figures 4 and 5, the potential costs of adjustment and/or benefits of converging towards desired gearing ratios are independent of a CR in Japan.

4.4.6 Hypothesis 6

In order to investigate whether the importance of CRs issued by S&P for companies based in the U.S. and Japan is significantly different from the rest of MB and BB countries, I include two additional interaction terms in column 1 (and 2 in Panels A and D) of the relevant Panels in Table 5. The negative and statistically significant at the highest level coefficients on *RATINGL1*US* confirm the idea of a particularly important role of NRSROs and their services in the U.S. in comparison with other countries formulated in Hypothesis 6. The coefficients on *RATINGL1*JAPAN* exhibit mixed signs and are not statistically significant at standard levels.

4.4.7 Credit Rating Industry's Reform in the U.S. (2006-2010) and its Impact on the Relation between CRs and Firms' Capital Structure

Finally, in the case of the U.S. sample (Panel F of Table 5) in column 3, I use the interaction term between the *RATINGL1* variable and the dummy variable

REFORM[95] . I do this in order to capture the effect of the mentioned reform (see section 2.3.2) started in 2006. A negative[96] but statistically insignificant coefficient on *RATINGL1*REFORM* suggests that CRs' effect on firms' gearing in the U.S. was unaffected by the period corresponding to the series of reforms. As described in section 2.3.2, this reform took place in the U.S., and thus, it is not expected to have any bearings on the relation between the CRs and a firm's capital structure in other countries. However, as a robustness measure the same interaction term was included in all other Panels of Table 5. Just like in the U.S. sample, these coefficients were statistically insignificant. Due to the lack of significance and in order to improve readability of results presented in Table 5, the relevant results are not presented but available on request.

[Insert Table 5, Panels A to G here]

[95] This dummy variable equals one for the years 2006 to 2010 (the period of the rating industry's reform in the U.S.) and zero otherwise.

[96] I would expect the successful reform to strengthen the role of CRs on the firms' capital structure, thus, the coefficients on *RATINGL1*REFORM* to be negative and significant, in line with the hypothesized inverse relation between CRs and leverage ratios (see page 7 in Chapter 1 and page 74 in section 4.3) confirmed in Tables 3 and 4.

4.5 Robustness Tests

Previously estimated samples are split with respect to firm size, rating classes, and time periods.

4.5.1 Robustness of Findings by Firm Size

Prior research (Flannery and Rangan, 2006; Frank and Goyal, 2009) check for the robustness of their results by, among others, splitting data samples according to firm size and or time periods. Thus, following the existing literature, I acknowledge the fact that many determinants might influence different kind of companies in various ways and running one regression to fit one model with all firms may not be the appropriate procedure. In general, the results show that the partial adjustment model fits all groups of companies.

In Table 6, I divide four previously estimated samples (MB, BB, the U.S., and Japan) into two size categories according to their total assets (*SIZE*)[97]. The results with respect to firms SOAs show that in all samples larger firms adjust less rapidly even though theoretically, their sensitivity to fixed transaction costs (part of the adjustment costs) should be weaker. These results reconfirm the findings of previous studies (e.g., Antoniou et al., 2008). Faulkender et al. (2012) document that *"larger firms adjust excess leverage more slowly, consistent with the costs of excess leverage being smaller for larger firms."* (p.645).

Moreover, they find this relation robust with respect to over- and under-levered group of firms alike. In general, the bigger the company, the less fluctuation in its

[97] In line with Antoniou et al. (2008) and Mao (2003) I do not present the medium-size companies (between 40th and 60th percentile of total assets).

cash flows, therefore, lower costs associated with being away from its desired level of debt. Additionally, larger firms rely more on bond financing (which traditionally has few covenants), associated with relatively lesser pressure for these firms to converge towards their targets as compared with pressure imposed by banks on their borrowers via a number of tight covenants (as argued by Flannery and Rangan, 2006).

Furthermore, this evidence seems to be in line with the prior results indicating that companies with better CRs (proxying for the lesser degree of financial constraints) exhibit slower SOAs. In their study, Faulkender et al. (2012) use a firm size and a bond credit rating as proxies for the financial constraints. According to Table 2, the larger is the firm, the higher is its CR, and therefore similar kinds of factors might be behind the relation between CRs or firm size and its SOA. In other words, in line with Byoun (2011) and Faulkender et al. (2012), larger firms are less financially constrained than their smaller counterparts, and have reasons to display slower SOAs as compared with smaller (financially constrained) firms. Faulkender et al. (2012) argue that in case of financially unconstrained (large) companies, converging towards their target debt ratios *"would require a 'special' trip to the capital markets, and the associated costs would be offset only by the benefits of moving closer to target leverage"* (p.633). Korajczyk and Levy, (2003) document that financially unconstrained firms are more likely to deviate from their target capital structure in an attempt to time the markets by issuing/repurchasing securities when macroeconomic conditions are most favorable.

In addition, *RATINGL1* is more important both statistically and economically for smaller firms than for larger in three samples (especially the American) of firms[98]. This result seems logical and is in line with Byoun (2011), Frank and Goyal (2009),

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[98] The Japanese sample is the only exception.

and suggests that according to the POT, CRs help smaller companies to access capital markets and raise funds in form of equity (negative coefficients in MB, BB, and American samples).

[Insert Table 6 here]

4.5.2 Robustness of Findings Over Time (by Decades)

In Table 7 the samples are split into two decades (1991-2000[99] and 2001-2010). The results indicate that the growing criticism of CRAs and their CRs that has taken place since 1997 might have a significant impact on the CRs' influence on companies' capital structure. This could be caused by financial market's diminished reliance on CRs and their information role due to CRAs damaged reputation and CRs regarded as often inaccurate or unreliable indicators of firms' probability of default. Consequently, it can be observed that the importance of CRs in MB countries (that also applies to U.S. sample) was indeed much stronger during the period 1991-2000 as compared with the more recent decade (2001-2010).

In addition, the results offer support to Hypothesis 6. In case of Japanese sample, the coefficients on *RATINGL1* are much less significant and their magnitudes are comparatively smaller than those from the BB sample (0.0006 and -0.0019 for Japan compared to -0.0038 and -0.0042 for the BB sample) for the first and second ten-year periods respectively. During both decades, In the American sample the coefficients on *RATINGL1* are the most significant and the largest (compared with coefficients on *RATINGL1* in other samples). This evidence suggests that in the U.S. CRs are relatively more important as determinants of firms' capital structure.

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[99] In case of the BB sample, the first sub-period is 9-years long due to missing observations for 1991.

[Insert Table 7 here]

4.5.3 Robustness of Findings Across Different Rating Classes (Additional Support of Hypothesis 5)

In this section I elaborate on the results exhibited in Table 8, in which I divide previously estimated samples (MB, BB, advanced, developing, the U.S, and Japan) into two subsamples based on the firms' CRs (those with an investment-grade CR and those with a speculative-grade CR). I was motivated by the most recent approach of Faulkender et al. (2012)[100] and their forceful argument of SOAs being highly dependent on credit ratings (stemming from the financial constraints problem similar to that examined by Byoun (2011)). The results in Table 8 are consistent with those from Table 5 (where I use the *RATINGL1*LAGLEV* interaction term), and show that the SOAs are faster (slower) for firms with speculative (investment) CRs.

Inspecting the results further, I can conclude that the largest disparity in the SOAs between investment- and speculative-grade sub-samples occurs in the developing panel of firms. In this sample, companies with speculative (investment) CRs close about 47 (32) percent of the gap between their actual and target debt ratios within one year, and with these speeds it takes 13 (21) months to close half the gap between firms' desired and current gearing ratios. In other words, firms with below-investment CRs close approximately 15 percent more of the gap annually and they need 8 months shorter period to close half of the distance between the above-mentioned debt ratios. The estimated coefficients on the *LAGLEV* variable proxying for the SOAs of firms with different CRs suggest that Byoun (2011), Faulkender et al. (2012), and Korajczyk and Levy's (2003) arguments apply to my

[100] See the Literature Review chapter, section 2.3.1.

thesis. The results also indicate that no matter the financial orientation or economic development of the country in which firms are based, those with poorer issuer CRs adjust towards their target gearing ratios at a faster speed.

Summing up, the results in Table 8 offer additional support to Hypothesis 5, that companies with high CRs adjust towards their target gearing ratios at a slower speed than firms with poor CRs. Moreover, my estimates suggest that this difference in the SOAs (being the smallest in the BB sample and the largest in the developing sample) occurs in all examined panels of firms.

[Insert Table 8, Panels A to C here]

Chapter 5. Conclusions

An extensive literature has formed during the last fifty years or so that investigates the main forces driving the firms' capital structure. However until recently, the impact of credit ratings (CRs) on capital structure had been neglected. Recent studies that include CRs are conducted with respect to the American market (Byoun, 2011; Hovakimian et al., 2009; Kisgen, 2006, 2009; Leary and Roberts, 2005; Sufi, 2009; Faulkender et al., 2012).

My thesis extends prior research by investigating the role of CRs on firms' capital structure and their speed of adjustment towards target level in 19 countries with different financial orientations and levels of economic development. I investigate a 20-year period sample for 1,513 non-financial companies.

I find that except for Japan, the impact of CRs on capital structure is more significant and negative in countries with more market-oriented financial systems (measured by the *FINARCH* variable), whereas the traditional simple division into MB and BB countries has no significant influence on the relation between CRs and firms' gearing ratios. A likely explanation for this evidence is the ability of the annually measured *FINARCH* to capture the fluctuations in size, activity and efficiency of the stock markets relative to banks.

The negative relation between CRs and gearing ratios is related to the pecking order theory (POT). Companies with better CRs have smaller problems with asymmetric information and adverse selection (two major components in the formulation of the POT), and therefore, benefit from the decreased cost of equity financing (e.g., Liu and Malatesta, 2007). Thus, they issue more equity and less debt (Frank and Goyal, 2009). Consequently, the more developed equity market, the more significant this effect. Despite relatively high *FINARCH's* values, this relation does not take place in the Japanese sample, possibly due to mistrust of local investors and firms in CRs issued by U.S.-based credit rating agencies (CRAs) such as S&P.

Furthermore, the relation between the CR and firms' leverage ratio is negative and significantly stronger in advanced than in developing economies. This disparity has a twofold explanation. First, due to low presence, short history and high volatility of CRs in the developing countries, their information role in the process of issuing equity (Frank and Goyal, 2009; Liu and Malatesta, 2007) or debt (Tang, 2009) loses reliability. Second, in developing economies firms rely more on bank lending than their counterparts from advanced economies (e.g., Demirgüç-Kunt et al., 2012).

In addition, my results are robust and indicate that regardless of financial orientation or economic development of a country, firms with poorer CRs enjoy faster SOAs. This can be explained by different degree of financial constraints (Byoun, 2011; Faulkender et al., 2012; Korajczyk and Levy, 2003).

Moreover, I find that CRs issued by S&P have a particularly strong influence on debt ratios of U.S. companies. My estimates suggest that CRs' effect in the MB and American samples decreased significantly during the second decade (2001-2010) of analyzed period, which coincides with the widespread critiques of CRAs and their services. This may suggest that the CRAs are not immune to criticism and that perceived reliability of CRs as information tool in eyes of investors and/or firms has fallen. Lastly, my results also show that the recent series of rating industries' reforms in the U.S. (2006-2010) carried no significant impact on the relation between CRs and capital structure.

A major limitation of research in my thesis is data constraint. Due to the limited S&P's CRs there is a huge disparity in the numbers of firms and observations between the U.S., Japan and other MB and BB countries. The same drawback applies to the big differences between advanced and developing samples of firms. On the one hand, this creates over-representation bias and difficulties in comparison of results across samples. On the other hand, small number of observations in developing sample leads to potential problems with using the Two-Step System GMM technique and potentially unreliable estimates. Moreover, consistent with the literature (Poon, 2003; Poon and Firth, 2005) my thesis can suffer from self-selection bias. First, firms with CRs tend to have higher profitability, liquidity, and lower leverage ratios. Second, the decision of applying for a CR also depends on the factors influencing the CR level. Finally, CRs tend to be quite stable over time (especially in the advanced countries). Therefore, my CR variable is highly consistent within company and thus has low within-firm variation that causes potentially unreliable estimations. This limitation applies to the Within Groups, First-Differencing GMM, and System GMM methods alike.

Appendix A

The Detailed Explanations of Exchange Act Rules 17g-1 through 17g-6 Implemented on the 26th of June 2007 by U.S. Securities and Exchange Commission

Exchange Act Rules Applicable to NRSROs	
Rule 17g-1	Requires an NRSRO to apply for NRSRO status and issue credit ratings for various classes of securities by filing a Form NRSRO with the Commission, and prescribes how an NRSRO must keep its registration up-to-date and file an annual certification. Additionally, an NRSRO must make its current Form NRSRO and information and documents submitted in Exhibits 1 through 9 to Form NRSRO publicly available.
Rule 17g-2	Requires an NRSRO to make and retain certain types of business records and publicly disclose certain ratings history data.
Rule 17g-3	Requires an NRSRO to file annual financial reports and reports of the number of credit rating actions with the Commission, some of which are audited.
Rule 17g-4	Requires an NRSRO to establish and enforce written policies and procedures designed to address specific areas in which material, nonpublic information could be inappropriately disclosed or used.
Rule 17g-5	Identifies a series of conflicts of interest arising from the business of determining credit ratings. Some of these conflicts must be disclosed and managed, while others are expressly prohibited.
Rule 17g-6	Prohibits NRSROs from engaging in certain unfair, abusive, or coercive practices.

Source: SEC (2011)

Appendix B

All Issued Ratings by Nationally Recognized Statistical Rating Organizations

(NRSROs) for the Year 2010

"The table summarizes below list the number of outstanding ratings reported by each NRSRO in its Form NRSRO annual certification for 2010. For each NRSRO, the table sets forth the number of outstanding ratings for the five asset classes." (p.5). Since the publication of this summary, one more CRA applied and was granted a status of NRSRO (HR Ratings de México, S.A. de C.V. on the 5th of November 2012.

NRSRO Ratings Outstanding by Asset Class*						
	Financial Institutions	Insurance Companies	Corporate Issuers	Asset-Backed Securities	Government Securities	**Total**
A.M. Best	N/R	5,062	2,043	54	N/R	**7,159**
DBRS	14,941	156	3,863	10,091	13,533	**42,584**
Egan-Jones	89	47	877	13	19	**1,045**
Fitch	61,550	1,657	13,385	64,535	363,897	**505,024**
JCR	159	30	495	N/R**	52	**736**
Kroll	16,515	48	1,002	0***	59	**17,624**
Moody's	61,581	4,540	30,285	101,546	841,235	**1,039,187**
Morningstar	N/R	N/R	N/R	8,322	N/R	**8,322**
R&I	503	48	2,836	N/R	1,031	**4,418**
S&P	54,000	8,200	44,500	117,900	965,900	**1,190,500**
Total	**209,338**	**19,788**	**99,286**	**302,461**	**2,185,726**	**2,816,599**

* As reported by the NRSROs on Form NRSRO, dated as of year-end 2010.
** N/R" indicates the NRSRO is not registered for that class of securities. R&I and JCR withdrew from their NRSRO registrations in asset-backed securities on June 28, 2010 and December 2, 2010, respectively.
***Kroll is registered in asset-backed securities, although it reported no ratings in this class as of year-end 2010.

Source: SEC (2011)

Appendix C

Sample's Countries Grouped by Financial Systems' Orientation and Economic Development

This appendix presents all the countries used in the study with regards to their level of economic development, according to the International Monetary Fund's classification. There are 5 economies considered as developing and 14 as advanced. Moreover, there are 8 economies with financial system classified as bank-based and 11 countries with market-based.

Country Financial System's Orientation		**Country's Economic Development**	
Bank-Based	**Market-Based**	**Developing**	**Advanced**
France	Australia	India	Australia
Germany	Canada	Indonesia	Canada
India	Hong Kong	Mexico	France
Indonesia	Korea	Russia	Germany
Italy	Mexico	Thailand	Hong Kong
Japan	the Netherlands		Italy
Russia	Sweden		Japan
Spain	Switzerland		Korea
	Thailand		the Netherlands
	the U.K.		Spain
	the U.S.		Sweden
			Switzerland
			the U.K.
			the U.S.

Source: Demirgüç-Kunt and Maksimovic (2002), IMF (2012), and Popov (1999)

Appendix D

Number of Sample Observations by Year and by Country

Due to the limited availability of S&P's CRs, the whole sample of rated firms with at least three consecutive observations during the whole period 1991-2010 covers just 19 countries. The poor CRs coverage is especially pronounced in case in developing countries, as well as earlier years of the analyzed period. The overall sample is an unbalanced panel of 17,046 annual observations: 323 for Australia, 551 for Canada, 394 for France, 327 for Germany, 86 for Hong Kong, 53 for India, 86 for Indonesia, 132 for Italy, 1,823 for Japan, 144 for Korea, 170 for Mexico, 133 for the Netherlands, 111 for Russia, 109 for Spain, 186 for Sweden, 129 for Switzerland, 55 for Thailand, 505 for the U.K., and 11,729 for the U.S.

Year	**AUSTRALIA**	**CANADA**	**FRANCE**	**GERMANY**	**HONG KONG**	**INDIA**	**INDONESIA**
1991		7					
1992		9	2				
1993		11	2	1			
1994	1	12	3	1			
1995	10	17	5	3	1		
1996	13	22	5	4	1		
1997	15	26	5	6	1		3
1998	17	31		6	1		3
1999	17	33		8	2		3
2000	20	35	21	15	3		3
2001	23	41	26	18	5	1	3
2002	23	41	32	21	5	1	5
2003	23	42	32	23	5	1	6
2004	22	44	33	28	6	6	7
2005	24	46	37	31	9	7	8
2006	24	46	38	31	9	7	10
2007	23	45	38	33	9	8	10
2008	23	43	39	34	10	8	9
2009	23		38	33	10	7	8
2010	22		38	31	9	7	8
total country obs.	323	551	394	327	86	53	86
as a percentage of total sample obs.	1.89%	3.23%	2.31%	1.92%	0.50%	0.31%	0.50%
total sample obs.	17,046						

Appendix D continued

Year	ITALY	JAPAN	KOREA	MEXICO	NETHERLANDS	RUSSIA
1991		12				
1992		13				
1993		15	1			
1994		18	1	2		
1995		20	1	2	1	
1996		22	1	2	1	
1997		51	2	6	1	1
1998		72	2	7		1
1999	2	108	2	9		1
2000	4	139	2	9	11	3
2001	5	141	6	11	11	5
2002	5	146	8	12	11	7
2003	9	159	10	12	11	9
2004	13	196	10	13	10	11
2005	14	194	13	15	11	12
2006	16	196	13	15	13	12
2007	16	107	15	15	13	11
2008	16	105	19	14	13	14
2009	16	57	19	13	13	13
2010	16	52	19	13	13	11
total country obs.	132	1,823	144	170	133	111
as a percentage of						
total sample obs.	0.77%	10.69%	0.84%	1.00%	0.78%	0.65%
total sample obs.	17,046					

Year	SPAIN	SWEDEN	SWITZERLAND	THAILAND	the U.K.	the U.S.
1991			1		16	279
1992			1		18	307
1993	3	2	1		19	341
1994	3	3	1		17	360
1995	3	3	1		19	386
1996	4	3	1	2	21	417
1997	4	7	2	2	21	461
1998	4	7	2	2	27	526
1999		8	5	2	27	585
2000	7	11	7	2	22	633
2001	7	14	8	2	24	662
2002	8	14	8	2	31	682
2003	8	14	9	2	32	700
2004	8	14	9	3	31	717
2005	7	14	10	4	35	747
2006	7	13	11	5	35	776
2007	9	14	13	7	31	800
2008	9	15	13	7	28	805
2009	9	15	13	7	27	778
2010	9	15	13	6	24	767
total country obs.	109	186	129	55	505	11,729
as a percentage of						
total sample obs.	0.64%	1.09%	0.76%	0.32%	2.96%	68.81%
total sample obs.	17,046					

Appendix E

Firm, Industry, and Country Characteristics

This appendix lists all dependent and independent variables used in the regression analysis. The *Name* column quotes the exact names of dependent (*MLEV*, *MLEVT*, *BLEV*, and *BLEVT*) and independent variables used in the econometric modeling process, corresponding to the mentioned characteristics. The *Definition* column describes calculations performed to obtain the variables. The *Data Source / Reference* column provides all the databases and articles from which the author obtains

Name	Variable	Definition	Data Source / Reference
Dependent variable			
MLEV	Long-term leverage to the market value of total assets ratio	Long-term debt/(Book Value of Total Assets-Book Value of Equity + Market Value of Equity)	Compustat
MLEVT	Total leverage to the market value of total assets ratio	(Long-term debt + Short-term debt)/(Book Value of Total Assets-Book Value of Equity + Market Value of Equity)	Compustat
BLEV	Long-term leverage to the book value of total assets ratio	Long-term debt/Book Value of Total assets	Compustat
BLEVT	Total leverage to the book value of total assets ratio	(Long-term debt + Short-term debt)/Book Value of Total assets	Compustat
Firm characteristics			
EBIT/TA	Profitability ratio	Earnings Before Interest and Taxes/Book Value of Total assets	Compustat
MTB	Market-to-book ratio (growth opportunities)	(Long-term debt + Short-term Debt + Preferred capital + Market Value of Equity)/Book Value of Total assets	Compustat
SIZE	Firm size	Natural logarithm of total annual assets measured in the U.S. dollars	Compustat
TANG/TA	Relative tangible assets	[Property, Plant and Equipment Total (Net)]/Book Value of Total Assets	Compustat
RATINGL1	Standard & Poor's domestic long-term issuers credit ratings lagged one year as compared with all other variables	transformed by assigning ordinal values: from 1 for the lowest rating (D), to 22 for the highest rating (AAA)	Compustat North America, OSIRIS, S&P Global Credit Portal

all variables.

Appendix E continued

Name	Variable	Definition	Data Source / Reference
Industry characteristic			
MEDLEV	Median industry leverage	The median value of *MLEV* variable by SIC code and by year	Compustat, EHSO (2012), de Jong et al. (2008)
Macroeconomic variables			
INFL	Annual Inflation rate	Inflation measured by the consumer price index reflects the annual percentage change	The World Bank (2011)
BOND	Annual Bond Market Development	Measured annually such as: (public bond market capitalization + private bond market capitalization) / GDP	de Jong et al. (2008), Čihák et al. (2012)
FINARCH	Financial Architecture (measured annually)	The first principal component of three indices measuring the country's financial system orientation based on the relative size, activity, and efficiency of stock markets vis-à-vis the banking sector. The higher is the value of FINARCH, the more market-oriented is the financial system of a country.	Čihák et al. (2012), Levine (2002), Tadesse (2006)
		• The relative size index: [(market capitalization of domestic stocks / GDP) / claims of the banking sector against the private real sector / GDP)]	Čihák et al. (2012)
		• The relative efficiency index: [(total value of shares traded /average real market capitalization) * (banking overhead costs / banking assets)]	Čihák et al. (2012)
		• The relative activity index: [(total value of shares traded / GDP) / (claims of the banking sector against the private real sector / GDP)]	Čihák et al. (2012)
MBDUM	Market based economy dummy	A dummy variable equal to 1 if the economy has the market-based financial system and zero otherwise	Demirgüç-Kunt and Maksimovic (2002), Popov (1999)
DEVDUM	Developed economy dummy	A dummy variable equal to 1 if the economy is considered as advanced and zero otherwise	IMF (2012)
REFORM	the U.S. credit rating industry's reform dummy	A dummy variable equals one for the years 2006 to 2010 (the period of the rating industry's reform in the U.S.) and zero otherwise.	Compustat

Appendix F

Expected Relations between a Firm's Capital Structure and its Determinants

This appendix presents the observed direction of the impact of firm, industry and macroeconomic determinants of capital structure in the previous research from the field if investigation. A plus sign (+) means that in their study authors find evidence for a positive and significant relation between the dependent and independent variables. A minus sign (-) equals to the negative and significant relation. The *Literature Source* column provides the number of papers in which the aforementioned relationship was observed.

Capital Structure Determinants	Variable Used as a Proxy	Expected Sign	Literature Source
Firm-specific characteristics			
Lagged leverage (first lag of firm's gearing ratio)	**LAGLEV**	+	Alti (2006), Antoniou et al. (2008), Fama and French (2002), Flannery and Rangan (2006), Frank and Goyal (2004), Harford et al. (2009), Hovakimian et al. (2001), Huang and Ritter (2009), Ju et al. (2005), Korajczyk and Levy (2003), Leary and Roberts (2005), Öztekin and Flannery (2012), Strebulaev (2007)
Profitability	**EBIT/TA**	-	Antoniou et al. (2008), Demirgüç-Kunt and Maksimovic (1994), Faulkender and Petersen (2006), Hovakimian and Li (2011), Leary and Roberts (2005), Lemmon et al. (2008), Mittoo and Zhang (2008), Rajan and Zingales (1995), Titman and Wessels (1988)
Growth opportunities	**MTB**	-	Antoniou et al. (2008), Byoun (2008), Faulkender and Petersen (2006), Flannery and Rangan (2006), González and González (2008), Hovakimian et al. (2004), Hovakimian and Li (2011), Lemmon et al. (2008), Mittoo and Zhang (2008), Myers (1984)
Firm size	**SIZE**	+	Antoniou et al. (2008), Byoun (2008), Flannery and Rangan (2006), González and González (2008), Hovakimian and Li (2011), Lemmon et al. (2008), Mittoo and Zhang (2008), Öztekin and Flannery (2012)
Relative tangible assets	**TANG/TA**	+	Antoniou et al. (2008), Faulkender and Petersen (2006), Flannery and Rangan (2006), González and González (2008), Hovakimian et al. (2004), Hovakimian and Li (2011), Lemmon et al. (2008), Mittoo and Zhang (2008), Öztekin (2011)
Firm credit rating (first lag)	**RATINGL1**	-	Byoun (2011), Frank and Goyal (2009), Leary and Roberts (2005)
Industry-specific characteristics			
Industry median leverage	**MEDLEV**	+	Byoun (2008), Flannery and Rangan (2006), Frank and Goyal (2004), González and González (2008), Hovakimian et al. (2004), Hovakimian and Li (2011), Lemmon et al. (2008), Öztekin (2011), Öztekin and Flannery (2012)
Macroeconomic variables			
Inflation rate	**INFL**	+	Frank and Goyal (2009), Jõeveer (2013)
Bond market	**BOND**	+	de Jong et al. (2008)
Financial architecture	**FINARCH**	-	to the best of my knowledge, there has been no prior study documenting such a relation. However, since the FINARCH variable is an additional and alternative way to measure market orientation of financial systems, the same sign is expected as for the MBDUM dummy variable.
Market-based economy	**MBDUM**	-	Antoniou et al. (2008), Borio (1990)
Developed economy	**DEVDUM**	+	Demirgüç-Kunt and Maksimovic (1999), Fan et al. (2012)
the U.S. credit rating industry's reform (2006-2010)	**REFORM**		Does not enter the model itself (included only as the interaction with the RATINGL1 variable).

Appendix G

The U.S. Standard Industrial Classification (SIC) Codes

No.	Industry Name	Industry SIC Codes
1	Food producers and processors, farming, fishing	0100-0799 2090-2099 0900-0999 2000-2079
2	Paper, forestry, packaging, printing, publishing, photography	0800-0899 2600-2799
3	Engineering, mining, metallurgy, oil and gas exploration	1000-1499 3300-3569 3580-3599
4	Building, construction	1500-1999 2400-2499
5	Beverages, tobacco	2080-2089 2100-2199
6	Textile, leather, clothing, footwear, furniture	2200-2399 2500-2599 3100-3199
7	Chemicals, healthcare, Pharmaceuticals	2800-2899
8	Diversified industry	2900-3099 3200-3299 3800-3999
9	Computer, electrical, electronic equipment	3570-3579 3600-3699
10	Automotive, aviation, transportation	3700-3799 4000-4799
11	Utilities	4900-4999
12	Services	4800-4899 5000-5799 5800-5899 5900-5999 7000-7199 7200-7299 7300-7499 7500-7799 7800-7999 8000-8399 8400-8599 8600-8699 8700-8799 8800-8899

Sources: Compustat, EHSO (2012), and de Jong et al. (2008)

Appendix H

Author's Ordinal Coding System along with S&P's Rating Scale

This table summarizes the whole spectrum of the firms' issuer credit ratings used by S&P. The highest possible rating assigned (AAA), is reserved for the firms with "*Extremely strong capacity to meet financial commitments*" and the lowest possible rating (D) means "*Payment default on financial commitments*" S&P (2012).

Standard & Poor's Long-Term Issuer Credit Rating

Rating	**Ordinal Value Asigned**
AAA	22
AA+	21
AA	20
AA-	19
A+	18
A	17
A-	16
BBB+	15
BBB	14
BBB-	13
BB+	12
BB	11
BB-	10
B+	9
B	8
B-	7
CCC+	6
CCC	5
CCC-	4
CC	3
SD	2
D	1

Source: S&P (2012)

Appendix I

Speeds of Adjustment (SOAs) by Countries (One-Step System GMM)

This table summarized the annual percentage SOAs estimates for market gearing ratio (proxied by the *MLEV* variable) of firms based in each of 19 sample's countries using One-Step System GMM technique separately for all countries except Japan and the U.S., for which the Two-Step System GMM estimates from Table 4 are used. See Appendix E for the list of all variables and their definitions. Rows (1) to (19) exhibit information on each of sample's economy. Mean and median values are presented in the last two rows (20) and (21). *, **, and *** indicate estimates' statistical significance at 10%, 5%, and 1% level, respectively.

Row	**Country**	**Firms**	**Observations**	**SOA**
(1)	Australia	27	295	0.26***
(2)	Canada	55	495	0.31***
(3)	France	40	366	0.21***
(4)	Germany	35	285	0.40***
(5)	Hong Kong	10	76	0.14***
(6)	India	8	45	0.75
(7)	Indonesia	13	73	0.72
(8)	Italy	16	116	0.45**
(9)	Japan	240	1,583	0.25***
(10)	Korea	19	124	0.64
(11)	Mexico	16	153	0.31**
(12)	the Netherlands	13	127	0.38**
(13)	Russia	18	92	0.65
(14)	Spain	10	101	0.40***
(15)	Sweden	16	172	0.55***
(16)	Switzerland	13	116	0.26***
(17)	Thailand	7	48	0.30**
(18)	the U.K.	53	440	0.45***
(19)	the U.S.	904	10,765	0.35***
(20)	Mean	80	814	0.41
(21)	Median	16	127	0.38

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Table 1: Descriptive Statistics

Panel A: Market-Based vs. Bank-Based Countries

Variable	Market-Based Countries 65.29 % of annual sample's obs. (excl. the U.S.)						Bank-Based Countries 34.71 % of annual sample's obs. (excl. Japan)						T-test	Non-par. test
	Mean	**Median**	**Std. dev.**	**No. obs.**	**Min.**	**Max.**	**Mean**	**Median**	**Std. dev.**	**No. obs.**	**Min.**	**Max.**	**T-Value**	**Z-Value**
Leverage														
MLEV	0.183	0.155	0.131	2,282	0.000	0.731	0.190	0.166	0.120	1,212	0.000	0.699	-1.57	-2.97***
MLEVT	0.228	0.198	0.146	2,282	0.000	0.733	0.257	0.236	0.139	1,212	0.001	0.779	-5.60***	-6.66***
BLEV	0.239	0.220	0.144	2,282	0.000	0.854	0.223	0.206	0.133	1,212	0.000	0.727	3.25***	2.78***
BLEVT	0.298	0.282	0.147	2,282	0.000	0.873	0.296	0.285	0.141	1,212	0.003	0.783	0.43	-0.11
Profitability														
EBIT/TA	0.091	0.084	0.073	2,282	-0.217	0.366	0.079	0.068	0.059	1,212	-0.118	0.408	5.38***	7.53***
Growth														
MTB	1.269	1.067	0.792	2,282	0.187	6.460	0.920	0.805	0.561	1,212	0.056	5.585	15.09***	15.82***
Firm Size														
SIZE	8.711	8.741	1.404	2,282	4.295	12.407	9.586	9.717	1.585	1,212	4.923	12.622	-16.15***	-15.99***
Tangible Assets														
TANG/TA	0.436	0.424	0.238	2,282	0.018	0.946	0.356	0.324	0.217	1,212	0.009	0.898	10.08***	9.42***
Firm Rating														
RATING	14.589	15	3.115	2,282	1	22	13.927	14	3.670	1,212	1	22	5.34***	4.93***
(Corresponding S&P's grade)	BBB+	BBB+			D	AAA	BBB	BBB			D	AAA		
Industry Characteristic														
MEDLEV	0.173	0.155	0.099	2,282	0.006	0.575	0.182	0.163	0.094	1,212	0.000	0.687	4.02***	13.45***
Macro. Variables														
INFL	2.542	2.214	2.502	2,282	-4.023	34.999	3.699	1.978	5.283	1,212	-0.399	85.742	-7.20***	-0.02
BOND	67.620	70.431	25.089	2,282	6.876	125.063	75.928	82.235	36.177	1,212	1.831	147.418	-7.13***	-9.45***
FINARCH	0.367	0.359	1.272	2,281	-2.786	3.395	0.773	0.706	1.033	1,202	-2.283	2.855	-10.16***	-10.25***
DEVDUM	0.901	1	0.298	2,282	0	1	0.794	1	0.405	1,212	0	1	8.16***	8.83***

This table presents mean, median, standard deviation, total number of observations, minimum and maximum values for dependent variables and firm-level characteristics: *MLEV*, *MLEVT*, *BLEV*, *BLEVT*, *EBIT/TA*, *MTB*, *SIZE*, and *TANG/TA* (all winsorised at the 1st and 99th percentile); S&P's issuer credit rating: *RATING*; median industry leverage: *MEDMLEV*; and macroeconomic variables: *INFL*, *BOND*, *FINARCH*, and *DEVDUM* during the whole period of investigation (from 1991 to 2010). The t-values and z-values are given for the two-sided t-test for equality of means and two-sided non-parametric Kruskal-Wallis test for equality of medians respectively. Both tests investigate the differences between characteristics from market-based vis-à-vis bank-based economies. The test statistics are equal to MB minus BB. *, **, and *** indicate that the hypothesized differences between means and medians are statistically significant at 10%, 5%, and 1% levels respectively.

Panel B: Advanced vs. Developing Countries

Variable	Advanced Countries 86.41% of annual sample's obs. (excl. the U.S. and Japan)						Developing Countries 13.59 % of annual sample's obs.						T-test	Non-par. test
	Mean	Median	Std. dev.	No. obs.	Min.	Max.	Mean	Median	Std. dev.	No. obs.	Min.	Max.	T-Value	Z-Value
Leverage														
MLEV	0.181	0.157	0.124	3,019	0.000	0.716	0.211	0.184	0.142	475	0.000	0.731	-4.29***	-4.14***
MLEVT	0.232	0.205	0.140	3,019	0.000	0.779	0.278	0.248	0.163	475	0.001	0.741	-5.88***	-5.53***
BLEV	0.233	0.212	0.141	3,019	0.000	0.854	0.239	0.237	0.136	475	0.001	0.727	-0.83	-1.88*
BLEVT	0.296	0.281	0.146	3,019	0.000	0.873	0.302	0.298	0.142	475	0.004	0.783	-0.76	-1.40
Profitability														
EBIT/TA	0.081	0.075	0.064	3,019	-0.217	0.366	0.122	0.107	0.088	475	-0.148	0.408	-9.69***	-10.09***
Growth														
MTB	1.145	0.963	0.718	3,019	0.157	6.460	1.162	0.981	0.861	475	0.056	5.585	-0.40	1.00
Firm Size														
SIZE	9.122	9.174	1.519	3,019	4.295	12.431	8.334	8.087	1.403	475	4.923	12.622	11.23***	11.14***
Tangible Assets														
TANG/TA	0.392	0.354	0.235	3,019	0.009	0.946	0.513	0.536	0.195	475	0.040	0.898	-12.23***	-11.33***
Firm Rating														
RATING	14.854	15	3.074	3,019	1	22	11.208	11	3.185	475	1	17	23.29***	21.18***
(Corresponding S&P's grade)	BBB+	BBB+			D	AAA	BB	BB			D	A		
Industry Characteristic														
MEDLEV	0.173	0.156	0.095	3,019	0.006	0.687	0.198	0.185	0.112	475	0.000	0.670	-4.82***	-4.88***
Macro. Variables														
INFL	2.041	2.002	1.174	3,019	-4.023	9.069	8.680	6.363	7.535	475	-0.854	85.742	-19.16***	-31.39***
BOND	78.031	81.285	23.779	3,019	14.081	147.418	22.644	24.659	15.270	475	1.831	66.380	67.25***	33.24***
FINARCH	0.524	0.557	1.190	3,008	-2.709	3.395	0.400	0.591	1.327	475	-2.786	2.855	1.92*	1.52
MBDUM	0.681	1	0.466	3,019	0	1	0.474	0	0.500	475	0	1	8.49***	8.83***

This table presents mean, median, standard deviation, total number of observations, minimum and maximum values for winsorised at the 1st and 99th percentile dependent variables and firm-level characteristics: *MLEV*, *MLEVT*, *BLEV*, *BLEVT*, *EBIT/TA*, *MTB*, *SIZE*, and *TANG/TA* (all winsorised at the 1st and 99th percentile); S&P's issuer credit rating: *RATING*; median industry leverage: *MEDMLEV*; and macroeconomic variables: *INFL*, *BOND*, *FINARCH*, and *MBDUM* during the whole period of investigation (from 1991 to 2010). The t-values and z-values are given for the two-sided t-test for equality of means and two-sided non-parametric Kruskal-Wallis test for equality of medians respectively. Both tests investigate the differences between characteristics from advanced vis-à-vis developing countries. The test statistics are equal to advanced minus developing. *, **, and *** indicate that the hypothesized differences between means and medians are statistically significant at 10%, 5%, and 1% levels respectively.

Panel C: the U.S. vs. Japan

Variable	the U.S. 86.55 % of annual sample's obs. (combined U.S & Japan)						Japan 13.45 % of annual sample's obs. (combined U.S & Japan)						T-test	Non-par. test
	Mean	Median	Std. dev.	No. obs.	Min.	Max.	Mean	Median	Std. dev.	No. obs.	Min.	Max.	T-Value	Z-Value
Leverage														
MLEV	0.215	0.192	0.150	11,729	0.000	0.669	0.174	0.149	0.139	1,823	0.000	0.562	11.68***	11.59***
MLEVT	0.245	0.223	0.158	11,729	0.001	0.697	0.272	0.248	0.187	1,823	0.000	0.676	-5.89***	-4.75***
BLEV	0.290	0.270	0.167	11,729	0.000	0.811	0.195	0.176	0.146	1,823	0.000	0.590	25.03***	23.38***
BLEVT	0.330	0.314	0.169	11,729	0.003	0.838	0.305	0.292	0.193	1,823	0.000	0.703	5.19***	5.45***
Profitability														
EBIT/TA	0.091	0.086	0.065	11,729	-0.131	0.280	0.053	0.045	0.039	1,823	-0.024	0.186	34.36***	31.01***
Growth														
MTB	1.336	1.075	0.820	11,729	0.410	5.212	0.939	0.832	0.450	1,823	0.311	3.004	30.58***	25.65***
Firm Size														
SIZE	8.163	8.036	1.330	11,729	5.401	11.710	9.393	9.390	1.131	1,823	6.988	12.029	-42.08***	-35.48***
Tangible Assets														
TANG/TA	0.375	0.328	0.243	11,729	0.015	0.897	0.383	0.325	0.221	1,823	0.067	0.912	-1.37	-2.79***
Firm Rating														
RATING	13.240	13	3.564	11,729	1	22	15.323	16	3.406	1,823	2	22	-24.13***	-22.72***
(Corresponding S&P's grade)	BBB-	BBB-			D	AAA	BBB+	A-			SD	AAA		
Industry Characteristic														
MEDLEV	0.176	0.167	0.061	11,729	0.059	0.405	0.157	0.137	0.109	1,823	0.000	0.529	7.08***	19.81***
Macro. Variables														
INFL	2.517	2.805	1.024	11,729	-0.356	4.235	-0.083	-0.250	0.749	1,823	-1.347	3.298	130***	60.94***
BOND	149.501	146.413	14.778	11,729	126.357	177.475	165.181	173.940	39.237	1,823	85.211	238.792	-16.88***	-18.66***
FINARCH	0.314	0.234	1.271	11,450	-2.207	2.547	0.713	0.159	1.619	1,823	-1.655	3.740	-10.06***	-7.52***

This table presents mean, median, standard deviation, total number of observations, minimum and maximum values for winsorised at the 1st and 99th percentile dependent variables and firm-level characteristics: MLEV, *MLEVT*, *BLEV*, *BLEVT*, *EBIT/TA*, *MTB*, *SIZE*, and *TANG/TA* (all winsorised at the 1st and 99th percentile); S&P's issuer credit rating: *RATING*; median industry leverage: *MEDMLEV*; and macroeconomic variables: *INFL*, *BOND*, *FINARCH* during the whole period of investigation (from 1991 to 2010). The t-values and z-values are given for the two-sided t-test for equality of means and two-sided non-parametric Kruskal-Wallis test for equality of medians respectively. Both tests investigate the differences between characteristics from the U.S. vis-à-vis Japan. The test statistics are equal to the U.S. minus Japan. *, **, and *** indicate that the hypothesized differences between means and medians are statistically significant at 10%, 5%, and 1% levels respectively.

Table 2: Average Leverage Ratios and Firm-Specific Characteristics by Different Credit Ratings

Panel A: Market-Based Countries (excluding the U.S.)

Credit Ratings	N	Long-term leverage to market value of total assets ratio	Total leverage to market value of total assets ratio	Long-term leverage to book value of total assets ratio	Total leverage to book value of total assets ratio	Profitability	Growth	Natural Log. of Firm Size (U.S.$)	Relative Tangible Assets
Below B	40	0.286	0.367	0.354	0.430	0.012	1.053	7.012	0.347
B	49	0.338	0.377	0.334	0.370	0.017	0.770	7.582	0.420
BB	76	0.218	0.268	0.250	0.309	0.090	1.317	8.018	0.390
BBB	304	0.201	0.243	0.256	0.308	0.087	1.154	8.666	0.464
A	200	0.160	0.203	0.222	0.281	0.096	1.365	9.279	0.442
AA	24	0.081	0.117	0.122	0.183	0.116	1.710	9.706	0.270
AAA	57	0.078	0.122	0.126	0.213	0.086	1.715	9.646	0.407

This table presents mean values for dependent variable: *MLEV*, *MLEVT*, *BLEV*, and *BLEVT*, as well as, firm-level characteristics: *EBIT/TA, MTB, SIZE, TANG/TA* after grouping companies according to their credit ratings.

Panel B: Bank-Based Countries (excluding Japan)

Credit Ratings	N	Long-term leverage to market value of total assets ratio	Total leverage to market value of total assets ratio	Long-term leverage to book value of total assets ratio	Total leverage to book value of total assets ratio	Profitability	Growth	Natural Log. of Firm Size (U.S.$)	Relative Tangible Assets
Below B	50	0.243	0.401	0.230	0.336	0.070	0.667	7.125	0.526
B	38	0.266	0.344	0.294	0.366	0.095	0.833	7.736	0.377
BB	94	0.214	0.267	0.250	0.310	0.097	1.024	8.682	0.337
BBB	164	0.187	0.253	0.205	0.275	0.072	0.839	9.888	0.330
A	73	0.158	0.222	0.203	0.282	0.069	0.948	10.431	0.320
AA	38	0.084	0.134	0.120	0.191	0.114	1.008	11.117	0.424
AAA	3	0.026	0.058	0.034	0.076	0.033	0.634	10.946	0.226

Panel C: Advanced Countries (excluding the U.S. and Japan)

Credit Ratings	N	Long-term leverage to market value of total assets ratio	Total leverage to market value of total assets ratio	Long-term leverage to book value of total assets ratio	Total leverage to book value of total assets ratio	Profitability	Growth	Natural Log. of Firm Size (U.S.$)	Relative Tangible Assets
Below B	38	0.290	0.380	0.367	0.459	0.021	1.093	7.192	0.295
B	52	0.300	0.346	0.329	0.376	0.024	0.797	7.685	0.345
BB	128	0.217	0.263	0.254	0.310	0.081	1.156	8.269	0.284
BBB	413	0.195	0.243	0.240	0.299	0.074	1.009	9.144	0.413
A	272	0.160	0.208	0.216	0.281	0.089	1.244	9.597	0.409
AA	62	0.083	0.128	0.121	0.188	0.115	1.280	10.571	0.365
AAA	60	0.076	0.119	0.121	0.206	0.083	1.661	9.711	0.398

Panel D: Developing Countries

Credit Ratings	N	Long-term leverage to market value of total assets ratio	Total leverage to market value of total assets ratio	Long-term leverage to book value of total assets ratio	Total leverage to book value of total assets ratio	Profitability	Growth	Natural Log. of Firm Size (U.S.$)	Relative Tangible Assets
Below B	52	0.241	0.391	0.225	0.319	0.062	0.652	6.989	0.556
B	35	0.317	0.388	0.298	0.356	0.092	0.798	7.596	0.484
BB	42	0.213	0.282	0.239	0.310	0.133	1.151	8.738	0.595
BBB	55	0.204	0.272	0.226	0.278	0.140	1.304	8.720	0.446
A	1	0.063	0.080	0.301	0.382	0.067	3.698	6.969	0.554

Panel E: the U.S.

Credit Ratings	N	Long-term leverage to market value of total assets ratio	Total leverage to market value of total assets ratio	Long-term leverage to book value of total assets ratio	Total leverage to book value of total assets ratio	Profitability	Growth	Natural Log. of Firm Size (U.S.$)	Relative Tangible Assets
Below B	430	0.361	0.403	0.432	0.481	0.004	0.968	7.266	0.398
B	508	0.369	0.398	0.438	0.470	0.032	1.061	7.233	0.379
BB	1,009	0.257	0.280	0.332	0.360	0.084	1.179	7.683	0.339
BBB	1,445	0.198	0.225	0.265	0.301	0.090	1.187	8.456	0.410
A	1,128	0.136	0.170	0.215	0.267	0.117	1.610	8.727	0.381
AA	218	0.073	0.104	0.154	0.222	0.150	2.248	9.700	0.415
AAA	153	0.040	0.084	0.086	0.176	0.172	2.697	10.382	0.310

Panel F: Japan

Credit Ratings	N	Long-term leverage to market value of total assets ratio	Total leverage to market value of total assets ratio	Long-term leverage to book value of total assets ratio	Total leverage to book value of total assets ratio	Profitability	Growth	Natural Log. of Firm Size (U.S.$)	Relative Tangible Assets
Below B	18	0.234	0.518	0.249	0.556	0.018	0.740	9.017	0.229
B	32	0.262	0.515	0.266	0.530	0.029	0.697	9.382	0.384
BB	121	0.252	0.440	0.279	0.487	0.038	0.878	9.065	0.452
BBB	189	0.148	0.244	0.172	0.285	0.055	0.967	8.918	0.336
A	180	0.102	0.162	0.124	0.198	0.066	1.072	9.361	0.319
AA	151	0.250	0.309	0.271	0.336	0.062	1.024	10.165	0.545
AAA	30	0.144	0.234	0.183	0.286	0.044	0.932	11.636	0.328

Table 3: Determinants of Firms' Capital Structures

Panel A: Ordinary Least Squares (OLS)

Independent Variable	Expected Sign	(1) All Countries	(2) MB Countries	(3) BB Countries	(4) Advanced Countries	(5) Developing Countries	(6) the U.S.	(7) Japan
LAGLEV	+	0.7727***	0.7709***	0.7425***	0.7783***	0.5031***	0.7746***	0.8520***
		(-77.08)	(70.09)	(29.54)	(77.94)	(5.92)	(64.31)	(40.96)
EBIT/TA	-	-0.1221***	-0.1253***	-0.1192***	-0.1251***	-0.1088***	-0.1412***	-0.2343***
		(-8.46)	(-8.02)	(-3.24)	(-8.41)	(-1.90)	(-7.64)	(-5.48)
MTB	-	-0.0127***	-0.0137***	-0.0055*	-0.0127***	-0.0185***	-0.0146***	0.0056
		(-10.53)	(-10.30)	(-1.69)	(-10.25)	(-2.96)	(-9.86)	(1.55)
SIZE	+	0.0002	-0.0003	0.0047***	0.0003	0.0019	-0.0004	0.0034**
		(0.51)	(-0.54)	(3.81)	(0.52)	(0.29)	(-0.60)	(2.54)
TANG/TA	+	0.0126***	0.0127***	0.0222***	0.0131***	0.0332	0.0141***	0.0254***
		(3.79)	(3.59)	(2.61)	(3.95)	(1.30)	(3.50)	(3.44)
RATINGL1	-	-0.0017***	-0.0017***	-0.0026***	-0.0017***	0.0011	-0.0017***	-0.0011*
		(-5.35)	(-4.83)	(-3.61)	(-5.37)	(0.45)	(-4.09)	(-1.75)
MEDLEV	+	0.1646***	0.1353***	0.2337***	0.1494***	0.4792***	0.0858***	0.0844***
		(13.47)	(9.57)	(7.54)	(12.52)	(5.88)	(5.23)	(4.49)
INFL	+	0.0009	0.0005	0.0010	0.0031***	0.0006	0.0213***	0.0176***
		(1.37)	(0.93)	(1.12)	(3.18)	(0.72)	(16.95)	(6.73)
BOND	+	0.0001**	-0.0001	-0.0000	0.0001***	-0.0007	0.0008***	0.0002***
		(2.32)	(-1.63)	(-0.13)	(3.27)	(-1.29)	(4.74)	(3.12)
FINARCH	-	-0.0009	-0.0011	0.0009	-0.0010	-0.0056	0.0019	0.0052***
		(-1.39)	(-1.18)	(0.63)	(-1.52)	(-1.07)	(1.27)	(3.93
MBDUM	-	-0.0054			-0.0076			
		(-0.75)			(-1.11)			
DEVDUM	+	0.0000	0.0364**					
		(0.00)	(2.39)					
Firms		1,513	1,133	380	1,451	62	904	240
Observations		15,472	12,811	2,661	15,061	411	10,765	1,583
Period of Est.		1991-2010	1991-2010	1991-2010	1991-2010	1994-2010	1991-2010	1991-2010
Adjusted R sqr.		0.79	0.78	0.87	0.79	0.76	0.77	0.94
BIC		-23667.77	-18834.59	-5154.97	-23260.48	-441.59	-15595.46	-4192.07
F-test (p-value)		0.00	0.00	0.00	0.00	0.00	0.00	0.00

See Appendix C for the list of countries grouped by their financial orientation and economic development level. See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year and country dummies are included, but not presented. The Bayesian Information Criterion based on the Model Chi-Square (BIC) determines the overall fit of the model.

Panel B: Fixed Effect (FE)

Independent Variable	**Expected Sign**	**(1) All Countries**	**(2) MB Countries**	**(3) BB Countries**	**(4) Advanced Countries**	**(5) Developing Countries**	**(6) the U.S.**	**(7) Japan**
LAGLEV	+	0.4706***	0.4787***	0.3679***	0.4795***	0.0889*	0.4854***	0.5099***
		(29.03)	(27.57)	(10.88)	(29.27)	(1.96)	(25.71)	(13.55)
EBIT/TA	-	-0.2326***	-0.2396***	-0.1866***	-0.2353***	-0.1671*	-0.2613***	-0.3891
		(-11.77)	(-11.47)	(-3.30)	(-11.65)	(-1.87)	(-11.07)	(-6.52)
MTB	-	-0.0315***	-0.0319***	-0.0284***	-0.0318***	-0.0201***	-0.0345***	-0.0213***
		(-13.69)	(-13.34)	(-4.99)	(-13.49)	(-2.93)	(-12.65)	(-2.86)
SIZE	+	0.0129***	0.0116***	0.0333***	0.0133***	0.0035	0.0114***	0.0426***
		(4.84)	(4.17)	(3.55)	(4.92)	(0.29)	(3.72)	(2.61)
TANG/TA	+	0.0262*	0.0306**	0.0233	0.0334**	-0.1488**	0.0367**	0.1324**
		(1.81)	(2.01)	(0.55)	(2.26)	(-2.32)	(2.11)	(2.21)
RATINGL1	-	-0.0014**	-0.0015**	-0.0015	-0.0016**	-0.0003	-0.0018*	-0.0005
		(-2.03)	(-1.96)	(-1.03)	(-2.23)	(-0.12)	(-1.90)	(-0.34)
MEDLEV	+	0.3799***	0.3546***	0.5251***	0.3448***	0.6839***	0.3037***	0.2905***
		(15.06)	(12.87)	(8.63)	(14.51)	(7.51)	(7.98)	(4.56)
INFL	+	0.0009*	0.0001	0.0010	0.0024**	0.0009	0.0134***	0.0120***
		(1.69)	(0.32)	(1.43)	(2.42)	(1.28)	(12.50)	(5.14)
BOND	+	0.0001**	-0.0004***	0.0001	0.0001**	-0.0003	-0.0000	0.0000
		(2.13)	(-3.33)	(1.47)	(2.31)	(-0.54)	(-0.04)	(0.06)
FINARCH	-	-0.0002	-0.0003	-0.0005	-0.0003	0.0000	-0.0011	0.0008
		(-0.36)	(-0.37)	(-0.34)	(-0.47)	(0.02)	(-0.65)	(0.48)
Firms		1,513	1,133	380	1,451	62	904	240
Observations		15,472	12,811	2,661	15,061	411	10,765	1,583
Period of Est.		1991-2010	1991-2010	1991-2010	1991-2010	1994-2010	1991-2010	1991-2010
Adjusted R sqr.		0.46	0.46	0.54	0.46	0.59	0.45	0.62
BIC		-9326.26	-7620.37	-1869.15	-9106.31	-254.63	-6263.35	-1363.82
Hausman Test (p-value)		0.00	0.00	0.00	0.00	0.00	0.00	0.00
F-test (p-value)		0.00	0.00	0.00	0.00	0.00	0.00	0.00

See Appendix C for the list of countries grouped by their financial orientation and economic development level. See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year dummies are included, but not presented. Hausman test compares the fixed effect versus random effect. The Bayesian Information Criterion based on the Model Chi-Square (BIC) determines the overall fit of the model.

Panel C: Two-Step System GMM

Independent Variable	Expected Sign	(1) All Countries	(2) MB Countries	(3) BB Countries	(4) Advanced Countries	(5) Developing Countries	(6) the U.S.	(7) Japan
LAGLEV	+	0.6375***	0.6402***	0.6792***	0.6406***	0.5219***	0.6527***	0.7460***
		(32.35)	(30.29)	(10.81)	(31.28)	(3.95)	(29.09)	(9.60)
EBIT/TA	-	-0.1454***	-0.1632***	-0.0406	-0.1478***	-0.1512	-0.1691***	-0.2513*
		(-5.52)	(-6.06)	(-0.26)	(-5.66)	(-0.45)	(-5.46)	(-1.79)
MTB	-	-0.0166***	-0.0170***	0.0089	-0.0173***	0.0139	-0.0179***	0.0019
		(-7.28)	(-6.97)	(0.54)	(-7.33)	(0.62)	(-6.56)	(0.08)
SIZE	+	-0.0009	-0.0014	0.0150	-0.0001	-0.0153	-0.0031	-0.0023
		(-0.53)	(-0.67)	(0.91)	(-0.05)	(-0.65)	(-1.42)	(-0.19)
TANG/TA	+	0.0060	-0.0022	0.0238	0.0077	0.0750	-0.0009	0.0442
		(0.55)	(-0.21)	(0.32)	(0.75)	(0.64)	(-0.08)	(0.32)
RATINGL1	-	-0.0039***	-0.0042***	-0.0041	-0.0044***	0.0043	-0.0037***	0.0005
		(-5.02)	(-4.84)	(-1.03)	(-5.48)	(0.73)	(-4.00)	(0.16)
MEDLEV	+	0.2755***	0.2430***	0.1921*	0.2522***	0.4454***	0.2316***	0.0398
		(9.39)	(7.71)	(1.65)	(9.13)	(2.81)	(6.61)	(0.23)
INFL	+	0.0005	-0.0000	0.0006	0.0034***	0.0009	0.0159***	0.0177***
		(0.91)	(-0.07)	(0.41)	(3.21)	(0.80)	(11.03)	(4.03)
BOND	+	0.0001	-0.0003**	-0.0000	0.0001**	0.0004	-0.0007*	-0.0000
		(1.40)	(-2.29)	(-0.35)	(2.17)	(0.48)	(-1.77)	(-0.02)
FINARCH	-	-0.0005	-0.0006	0.0019	-0.0007	-0.0024	0.0134***	-0.0015
		(-0.66)	(-0.54)	(0.63)	(-0.92)	(-0.31)	(6.51)	(-0.09)
MBDUM	-	0.0120***			-0.0190**	-0.0747		
		(3.10)			(-2.08)	(-0.86)		
DEVDUM	+	0.0090	0.0613***	0.0492				
		(0.48)	(3.14)	(1.03)				
Firms		1,513	1,133	380	1,451	62	904	240
Observations		15,472	12,811	2,661	15,061	411	10,765	1,583
Period of Est.		1991-2010	1991-2010	1991-2010	1991-2010	1994-2010	1991-2010	1991-2010
m1(Z-statistic)		-11.52***	-10.74***	-6.17***	-11.16***	-2.97***	-9.95***	-3.40***
m2(Z-statistic)		0.70	0.62	0.65	0.54	1.19	0.68	1.38
Hansen test (p-value)		0.29	0.60	0.47	0.21	0.81	0.37	0.17

See Appendix C for the list of countries grouped by their financial orientation and economic development level. See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as chi-square under the null of instrument validity. Instruments for the transformed equation in all columns are $MLEV_{(t-2)}$, $EBIT/TA_{(t-2)}$, $MTB_{(t-2)}$, $SIZE_{(t-2)}$, $TANG/TA_{(t-2)}$, $RATINGL1_{(t-2)}$, $MEDLEV_{(t-2)}$, and further lags. Instruments for the levels equation in all columns are $\Delta MLEV_{(t-1)}$, $\Delta EBIT/TA_{(t-1)}$,

$\Delta MTB_{(t-1)}$, $\Delta SIZE_{(t-1)}$, $\Delta TANG/TA_{(t-1)}$, $\Delta RATINGL1_{(t-1)}$, $\Delta MEDLEV_{(t-1)}$, and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year and country dummies are included, but not presented.

Table 4: Determinants of Firms' Capital Structures; Truncated Samples

(Two-Step System GMM)

Independent Variable	Expected Sign	(1) All Countries (excl. the U.S. & Japan)	(2) MB Countries (excl. the U.S.)	(3) BB Countries (excl. Japan)	(4) Advanced Countries (excl. the U.S. & Japan)	(5) Developing Countries	(6) the U.S.	(7) Japan
LAGLEV	+	0.5906***	0.5931***	0.6008***	0.6240***	0.5219***	0.6527***	0.7460***
		(16.21)	(9.96)	(7.69)	(18.40)	(3.95)	(29.09)	(9.60)
EBIT/TA	-	-0.0485	-0.1874**	-0.4710*	-0.0668	-0.1512	-0.1691***	-0.2513*
		(-1.04)	(-2.48)	(-1.94)	(-1.27)	(-0.45)	(-5.46)	(-1.79)
MTB	-	-0.0056	0.0000	0.0674**	-0.0050	0.0139	-0.0179***	0.0019
		(-1.55)	(0.02)	(2.07)	(-1.33)	(0.62)	(-6.56)	(0.08)
SIZE	+	0.0012	0.0064	-0.0024	0.0047	-0.0153	-0.0031	-0.0023
		(0.34)	(0.89)	(-0.25)	(1.48)	(-0.65)	(-1.42)	(-0.19)
TANG/TA	+	0.0038	0.0593	-0.0928	0.0134	0.0750	-0.0009	0.0442
		(0.18)	(1.16)	(-1.14)	(0.77)	(0.64)	(-0.08)	(0.32)
RATINGL1	-	-0.0018	-0.0002	-0.0058	-0.0038***	0.0043	-0.0037***	0.0005
		(-1.49)	(-0.10)	(-1.15)	(-3.24)	(0.73)	(-4.00)	(0.16)
MEDLEV	+	0.4221***	0.3519***	0.2347*	0.3612***	0.4454***	0.2316***	0.0398
		(8.67)	(4.50)	(1.66)	(8.39)	(2.81)	(6.61)	(0.23)
INFL	+	0.0003	0.0000	0.0023**	-0.0019	0.0009	0.0159***	0.0177***
		(0.55)	(0.06)	(2.10)	(-1.12)	(0.80)	(11.03)	(4.03)
BOND	+	-0.0001	-0.0002	0.0006	-0.0000	0.0004	-0.0007*	-0.0000
		(-0.66)	(-1.16)	(1.33)	(-0.05)	(0.48)	(-1.77)	(-0.02)
FINARCH	-	0.0006	0.0003	0.0061	0.0007	-0.0024	0.0134***	-0.0015
		(0.43)	(0.21)	(0.71)	(0.49)	(-0.31)	(6.51)	(-0.09)
MBDUM	-	0.0021			0.0033	-0.0747		
		(0.21)			(0.32)	(-0.86)		
DEVDUM	+	0.0186	0.0212	-0.0119				
		(0.95)	(1.50)	(-0.27)				
Firms		369	229	140	307	62	904	240
Observations		3,124	2,046	1,078	2,713	411	10,765	1,583
Period of Est.		1991-2010	1991-2010	1992-2010	1991-2010	1994-2010	1991-2010	1991-2010
m1(Z-statistic)		-8.05***	-6.42***	-4.82***	-8.12***	-2.97***	-9.95***	-3.40***
m2(Z-statistic)		-0.22	0.09	0.54	0.15	1.19	0.68	1.38
Hansen test (p-value)		0.42	0.63	-0.62	-1.43	0.81	0.37	0.17

See Appendix C for the list of countries grouped by their financial orientation and economic development level. See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as

chi-square under the null of instrument validity. Instruments for the transformed equation in all columns are $MLEV_{(t-2)}$, $EBIT/TA_{(t-2)}$, $MTB_{(t-2)}$, $SIZE_{(t-2)}$, $TANG/TA_{(t-2)}$, $RATINGL1_{(t-2)}$, $MEDLEV_{(t-2)}$, and further lags. Instruments for the levels equation in all columns are $\Delta MLEV_{(t-1)}$, $\Delta EBIT/TA_{(t-1)}$, $\Delta MTB_{(t-1)}$, $\Delta SIZE_{(t-1)}$, $\Delta TANG/TA_{(t-1)}$, $\Delta RATINGL1_{(t-1)}$, $\Delta MEDLEV_{(t-1)}$, and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year and country dummies are included, but not presented.

Table 5: Two-Step System GMM (with Interaction Terms)

Panel A: All Countries

Independent Variable	Expected Sign	(1) Hypotheses 1 to 3 and 6	(2) Hypotheses 2 to 4 and 6	(3) Hypothesis 5	(4) All Significant
LAGLEV	+	0.6457***	0.6480***	0.5190***	0.5557***
		(33.07)	(33.57)	(10.54)	(11.60)
EBIT/TA	-	-0.1417***	-0.1323***	-0.1551***	-0.1342***
		(-5.36)	(-5.14)	(-6.04)	(-5.11)
MTB	-	-0.0149***	-0.0146***	-0.0140***	-0.0137***
		(-6.58)	(-6.63)	(-6.67)	(-6.66)
SIZE	+	-0.0008	-0.0007	-0.0004	0.0000
		(-0.50)	(-0.46)	(-0.25)	(0.03)
TANG/TA	+	0.0086	0.0066	-0.0061	0.0006
		(0.85)	(0.67)	(-0.61)	(0.07)
RATINGL1	-	0.0039	0.0038*	-0.0060***	0.0015
		(1.48)	(1.72)	(-5.93)	(0.73)
MEDLEV	+	0.2931***	0.2953***	0.2563***	0.2625***
		(11.03)	(11.24)	(8.74)	(9.77)
INFL	+	0.0006	0.0006	0.0005	0.0006
		(1.16)	(1.34)	(0.90)	(1.30)
BOND	+	-0.0002	-0.0007***	0.0001**	-0.0004**
		(-1.19)	(-2.80)	(1.94)	(-2.03)
FINARCH	-	-0.0005	0.0101***	-0.0003	0.0091***
		(-0.66)	(2.82)	(-0.42)	(2.71)
MBDUM	-	0.0475**	0.0525***	0.0131***	0.0673***
		(2.42)	(2.82)	(3.59)	(4.50)
DEVDUM	+	0.1055***	0.1774***	0.0033	0.1052***
Interaction Variables		(2.21)	(3.69)	(0.19)	(3.17)
RATINGL1*MBDUM	-	0.0034			
		(1.46)			
RATINGL1*FINARCH	-		-0.0007***		-0.0007***
			(-3.08)		(-3.00)
RATINGL1*DEVDUM	-	-0.0110***	-0.0103***		-0.0090***
		(-3.88)	(-4.19)		(-3.78)
RATINGL1*BOND	+	0.0000*	0.0001***		0.0000***
		(1.78)	(3.45)		(2.82)
RATINGL1*US	-	-0.0043**	-0.0062***		-0.0037***
		(-2.23)	(-3.33)		(-3.87)
RATINGL1*JAPAN	+	0.0016	-0.0032		
		(0.64)	(-1.49)		
RATINGL1*LAGLEV	+			0.0111***	0.0084**
				(3.04)	(2.39)
Firms		1,513	1,513	1,513	1,513
Observations		15,472	15,472	15,472	15,472
Period of Est.		1991-2010	1991-2010	1991-2010	1991-2010
m1(Z-statistic)		-11.58***	-11.58***	-11.98***	-11.65***
m2(Z-statistic)		0.66	0.65	0.74	0.74
Hansen test (p-value)		0.38	0.51	0.44	0.27

The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as chi-square under the null of instrument validity. The same set of instruments as in Tables 3 & 4 applies to all columns. Additional instruments used for the transformed equation are: $RATINGL1_{(t-2)}*MBDUM_{(t-2)}$ (column 1), $RATINGL1_{(t-2)}*FINARCH_{(t-2)}$ (columns 2 & 4), $RATINGL1_{(t-2)}*DEVDUM_{(t-2)}$, $RATINGL1_{(t-2)}*BOND_{(t-2)}$, and $RATINGL1_{(t-2)}*US_{(t-2)}$ (columns 1, 2, & 4), $RATINGL1_{(t-2)}*JAPAN_{(t-2)}$ (columns 1 & 2), $RATINGL1_{(t-2)}*LAGLEV_{(t-2)}$ (columns 3 & 4), and further lags. Additional instruments used for the levels equation are: $\Delta(RATINGL1_{(t-1)}*MBDUM_{(t-1)})$ (column 1), $\Delta(RATINGL1_{(t-1)}*FINARCH_{(t-1)})$ (columns 2 & 4), $\Delta(RATINGL1_{(t-1)}*DEVDUM_{(t-1)})$, $\Delta(RATINGL1_{(t-1)}*BOND_{(t-1)})$, and $\Delta(RATINGL1_{(t-1)}*US_{(t-1)})$ (columns 1, 2, & 4), $\Delta(RATINGL1_{(t-1)}*JAPAN_{(t-1)})$ (columns 1 & 2), $\Delta(RATINGL1_{(t-1)}*LAGLEV_{(t-1)})$ (columns 3 & 4), and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year and country dummies are included, but not presented.

Panel B: Market-Based Countries

Independent Variable	Expected Sign	(1) Hypotheses 2 to 4 and 6	(2) Hypothesis 5	(3) All Significant
LAGLEV	+	0.6563***	0.5624***	0.5559***
		(32.05)	(9.91)	(9.62)
EBIT/TA	-	-0.1615***	-0.1577***	-0.1558***
		(-5.76)	(-5.82)	(-5.60)
MTB	-	-0.0134***	-0.0138***	-0.0117***
		(-5.29)	(-6.27)	(-5.20)
SIZE	+	-0.0007	-0.0004	0.0003
		(-0.34)	(-0.22)	(0.20)
TANG/TA	+	-0.0036	-0.0095	-0.0143
		(-0.32)	(-0.94)	(-1.35)
RATINGL1	-	0.0040	-0.0056***	0.0024
		(1.28)	(-4.89)	(0.78)
MEDLEV	+	0.2699***	0.2182***	0.2508***
		(8.70)	(6.62)	(8.24)
INFL	+	-0.0000	-0.0000	-0.0000
		(-0.07)	(-0.14)	(-0.08)
BOND	+	-0.0013***	-0.0002*	-0.0008**
		(-3.22)	(-1.94)	(-2.00)
FINARCH	-	0.0130***	-0.0006	0.0128***
		(3.12)	(-0.62)	(3.06)
DEVDUM	+	0.3193***	0.0489***	0.2587***
Interaction Variables		(4.98)	(2.58)	(3.76)
RATINGL1*FINARCH	-	-0.0010***		-0.0009***
		(-3.44)		(-3.35)
RATINGL1*DEVDUM	-	-0.0088**		-0.0070**
		(-2.54)		(-2.02)
RATINGL1*BOND	+	0.0001***		0.0000
		(2.57)		(1.37)
RATINGL1*US	-	-0.0094***		-0.0073***
		(-3.78)		(-2.81)
RATINGL1*LAGLEV	+		0.0085**	0.0093**
			(1.98)	(2.13)
Firms		1,133	1,133	1,133
Observations		12,811	12,811	12,811
Period of Est.		1991-2010	1991-2010	1991-2010
m1(Z-statistic)		-10.84***	-11.14***	-11.19***
m2(Z-statistic)		0.64	0.69	0.69
Hansen test (p-value)		0.26	0.20	0.50

See Appendix C for the list of countries grouped by their financial orientation and economic development level. See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as

chi-square under the null of instrument validity. The same set of instruments as in Tables 3 & 4 applies to all columns. Additional instruments used for the transformed equation are: $RATINGL1_{(t-2)}*FINARCH_{(t-2)}$, $RATINGL1_{(t-2)}*DEVDUM_{(t-2)}$, $RATINGL1_{(t-2)}*BOND_{(t-2)}$, and $RATINGL1_{(t-2)}*US_{(t-2)}$ (columns 1 & 3), $RATINGL1_{(t-2)}*LAGLEV_{(t-2)}$ (columns 2 & 3), and further lags. Additional instruments used for the levels equation are: $\Delta(RATINGL1_{(t-1)}*FINARCH_{(t-1)})$, $\Delta(RATINGL1_{(t-1)}*DEVDUM_{(t-1)})$, $\Delta(RATINGL1_{(t-1)}*BOND_{(t-1)})$, and $\Delta(RATINGL1_{(t-1)}*US_{(t-1)})$ (columns 1 & 3), $\Delta(RATINGL1_{(t-1)}*LAGLEV_{(t-1)})$ (columns 2 & 3), and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the paprentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year and country dummies are included, but not presented.

Panel C: Bank-Based Countries

Independent Variable	Expected Sign	(1) Hypotheses 2 to 4 and 6	(2) Hypothesis 5	(3) All Significant
LAGLEV	+	0.5496***	0.4653***	0.5198***
		(9.38)	(4.69)	(7.41)
EBIT/TA	-	-0.1442	-0.0971	-0.1161*
		(-1.51)	(-1.12)	(-1.76)
MTB	-	-0.0091	-0.0112	-0.0175**
		(-0.85)	(-1.45)	(-2.35)
SIZE	+	0.0063	0.0064**	0.0058**
		(1.10)	(2.36)	(2.13)
TANG/TA	+	0.0004	0.0215	0.0221
		(0.01)	(0.86)	(1.06)
RATINGL1	-	0.0015	-0.0054***	0.0030
		(0.28)	(-2.80)	(0.87)
MEDLEV	+	0.3698***	0.2550***	0.2915***
		(4.25)	(4.96)	(5.02)
INFL	+	0.0007	0.0009	0.0007
		(0.95)	(1.08)	(1.01)
BOND	+	-0.0006	-0.0000	-0.0004
		(-1.25)	(-0.41)	(-1.11)
FINARCH	-	0.0079	0.0007	0.0012
		(0.95)	(0.37)	(0.64)
DEVDUM	+	0.1505*	0.0369	0.1580***
Interaction Variables		(1.91)	(1.54)	(3.07)
RATINGL1*FINARCH	-	-0.0004		
		(-0.81)		
RATINGL1*DEVDUM	-	-0.0118*		-0.0117***
		(-1.76)		(-2.97)
RATINGL1*BOND	+	0.0000*		0.0000
		(1.70)		(1.43)
RATINGL1*JAPAN	+	0.0009		
		(0.17)		
RATINGL1*LAGLEV	+		0.0130**	0.0078*
			(2.07)	(1.75)
Firms		380	380	380
Observations		2,661	2,661	2,661
Period of Est.		1991-2010	1991-2010	1991-2010
m1(Z-statistic)		-5.30***	-5.99***	-5.84***
m2(Z-statistic)		0.38	0.51	0.39
Hansen test (p-value)		0.67	0.81	0.72

See Appendix C for the list of countries grouped by their financial orientation and economic development level. See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as

chi-square under the null of instrument validity. The same set of instruments as in Tables 3 & 4 applies to all columns. Additional instruments used for the transformed equation are: $RATINGL1_{(t-2)}$*$FINARCH_{(t-2)}$, $RATINGL1_{(t-2)}$*$JAPAN_{(t-2)}$ (column 1), $RATINGL1_{(t-2)}$*$DEVDUM_{(t-2)}$, $RATINGL1_{(t-2)}$*$BOND_{(t-2)}$, (columns 1 & 3), $RATINGL1_{(t-2)}$*$LAGLEV_{(t-2)}$ (columns 2 & 3), and further lags. Additional instruments used for the levels equation are: Δ($RATINGL1_{(t-1)}$*$FINARCH_{(t-1)}$), Δ($RATINGL1_{(t-1)}$*$JAPAN_{(t-1)}$) (column 1), Δ($RATINGL1_{(t-1)}$*$DEVDUM_{(t-1)}$), Δ($RATINGL1_{(t-1)}$*$BOND_{(t-1)}$) (columns 1 & 3), Δ($RATINGL1_{(t-1)}$*$LAGLEV_{(t-1)}$) (columns 2 & 3), and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are below the coefficients. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year and country dummies are included, but not presented.

Panel D: Advanced Countries

Independent Variable	Expected Sign	(1) Hypotheses 1, 3 and 6	(2) Hypotheses 3, 4 and 6	(3) Hypothesis 5	(4) All Significant	(5) All Significant
LAGLEV	+	0.6487***	0.6569***	0.5447***	0.5669***	0.5599***
		(33.38)	(32.88)	(10.51)	(11.02)	(10.85)
EBIT/TA	-	-0.133***	-0.1317***	-0.1540***	-0.1444***	-0.1355***
		(-5.01)	(-5.00)	(-5.96)	(-5.65)	(-5.29)
MTB	-	-0.0161***	-0.014***	-0.0154***	-0.0146***	-0.0147***
		(-7.22)	(-6.27)	(-7.16)	(-6.87)	(-7.09)
SIZE	+	-0.0003	-0.0002	0.0004	-0.0001	0.0001
		(-0.18)	(-0.14)	(0.27)	(-0.11)	(0.10)
TANG/TA	+	0.0094	0.0085	-0.0016	0.0002	0.0019
		(0.95)	(0.83)	(-0.17)	(0.02)	(0.20)
RATINGL1	-	-0.0085***	-0.0064***	-0.0060***	-0.0070***	-0.0075***
		(-3.60)	(-3.98)	(-5.71)	(-3.50)	(-4.48)
MEDLEV	+	0.2664***	0.2691***	0.2313***	0.2453***	0.2313***
		(10.55)	(10.35)	(8.13)	(8.94)	(8.65)
INFL	+	0.0026**	0.0027***	0.0031***	0.0025**	0.0022**
		(2.55)	(2.58)	(3.02)	(2.43)	(2.26)
BOND	+	-0.0002	-0.0008***	0.0001***	-0.0001	-0.0004**
		(-1.05)	(-2.80)	(2.78)	(-0.85)	(-2.05)
FINARCH	-	-0.0004	0.011***	-0.0005	-0.0004	0.0093***
		(-0.54)	(2.86)	(-0.70)	(-0.54)	(2.65)
MBDUM	-	0.0417**	0.0465**	0.0079*	0.0270	0.0603***
Interaction Variables		(2.16)	(2.47)	(1.85)	(1.64)	(4.16)
RATINGL1*MBDUM	-	0.0052**			0.0024	
		(2.02)			(1.17)	
RATINGL1*FINARCH	-		-0.0008***			-0.0007***
			(-3.12)			(-2.94)
RATINGL1*BOND	+	0.0001*	0.0001***		0.0000	0.0000***
		(1.70)	(3.47)		(1.47)	(2.80)
RATINGL1*US	-	-0.0045**	-0.0065***		-0.0038**	-0.0035***
		(-2.37)	(-3.47)		(-1.96)	(-3.83)
RATINGL1*JAPAN	+	0.0030	-0.0036			
		(1.17)	(-1.64)			
RATINGL1*LAGLEV	+			0.0090**	0.0074*	0.0083**
				(2.35)	(1.95)	(2.19)
Firms		1,451	1,451	1,451	1,451	1,451
Observations		15,061	15,061	15,061	15,061	15,061
Period of Est.		1991-2010	1991-2010	1991-2010	1991-2010	1991-2010
m1(Z-statistic)		-11.25***	-11.25***	-11.57***	-11.56***	-11.59***
m2(Z-statistic)		0.53	0.54	0.59	0.58	0.57
Hansen test (p-value)		0.59	0.20	0.64	0.39	0.39

See Appendix C for the list of countries grouped by their financial orientation and economic development level. See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as chi-square under the null of instrument validity. The same set of instruments as in Tables 3 & 4 applies to all columns. Additional instruments used for the transformed equation are: $RATINGL1_{(t-2)}*MBDUM_{(t-2)}$ (columns 1 & 4), $RATINGL1_{(t-2)}*FINARCH_{(t-2)}$ (columns 2 & 5), $RATINGL1_{(t-2)}*BOND_{(t-2)}$, and $RATINGL1_{(t-2)}*US_{(t-2)}$ (columns 1, 2, 4, & 5), $RATINGL1_{(t-2)}*JAPAN_{(t-2)}$ (columns 1 & 2), $RATINGL1_{(t-2)}*LAGLEV_{(t-2)}$ (columns 3, 4, & 5), and further lags. Additional instruments used for the levels equation are: $\Delta(RATINGL1_{(t-1)}*MBDUM_{(t-1)})$ (columns 1 & 4), $\Delta(RATINGL1_{(t-1)}*FINARCH_{(t-1)})$ (columns 2 & 5), $\Delta(RATINGL1_{(t-1)}*BOND_{(t-1)})$, and $\Delta(RATINGL1_{(t-1)}*US_{(t-1)})$ (columns 1, 2, 4, & 5), $\Delta(RATINGL1_{(t-1)}*JAPAN_{(t-1)})$ (columns 1 & 2), $\Delta(RATINGL1_{(t-1)}*LAGLEV_{(t-1)})$ (columns 3, 4, & 5), and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year and country dummies are included, but not presented.

Panel E: Developing Countries

Independent Variable	Expected Sign	(1) Hypotheses 1 and 3	(2) Hypotheses 3 and 4	(3) Hypothesis 5
LAGLEV	+	0.5832***	0.5032***	0.9509*
		(3.83)	(3.48)	(1.77)
EBIT/TA	-	-0.0860	-0.1494	-0.2405
		(-0.34)	(-0.77)	(-0.77)
MTB	-	0.0081	0.0134	0.0228
		(0.33)	(0.72)	(1.02)
SIZE	+	-0.0102	-0.0362	-0.0165
		(-0.43)	(-1.48)	(-0.44)
TANG/TA	+	0.0762	-0.0095	-0.0248
		(0.73)	(-0.11)	(-0.18)
RATINGL1	-	0.0033	0.0081	0.0156
		(0.36)	(0.96)	(1.03)
MEDLEV	+	0.3952*	0.4820***	0.4741**
		(1.76)	(2.60)	(2.27)
INFL	+	0.0005	0.0010	0.0007
		(0.39)	(0.72)	(0.52)
BOND	+	-0.0019	0.0024	0.0006
		(-0.38)	(0.55)	(0.38)
FINARCH	-	-0.0025	0.0319	0.0047
		(-0.22)	(1.08)	(0.47)
MBDUM	-	-0.0449	-0.1912*	-0.1219
Interaction Variables		(-0.31)	(-1.88)	(-0.84)
RATINGL1*MBDUM	-	-0.0019		
		(-0.18)		
RATINGL1*FINARCH	-		-0.0029	
			(-1.27)	
RATINGL1*BOND	+	0.0002	-0.0000	
		(0.45)	(-0.17)	
RATINGL1*LAGLEV	+			-0.0379
				(-0.77)
Firms		62	62	62
Observations		411	411	411
Period of Est.		1994-2010	1994-2010	1994-2010
m1(Z-statistic)		-3.21***	-3.02***	-2.75***
m2(Z-statistic)		1.24	1.46	1.19
Hansen test (p-value)		0.50	0.79	0.11

See Appendix C for the list of countries grouped by their financial orientation and economic development level. See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as chi-square under the null of instrument validity. The same set of instruments as in Tables 3 & 4 applies to all columns. Additional instruments used for the transformed equation are:

$RATINGL1_{(t-2)}*MBDUM_{(t-2)}$ (column 1), $RATINGL1_{(t-2)}*FINARCH_{(t-2)}$ (column 2), $RATINGL1_{(t-2)}*BOND_{(t-2)}$ (columns 1 & 2), $RATINGL1_{(t-2)}*LAGLEV_{(t-2)}$ (column 3), and further lags. Additional instruments used for the levels equation are: $\Delta(RATINGL1_{(t-1)}*MBDUM_{(t-1)})$ (column 1), $\Delta(RATINGL1_{(t-1)}*FINARCH_{(t-1)})$ (column 2), $\Delta(RATINGL1_{(t-1)}*BOND_{(t-1)})$ (columns 1 & 2), $\Delta(RATINGL1_{(t-1)}*LAGLEV_{(t-1)})$ (column 3), and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year and country dummies are included, but not presented.

Panel F: the U.S.

Independent Variable	Expected Sign	(1) Hypotheses 3 and 4	(2) Hypothesis 5	(3) CR Industry Reform	(4) All Significant
LAGLEV	+	0.6688***	0.5610***	0.6529***	0.5764***
		(30.64)	(9.44)	(29.19)	(9.51)
EBIT/TA	-	-0.1614***	-0.1760***	-0.1674***	-0.1728***
		(-4.93)	(-5.68)	(-5.37)	(-5.21)
MTB	-	-0.0146***	-0.0138***	-0.0182***	-0.0111***
		(-5.38)	(-5.66)	(-6.77)	(-4.58)
SIZE	+	-0.0020	-0.0020	-0.0029	-0.0009
		(-0.90)	(-0.98)	(-1.27)	(-0.44)
TANG/TA	+	-0.0012	-0.0100	-0.0014	-0.0107
		(-0.11)	(-0.91)	(-0.12)	(-0.92)
RATINGL1	-	-0.0131***	-0.0053***	-0.0038***	-0.0116**
		(-2.78)	(-4.35)	(-4.09)	(-2.34)
MEDLEV	+	0.2486***	0.2171***	0.2303***	0.2280***
		(7.10)	(6.09)	(6.62)	(6.44)
INFL	+	0.0162***	0.0166***	0.0159***	0.0169***
		(11.09)	(11.36)	(10.98)	(11.39)
BOND	+	-0.0015***	-0.0006	-0.0007*	-0.0011**
		(-2.68)	(-1.57)	(-1.84)	(-1.97)
FINARCH	-	0.0240***	0.0139***	0.0135***	0.0252***
Interaction Variables		(4.73)	(6.90)	(6.51)	(4.89)
RATINGL1*FINARCH	-	-0.0009***			-0.0009***
		(-2.58)			(-2.65)
RATINGL1*BOND	+	0.0000**			0.0000
		(2.01)			(1.26)
RATINGL1*LAGLEV	+		0.0100**		0.0091*
			(2.08)		(1.88)
RATINGL1*REFORM	-			-0.0002	
				(-0.41)	
Firms		904	904	904	904
Observations		10,765	10,765	10,765	10,765
Period of Est.		1991-2010	1991-2010	1991-2010	1991-2010
m1(Z-statistic)		-10.02***	-10.32***	-9.95***	-10.37***
m2(Z-statistic)		0.67	0.76	0.67	0.75
Hansen test (p-value)		0.18	0.53	0.38	0.16

See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as chi-square under the null of instrument validity. The same set of instruments as in Tables 3 & 4 applies to all columns. Additional instruments used for the transformed equation are: $RATINGL1_{(t-2)}*FINARCH_{(t-2)}$, $RATINGL1_{(t-2)}*BOND_{(t-2)}$ (columns 1 & 4), $RATINGL1_{(t-2)}*LAGLEV_{(t-2)}$ (columns 2 & 4), $RATINGL1_{(t-2)}*REFORM_{(t-2)}$ (column 3), and further lags. Additional instruments used for the levels equation are: Δ(*RATINGL1*$_{(t-1)}$**FINARCH*$_{(t-1)}$), Δ(*RATINGL1*$_{(t-1)}$**BOND*$_{(t-1)}$) (columns 1 & 4), Δ(*RATINGL1*$_{(t-1)}$**LAGLEV*$_{(t-1)}$) (columns 2 & 4), Δ(*RATINGL1*$_{(t-1)}$**REFORM*$_{(t-1)}$) (column 3), and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year dummies are included, but not presented.

Panel G: Japan

Independent Variable	Expected Sign	(1) Hypotheses 3 and 4	(2) Hypothesis 5
LAGLEV	+	0.6683***	0.5935***
		(9.85)	(2.35)
EBIT/TA	-	-0.2862**	-0.1653
		(-2.50)	(-1.25)
MTB	-	-0.0051	-0.0168
		(-0.37)	(-0.95)
SIZE	+	0.0117**	0.0073
		(2.34)	(1.06)
TANG/TA	+	0.0385	0.0473
		(0.71)	(0.56)
RATINGL1	-	0.0004	-0.0016
		(0.11)	(-0.37)
MEDLEV	+	0.0594	-0.1069
		(0.56)	(-0.68)
INFL	+	0.0153***	0.0155***
		(3.89)	(4.03)
BOND	+	0.0006	0.0017
		(0.55)	(1.36)
FINARCH	-	0.0020	0.0213
Interaction Variables		(0.12)	(1.22)
RATINGL1*FINARCH	-	0.0001	
		(0.28)	
RATINGL1*BOND	+	-0.0000	
		(-0.52)	
RATINGL1*LAGLEV	+		0.0091
			(0.56)
Firms		240	240
Observations		1,583	1,583
Period of Est.		1991-2010	1991-2010
m1(Z-statistic)		-3.33***	-3.36***
m2(Z-statistic)		1.34	1.35
Hansen test (p-value)		0.12	0.11

See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as chi-square under the null of instrument validity. The same set of instruments as in Tables 3 & 4 applies to all columns. Additional instruments used for the transformed equation are: $RATINGL1_{(t-2)}*FINARCH_{(t-2)}$, $RATINGL1_{(t-2)}*BOND_{(t-2)}$ (column 1), $RATINGL1_{(t-2)}*LAGLEV_{(t-2)}$ (column 2), and further lags. Additional instruments used for the levels equation are: $\Delta(RATINGL1_{(t-1)}*FINARCH_{(t-1)})$,

$\Delta(RATINGL1_{(t-1)}*BOND_{(t-1)})$ (column 1), $\Delta(RATINGL1_{(t-1)}*LAGLEV_{(t-1)})$ (column 2), and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year dummies are included, but not presented.

Table 6: Robustness of Findings by SIZE (Two-Step System GMM)

Independent Variable	Expected Sign	(1) MB countries (excl. the U.S.) Small	(2) Large	(3) BB Countries (excl. Japan) Small	(4) Large	(5) The U.S. Small	(6) Large	(7) Japan Small	(8) Large
LAGLEV	+	0.5282***	0.6850***	0.4689***	0.6597***	0.6234***	0.7987***	0.6259***	0.7509***
		(6.49)	(12.56)	(5.12)	(4.48)	(16.33)	(43.56)	(8.12)	(3.79)
EBIT/TA	-	-0.1929*	-0.0823	-0.4158*	-0.8036	-0.1306***	-0.1344***	-0.3364	-0.2964
		(-1.69)	(-0.82)	(-1.82)	(-1.59)	(-2.77)	(-3.03)	(-1.46)	(-1.16)
MTB	-	0.0027	-0.0153***	0.0241	0.1361*	-0.0354***	-0.0019	-0.0029	0.0184
		(0.25)	(-2.79)	(0.86)	(1.68)	(-5.56)	(-0.85)	(-0.13)	(0.76)
TANG/TA	+	0.0036	0.0109	-0.0226	0.0461	0.0077	0.0129	0.1834**	-0.0744
		(0.04)	(0.18)	(-0.29)	(0.31)	(0.45)	(1.24)	(2.20)	(-0.94)
RATINGL1	-	-0.0022	0.0001	-0.0059	0.0043	-0.0074***	-0.0013	0.0008	-0.0027
		(-0.52)	(0.07)	(-0.90)	(0.58)	(-4.39)	(-1.56)	(0.26)	(-0.64)
MEDLEV	+	0.4456***	0.1422*	0.5873***	0.1963	0.2770***	0.1607***	-0.1904	0.317
		(4.34)	(1.86)	(4.14)	(0.78)	(4.52)	(4.53)	(-1.56)	(0.93)
INFL	+	0.0010	0.0006	0.0027***	-0.0018	0.0188***	0.0132***	0.0141*	0.0115*
		(0.70)	(0.69)	(3.00)	(-0.46)	(6.28)	(8.68)	(1.89)	(1.81)
BOND	+	0.0001	-0.0000	0.0015*	-0.0005	-0.0009	-0.0009**	-0.0000	-0.0000
		(0.22)	(-0.18)	(1.67)	(-1.02)	(-1.15)	(-2.00)	(-0.03)	(-0.05)
FINARCH	-	0.0046	-0.0004	0.0179*	-0.0120	0.0170***	0.0147***	-0.0068	0.0017
		(1.22)	(-0.20)	(1.96)	(-1.36)	(3.91)	(7.58)	(-0.21)	(0.09)
DEVDUM	+	0.0424*	-0.0345	-0.0338	-0.0345				
		(1.68)	(-0.78)	(-0.35)	(-0.34)				
Firms		125	108	86	57	575	405	169	87
Observations		805	829	419	442	4,104	4,474	588	665
Period of Est.		1991-2010	1991-2010	1992-2010	1992-2010	1991-2010	1991-2010	1991-2010	1991-2010
m1(Z-statistic)		-4.90***	-4.72***	-3.03***	-3.48***	-7.86***	-10.27***	-2.39**	-3.18***
m2(Z-statistic)		0.30	-0.71	-0.79	-1.53	0.87	-1.49	1.02	1.84*
Hansen test (p-value)		0.37	0.45	0.23	0.28	0.36	0.27	0.30	0.27

See Appendix C for the list of countries grouped by their financial orientation and economic development level. See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). Firm is classified as small (large) if its *SIZE* is above the 60^{th} (below the 40^{th}) percentile of all sample firms. m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as chi-square under the null of instrument validity. Instruments for the transformed equation in all columns are $MLEV_{(t-2)}$, $EBIT/TA_{(t-2)}$, $MTB_{(t-2)}$, $TANG/TA_{(t-2)}$, $RATINGL1_{(t-2)}$, $MEDLEV_{(t-2)}$, and further lags. Instruments for the levels equation in all columns are $\Delta MLEV_{(t-1)}$, $\Delta EBIT/TA_{(t-1)}$, $\Delta MTB_{(t-1)}$,

$\Delta TANG/TA_{(t-1)}$, $\Delta RATINGL1_{(t-1)}$, $\Delta MEDLEV_{(t-1)}$, and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year and country dummies are included, but not presented.

Table 7: Robustness of Findings Over Time (Two-Step System GMM)

Independent Variable	Expected Sign	(1) MB countries (excl. the U.S.)	(2)	(3) BB Countries (excl. Japan)	(4)	(5) The U.S.	(6)	(7) Japan	(8)
		1991-2000	2001-2010	1992-2000	2001-2010	1991-2000	2001-2010	1991-2000	2001-2010
LAGLEV	+	0.4916***	0.6859***	0.5752***	0.7736***	0.7593***	0.6133***	0.5147***	0.7652***
		(6.67)	(11.28)	(5.18)	(5.41)	(13.21)	(21.39)	(3.53)	(14.76)
EBIT/TA	-	-0.1204	-0.0232	-0.0997	0.0289	-0.2280*	-0.1621***	-0.5752*	-0.2156*
		(-1.24)	(-0.42)	(-0.74)	(0.05)	(-1.66)	(-4.55)	(-1.93)	(-1.88)
MTB	-	-0.0030	-0.0086	-0.0095	0.0414	0.0055	-0.0251***	-0.0448	0.0123
		(-0.52)	(-1.17)	(-0.48)	(1.19)	(0.82)	(-6.57)	(-1.45)	(0.96)
SIZE	+	0.0002	0.0010	-0.0149*	0.0028	0.0066	-0.0014	-0.0020	0.0067*
		(0.04)	(0.23)	(-1.70)	(0.16)	(0.86)	(-0.41)	(-0.14)	(1.79)
TANG/TA	+	0.0042	0.0323	0.0225	-0.0092	0.0648	0.0045	0.2852**	0.0116
		(0.18)	(1.35)	(0.24)	(-0.06)	(0.95)	(0.29)	(2.35)	(0.50)
RATINGL1	-	-0.0049**	-0.0002	-0.0038	-0.0042	-0.0113***	-0.0023*	0.0006	-0.0019
		(-2.38)	(-0.12)	(-0.88)	(-0.68)	(-4.17)	(-1.84)	(0.20)	(-1.29)
MEDLEV	+	0.5103***	0.2633***	0.5107***	0.1666	0.3001**	0.3253***	-0.1243	0.1861***
		(4.42)	(4.09)	(4.32)	(0.55)	(2.24)	(6.60)	(-0.68)	(2.61)
INFL	+	-0.0000	-0.0006	0.0023*	-0.0003	-0.0185***	0.0137***	-0.0037	0.0181***
		(-0.06)	(-0.28)	(1.66)	(-0.14)	(-2.90)	(9.23)	(-0.18)	(4.78)
BOND	+	-0.0009	-0.0003	0.0005	0.0009	-0.0018	-0.0009**	0.0004	0.0001
		(-0.91)	(-1.07)	(0.24)	(1.45)	(-0.61)	(-2.30)	(0.41)	(0.17)
FINARCH	-	-0.0076***	-0.0005	0.0198	0.0075	0.0049	0.0110***	-0.0373**	0.0037
		(-2.31)	(-0.32)	(0.63)	(0.57)	(0.87)	(5.44)	(-2.20)	(0.26)
DEVDUM	+	0.0785**	0.0325***	0.0441	-0.0505				
		(2.13)	(2.84)	(0.25)	(-1.24)				
Firms		122	221	37	140	603	893	108	240
Observations		520	1,526	94	984	3,626	7,139	331	1,252
Period of Est.		1991-2000	2001-2010	1992-2000	2001-2010	1991-2000	2001-2010	1991-2000	2001-2010
m1(Z-statistic)		-3.43***	-5.96***	-1.65*	-5.07***	-10.31***	-12.09***	-3.19***	-3.26***
m2(Z-statistic)		0.12	0.56	0.22	-0.86	-2.54**	0.32	1.11	0.89
Hansen test (p-value)		0.97	0.54	0.83	0.51	0.01	0.18	0.16	0.88

See Appendix C for the list of countries grouped by their financial orientation and economic development level. See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as chi-square under the null of instrument validity. Instruments for the transformed equation in all columns are $MLEV_{(t-2)}$, $EBIT/TA_{(t-2)}$, $MTB_{(t-2)}$, $SIZE_{(t-2)}$, $TANG/TA_{(t-2)}$, $RATINGL1_{(t-2)}$, $MEDLEV_{(t-2)}$, and further lags. Instruments for the levels equation in all columns are $\Delta MLEV_{(t-1)}$, $\Delta EBIT/TA_{(t-1)}$, $\Delta MTB_{(t-1)}$, $\Delta SIZE_{(t-1)}$, $\Delta TANG/TA_{(t-1)}$, $\Delta RATINGL1_{(t-1)}$, $\Delta MEDLEV_{(t-1)}$, and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year and country dummies are included, but not presented.

Table 8: SOAs for Firms with Investment and Speculative Credit Ratings

(Two-Step System GMM)

Panel A: Market-Based and Bank-Based Countries (excluding the U.S. and Japan)

		MB Countries (excl. the U.S.)		BB Countries (excl. Japan)	
Independent Variable	**Expected Sign**	**Investment-Grade**	**Speculative-Grade**	**Investment-Grade**	**Speculative-Grade**
LAGLEV	+	0.6145***	0.5316***	0.5349***	0.4881***
		(10.28)	(3.91)	(5.01)	(2.65)
EBIT/TA	-	-0.1100	-0.2400	0.006	0.3092
		(-1.22)	(-1.49)	(0.01)	(0.64)
MTB	-	-0.0047	-0.0206	0.0299	-0.0071
		(-0.76)	(-1.12)	(1.15)	(-0.17)
SIZE	+	0.0079	0.0178	0.0193	0.0150
		(0.72)	(0.63)	(1.38)	(0.45)
TANG/TA	+	0.0616	-0.0089	-0.0515	0.1426
		(1.17)	(-0.09)	(-0.62)	(1.04)
MEDLEV	+	0.2235**	0.3939***	0.3942**	0.9743***
		(2.64)	(3.02)	(2.56)	(3.53)
INFL	+	0.0014	-0.0035	-0.0047	0.0005
		(1.13)	(-1.58)	(-1.30)	(0.46)
BOND	+	-0.0003	0.0008	-0.0004	-0.0014
		(-1.43)	(0.90)	(-0.61)	(-0.84)
FINARCH	-	-0.0012	0.0091	-0.0039	0.0012
		(-0.99)	(1.33)	(-0.47)	(0.09)
DEVDUM	+	0.0111	0.0341	-0.0107	0.1360
		(0.80)	(0.63)	(-0.13)	(1.03)
Firms		187	78	92	74
Observations		1,628	418	735	343
Period of Est.		1991-2010	1991-2010	1992-2010	1992-2010
m1(Z-statistic)		-5.59***	-3.17***	-4.01***	-2.58***
m2(Z-statistic)		-1.65*	1.01	-0.18	-0.17
Hansen test (p-value)		0.73	0.49	0.35	0.12

See Appendix C for the list of countries grouped by their financial orientation and economic development level. See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as chi-square under the null of instrument validity. Instruments for the transformed equation in all columns are $MLEV_{(t-2)}$, $EBIT/TA_{(t-2)}$, $MTB_{(t-2)}$, $SIZE_{(t-2)}$, $TANG/TA_{(t-2)}$, $MEDLEV_{(t-2)}$, and further lags. Instruments for the levels equation in all columns are $\Delta MLEV_{(t-1)}$, $\Delta EBIT/TA_{(t-1)}$, $\Delta MTB_{(t-1)}$, $\Delta SIZE_{(t-1)}$,

$\Delta TANG/TA_{(t-1)}$, $\Delta MEDLEV_{(t-1)}$, and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year and country dummies are included, but not presented. The Investment-Grade (Speculative-Grade) column reports estimated coefficients for all firms with S&P's issuer credit ratings BBB- or above (BB+ or below).

Panel B: Advanced and Developing Countries (excluding the U.S. and Japan)

		Advanced Countries (excl. the U.S & Japan)		Developing Countries	
Independent Variable	**Expected Sign**	**Investment-Grade**	**Speculative-Grade**	**Investment-Grade**	**Speculative-Grade**
LAGLEV	+	0.6335***	0.5151***	0.6775***	0.5310***
		(11.81)	(4.06)	(4.96)	(3.67)
EBIT/TA	-	-0.1468	-0.1265	-0.2813	0.2466
		(-1.39)	(-0.78)	(-1.48)	(0.63)
MTB	-	0.0075	-0.0310**	0.0038	0.0150
		(0.78)	(-2.31)	(0.32)	(0.37)
SIZE	+	0.0109	0.0428	-0.0161	-0.0061
		(0.98)	(1.27)	(-0.76)	(-0.23)
TANG/TA	+	0.0427	-0.0308	-0.0348	0.1194
		(0.84)	(-0.36)	(-0.44)	(0.87)
MEDLEV	+	0.1384*	0.4421***	0.1009	0.8365***
		(1.65)	(2.98)	(0.83)	(3.56)
INFL	+	-0.0026	0.0085	0.0031*	0.0018
		(-1.30)	(0.92)	(1.72)	(1.25)
BOND	+	-0.0000	0.0006	0.0002	-0.0001
		(-0.23)	(0.78)	(0.22)	(-0.07)
FINARCH	-	0.0003	0.0105	-0.0064	0.0005
		(0.18)	(1.32)	(-1.12)	(0.04)
MBDUM	-	-0.0028	-0.1098	-0.0637	0.0430
		(-0.13)	(-1.20)	(-0.74)	(0.36)
Firms		252	104	27	48
Observations		2,193	520	170	241
Period of Est.		1991-2010	1991-2010	1994-2010	1994-2010
Correlation 1		-7.16***	-3.03***	-2.39**	-3.87***
Correlation 2		-1.59	1.12	-0.74	1.93*
Hansen test (p-value)		0.21	0.43	0.97	0.12

See Appendix C for the list of countries grouped by their financial orientation and economic development level. See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as chi-square under the null of instrument validity. Instruments for the transformed equation in all columns are $MLEV_{(t-2)}$, $EBIT/TA_{(t-2)}$, $MTB_{(t-2)}$, $SIZE_{(t-2)}$, $TANG/TA_{(t-2)}$, $MEDLEV_{(t-2)}$, and further lags. Instruments for the levels equation in all columns are $\Delta MLEV_{(t-1)}$, $\Delta EBIT/TA_{(t-1)}$, $\Delta MTB_{(t-1)}$, $\Delta SIZE_{(t-1)}$, $\Delta TANG/TA_{(t-1)}$, $\Delta MEDLEV_{(t-1)}$, and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year and country dummies are included, but not presented. The Investment-Grade (Speculative-Grade) column reports estimated coefficients for all firms with S&P's issuer credit ratings BBB- or above (BB+ or below).

Panel C: the U.S. and Japan

Independent Variable	Expected Sign	the U.S. Investment-Grade	the U.S. Speculative-Grade	Japan Investment-Grade	Japan Speculative-Grade
LAGLEV	+	0.7285***	0.6237***	0.7542***	0.6479***
		(38.40)	(20.90)	(9.87)	(7.39)
EBIT/TA	-	-0.1510***	-0.2183***	-0.1607	-0.5464
		(-5.33)	(-4.54)	(-1.29)	(-1.50)
MTB	-	-0.0093***	-0.0427***	-0.0022	-0.0305
		(-5.78)	(-6.98)	(-0.13)	(-0.40)
SIZE	+	-0.0004	-0.0030	0.0016	0.0168
		(-0.31)	(-0.65)	(0.30)	(0.75)
TANG/TA	+	0.0198*	0.0122	-0.0494	-0.0135
		(1.91)	(0.64)	(-0.74)	(-0.00)
MEDLEV	+	0.1181***	0.2792***	0.1199	0.6741*
		(3.55)	(3.74)	(1.12)	(1.66)
INFL	+	0.0102***	0.0205***	0.0167***	0.0073
		(8.69)	(7.73)	(3.37)	(0.26)
BOND	+	-0.0000	-0.0012*	0.0008	-0.0017
		(-0.32)	(-1.65)	(0.72)	(-0.25)
FINARCH	-	0.0101***	0.0140***	0.0142	-0.0143
		(7.10)	(3.58)	(0.86)	(-0.16)
Firms		534	593	207	70
Observations		6,432	4,333	1,246	337
Period of Est.		1991-2010	1991-2010	1991-2010	1991-2010
m1(Z-statistic)		-12.34***	-7.04***	-5.57***	-2.97***
m2(Z-statistic)		0.66	0.93	1.74*	0.87
Hansen test (p-value)		0.40	0.78	0.27	0.13

See Appendix E for the list of all variables and their definitions. The dependent variable is long-term leverage to the market value of total assets ratio (*MLEV*). m1 and m2 are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test is a test of the overidentifying restrictions, distributed as chi-square under the null of instrument validity. Instruments for the transformed equation in all columns are $MLEV_{(t-2)}$, $EBIT/TA_{(t-2)}$, $MTB_{(t-2)}$, $SIZE_{(t-2)}$, $TANG/TA_{(t-2)}$, $MEDLEV_{(t-2)}$, and further lags. Instruments for the levels equation in all columns are $\Delta MLEV_{(t-1)}$, $\Delta EBIT/TA_{(t-1)}$, $\Delta MTB_{(t-1)}$, $\Delta SIZE_{(t-1)}$, $\Delta TANG/TA_{(t-1)}$, $\Delta MEDLEV_{(t-1)}$, and further lags. T-statistics based on asymptotic standard errors that are robust for heteroskedasticity and clustered by the firms are in the parentheses. *, **, and *** indicate coefficients' significance at 10%, 5%, and 1% level, respectively. Year dummies are included, but not presented. The Investment-Grade (Speculative-Grade) column reports estimated coefficients for all firms with S&P's issuer credit ratings BBB- or above (BB+ or below).

Figure 1

Annual Plot of Means of Long-Term Leverage to the Market Value of Total Assets Ratio (MLEV) and Their Corresponding Logarithmic Trends Over Time

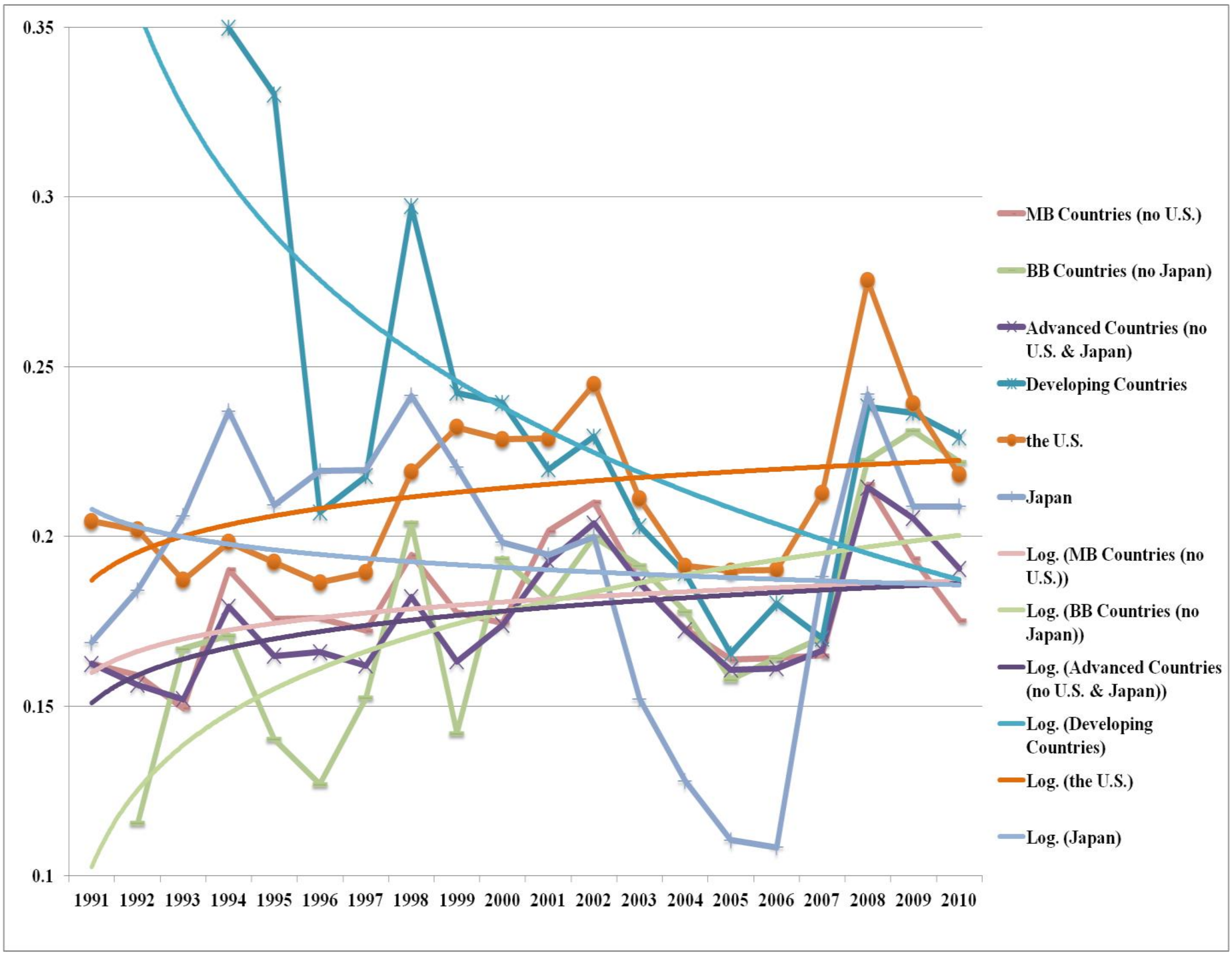

Figure 2

Annual Plot of Means of Long-Term Leverage to the Book Value of Total Assets Ratio (BLEV) and Their Corresponding Logarithmic Trends Over Time

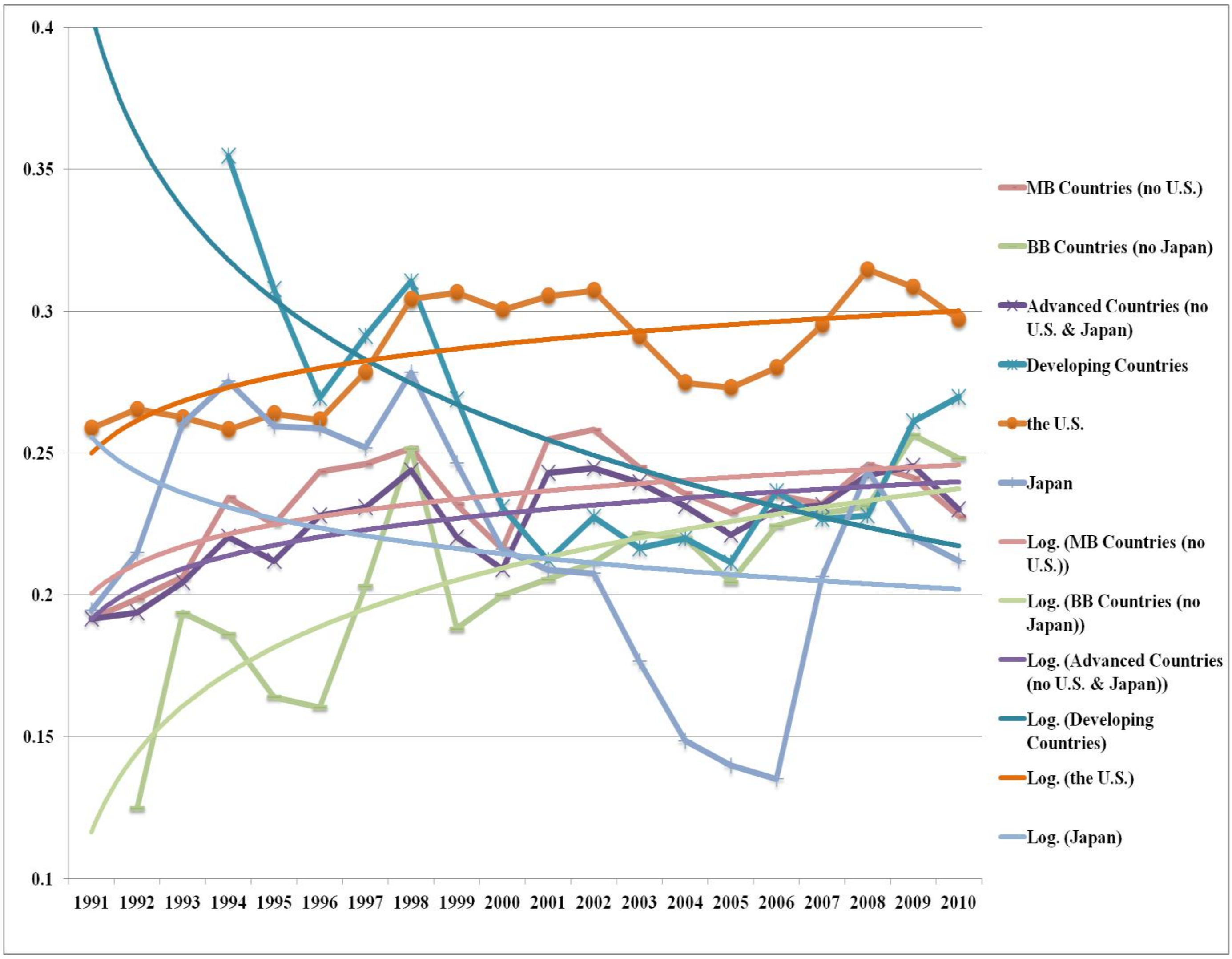

Figure 3

Comparison of Average FINARCH Values for Samples of Firms with Respect to Their Financial Orientations and Economic Development Between two Decades: 1991-2000 vis-à-vis 2001-2010

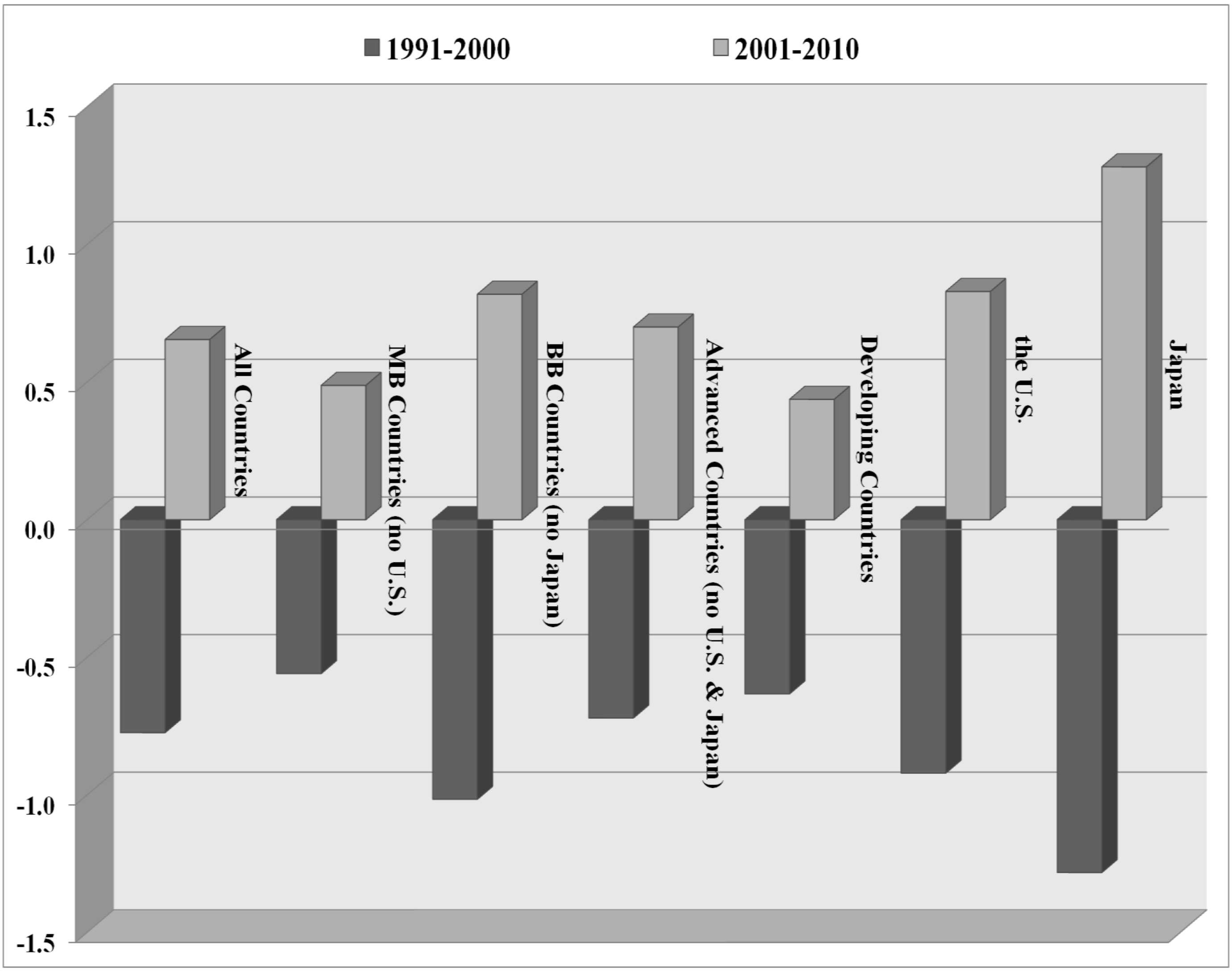

Figure 4

Yearly plot of Average FINARCH Values for Samples of Firms

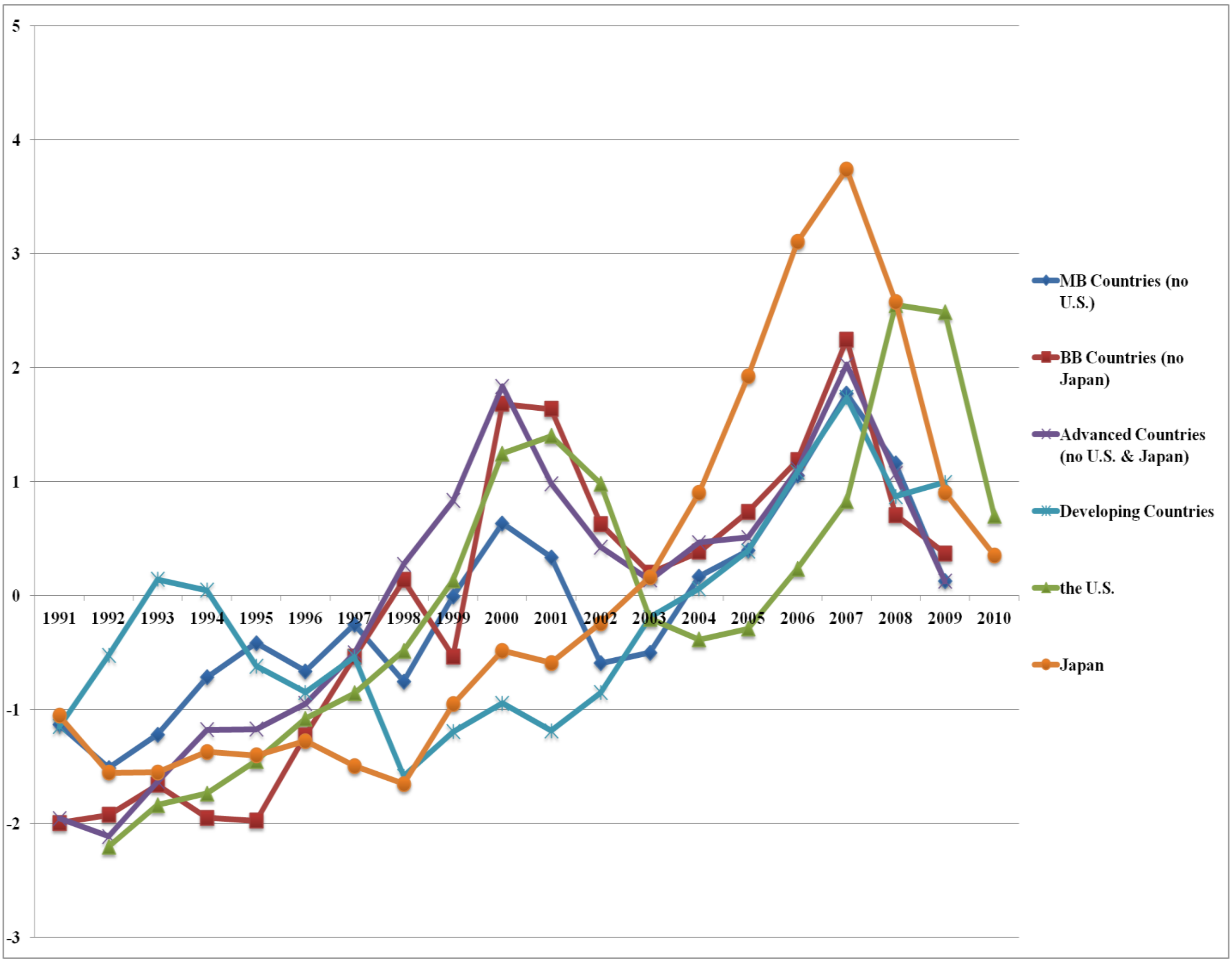

Figure 5

Yearly plot of Median FINARCH Values for Samples of Firms

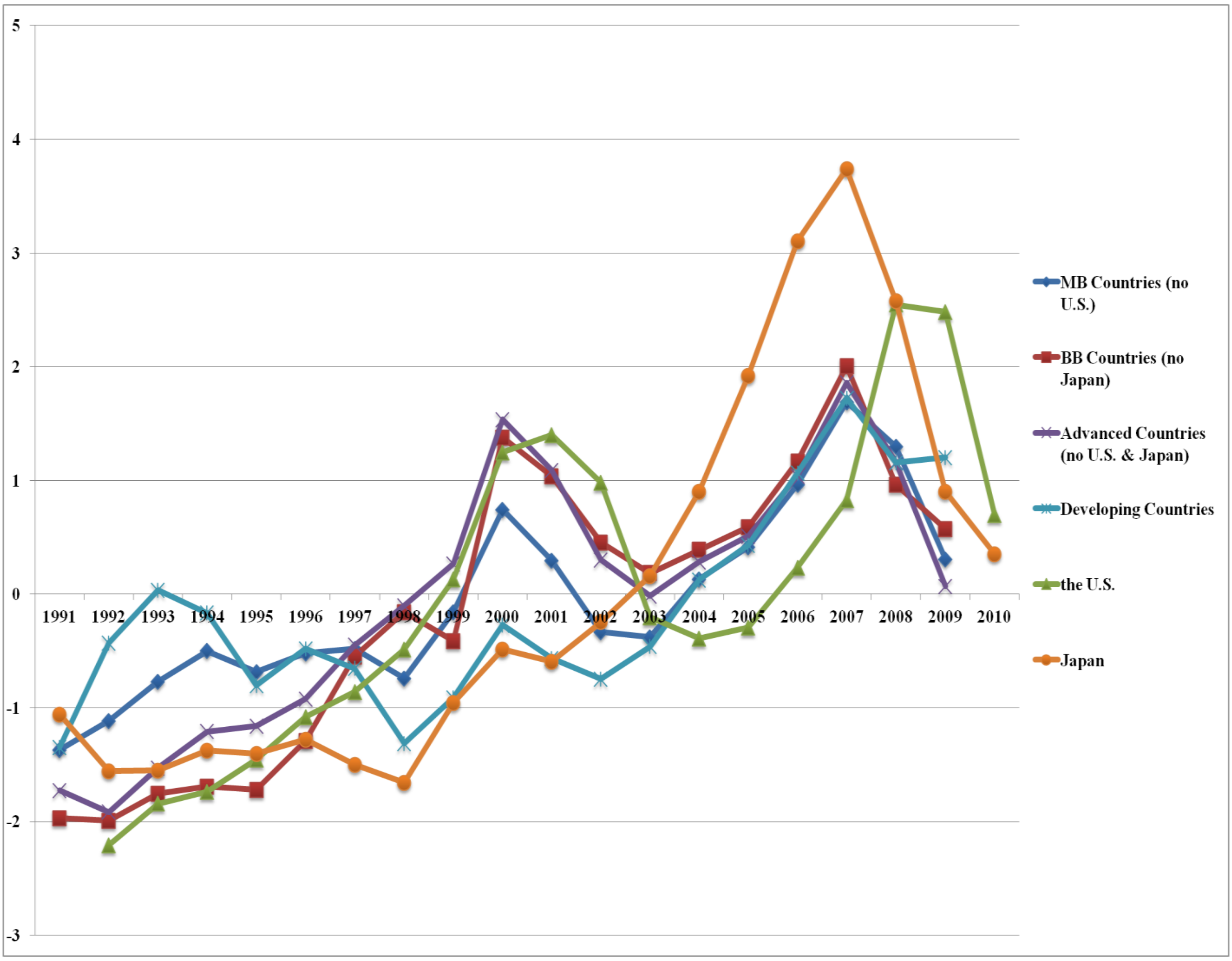

Figure 6

Average Values of Long-Term Leverage to the Market Value of Total Assets Ratio (MLEV) by Different Credit Ratings

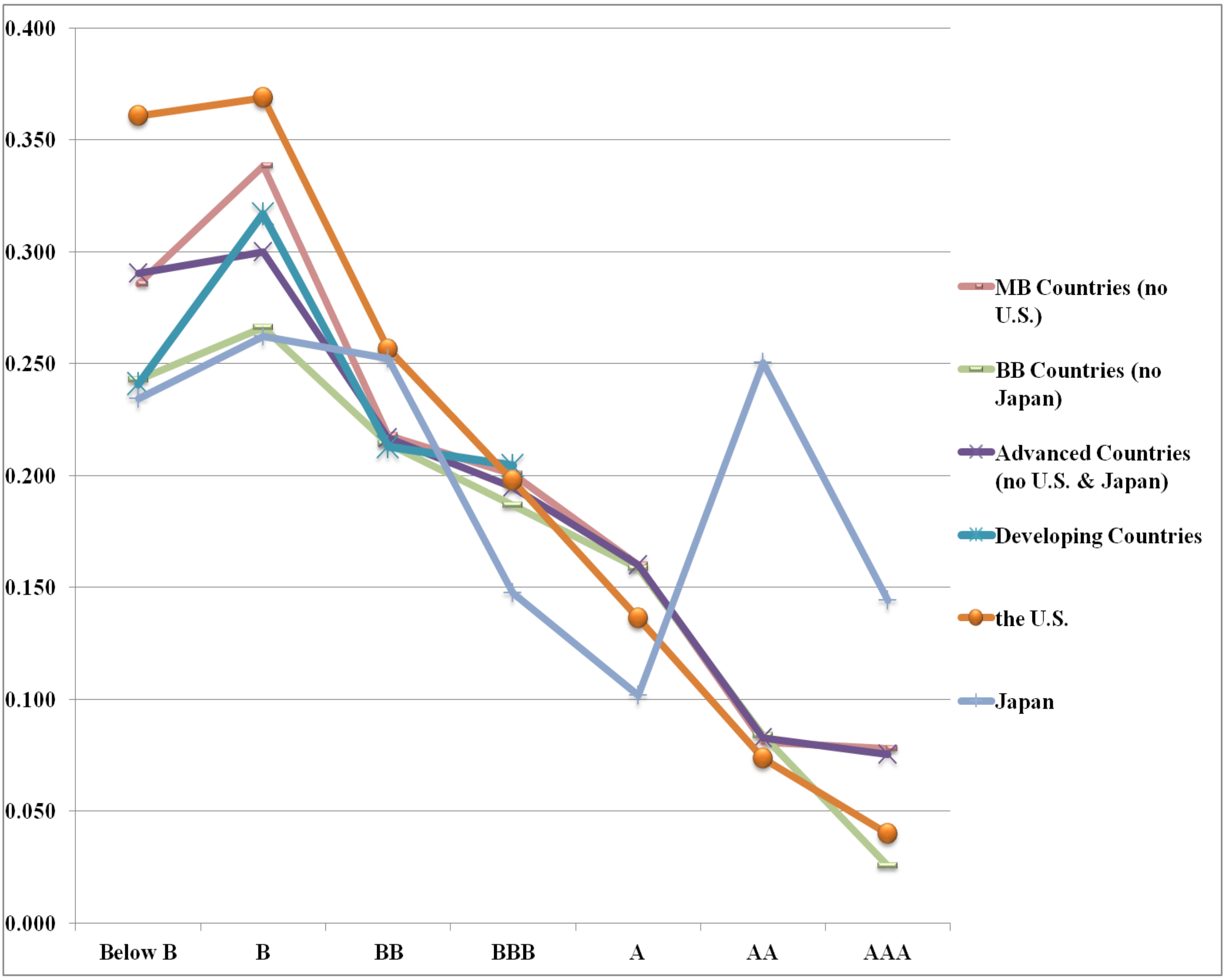

Figure 7

Average Values of Total Leverage to the Market Value of Total Assets Ratio (MLEVT)

by Different Credit Ratings

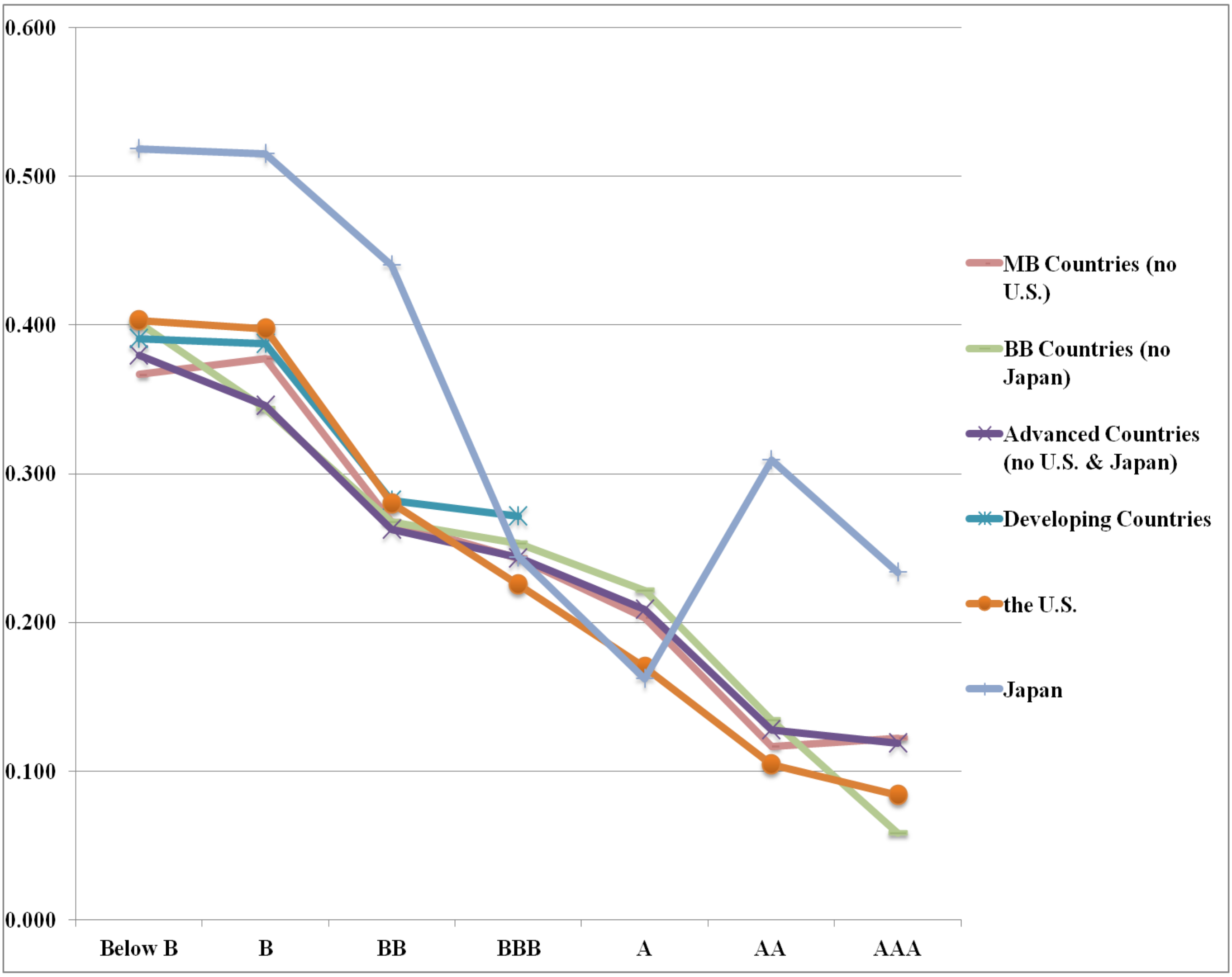

Figure 8

Average Values of Long-Term Leverage to the Book Value of Total Assets Ratio (BLEV) by Different Credit Ratings

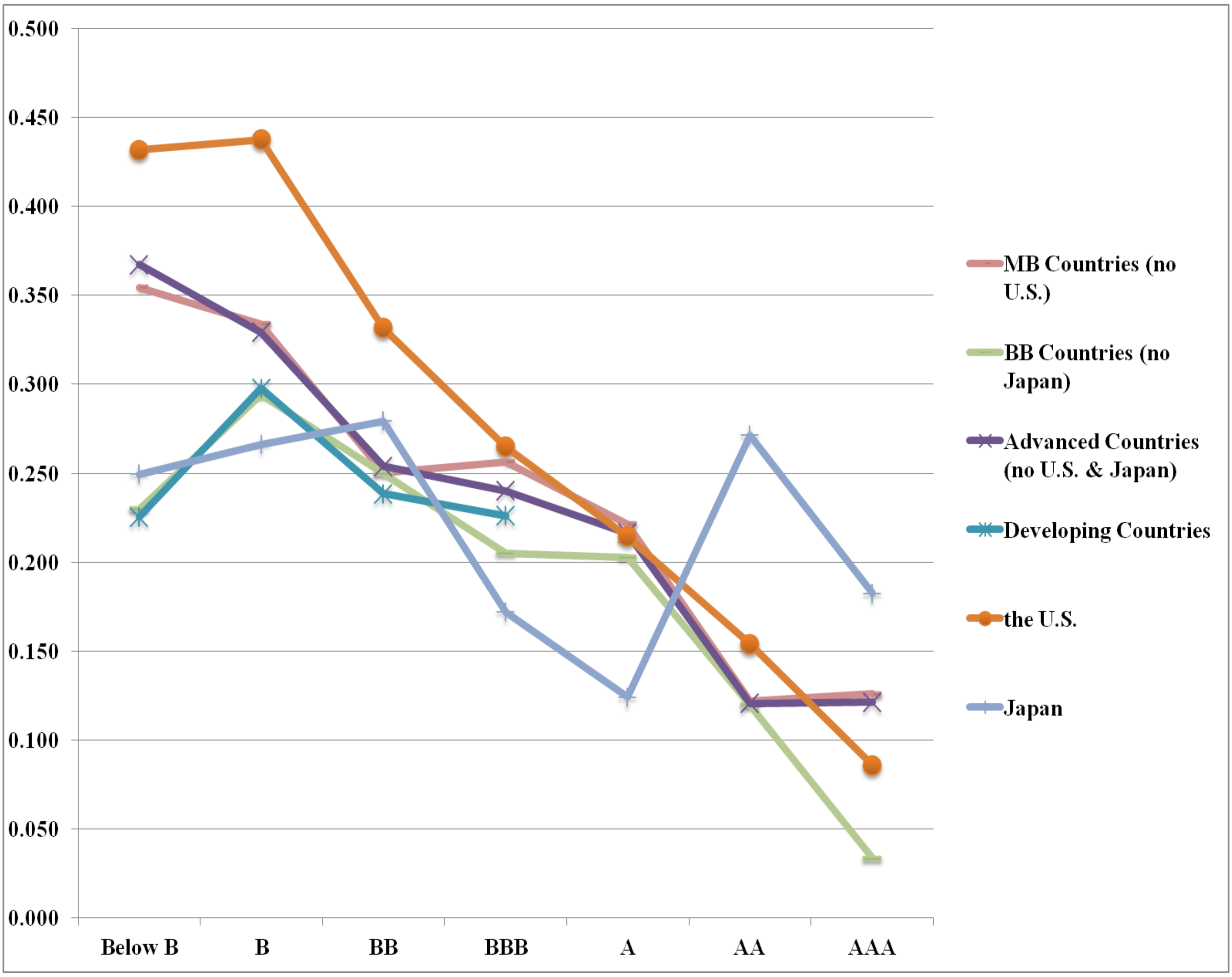

Figure 9

Average Values of Total Leverage to the Book Value of Total Assets Ratio (BLEVT)

by Different Credit Ratings

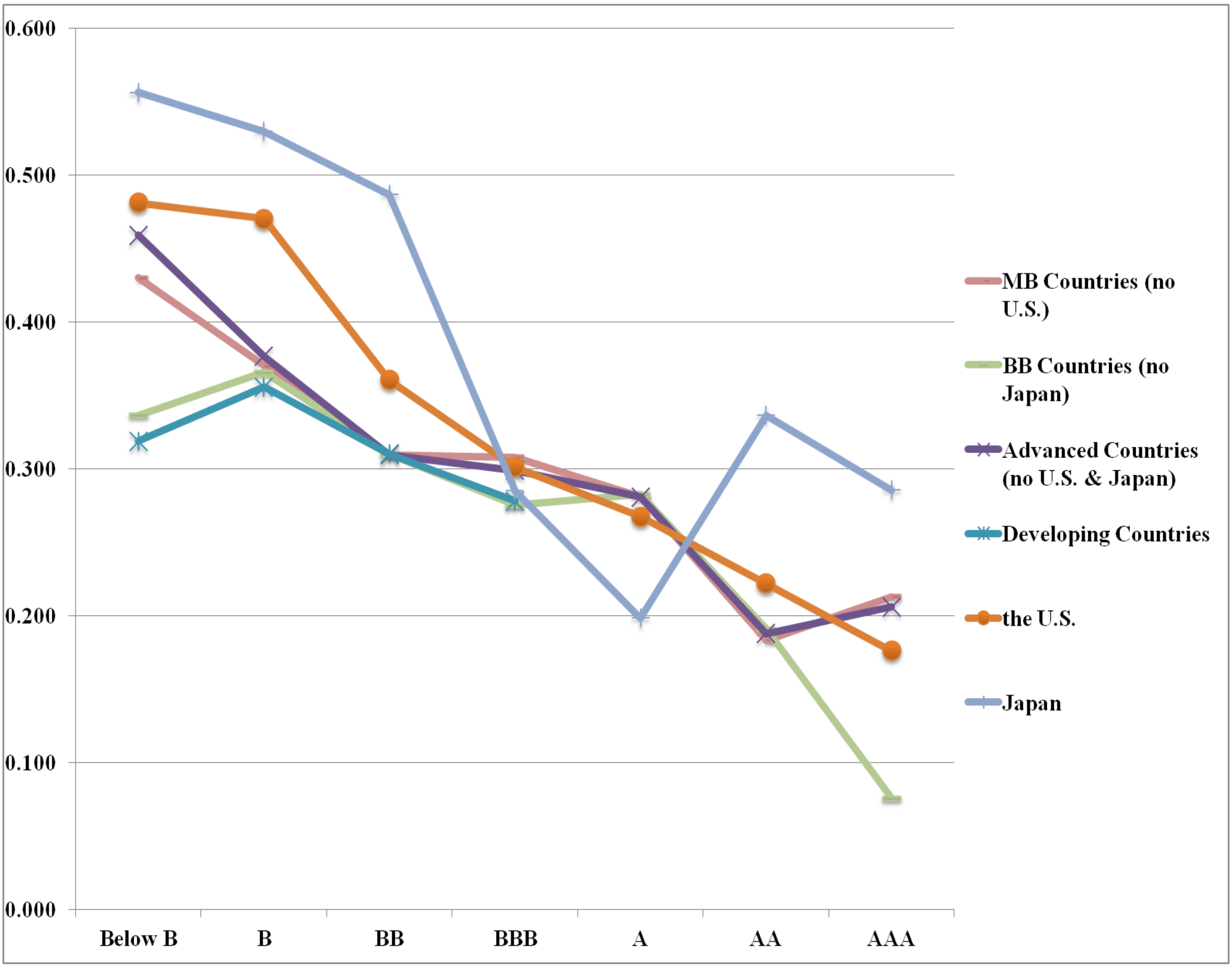

Figure 10

Yearly plot of Means of Credit Ratings for Regressed Samples of Firms