THE INFLUENCE OF BANKS ON CORPORATE FINANCING AND ACCOUNTING DECISIONS OF GERMAN SMES

DISSERTATION

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Affidavit

I hereby declare, that the following thesis entitled “The Influence of Banks on Corporate Financing and Accounting Decisions of German SMEs” is the result of my own work. I did not receive help or support from commercial consultants. All sources and/or materials applied are listed and specified in the thesis.

Furthermore, I confirm that this thesis has not yet been submitted as part of another examination process neither in identical nor in similar form.

Würzburg, August 5, 2014

Eidesstattliche Erklärung

Hiermit erkläre ich an Eides statt, die Dissertation „The Influence of Banks on Corporate Financing and Accounting Decisions of German SMEs“ eigenständig, d.h. insbesondere selbständig und ohne Hilfe eines kommerziellen Promotionsberaters, angefertigt und keine anderen als die von mir angegebenen Quellen und Hilfsmittel verwendet zu haben.

Ich erkläre außerdem, dass die Dissertation weder in gleicher noch in ähnlicher Form bereits in einem anderen Prüfungsverfahren vorgelegen hat.

Würzburg, August 5, 2014

Publications

The present dissertation is a cumulative work that consists of three individual papers that analyze the influence of banks on managerial decisions of German SMEs.

Earlier versions of these essays were presented at academic conferences and are submitted for publication in academic journals. In this section, the three studies are separately listed and co-authors are named. In addition, presentations and publication details are given.

"Debt capital costs of German SMEs caught in between Basel II and the financial crisis"

Schindele, Alexandra and Szczesny, Andrea

First version: December 2011

Earlier version available at SSRN: http://ssrn.com/abstract=2048337

Presentation of earlier versions: EAA Annual Congress in Ljubljana 2012, GSLES Doctoral Workshop Oberjoch 2012

Under revision at the Journal of Business Economics

"Earnings management of German SMEs in the context of bank lending"

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"Survey on the financing and accounting behavior of German SMEs"

Schindele, Alexandra and Grom, Michael

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Abstract

The present dissertation analyzes whether bank debt lending influences certain managerial decisions of borrowers, and if so, how. More precisely, the thesis investigates the influence of bank debt lending on the cost of debt and capital structure of firms, and on the accounting behavior of borrowers prior to borrowing new bank debt. The major aim of the dissertation is to deliver empirical evidence that central managerial decisions of companies are not only made by managers and equity owners but also driven by important debt investors. The objects of discussion are German small and medium-sized enterprises (*SMEs*). These firms are particularly suitable for this analysis, as they commonly have high bank debt proportions.

The dissertation comprises three separate empirical analyses, which investigate selected aspects in the above mentioned context. Section 3.1 inspects the impact of the Basel II Capital Accord and the financial crisis on the cost of debt of German SMEs. Basel II formalized the credit assessment of debtors. This might have led to higher costs and a higher risk awareness of banks. Banks might have tried to refinance those additional costs by imposing tighter credit terms on debtors. Especially SMEs might face a higher cost of debt, as they tend to have comparably high proportions of bank debt, low equity ratios, and consecutively lower ratings than big companies. The results presented in Section 3.1 indicate a significant rise of the cost of debt since 2007. Unfortunately, the amendment of Basel II was followed by the financial crisis. It is difficult to separate the effect of the reform and the one of the crisis on the costs of debt capital of German SMEs. The presented analysis controls for several possible interdependencies between credit costs, credit shortage and the insolvency risk of companies. However, none of the analyzed facts indicates a significant change in the extent of bank credit granting to SMEs during the financial crisis that would justify higher costs of debt capital. The results might point out that banks made use of the special situation of the financial crisis and raised credit standards for SME loans.

Section 3.2 examines whether bank debt financing drives certain accounting choices of German SMEs. At least since Basel II, banks have to base their credit assessments on objective, quantitative ratings, which commonly rely on financial statement data. As loan interest rates account for a significant proportion of the cost of capital of SMEs, their incentive to optimize loan conditions is obvious. Under the assumption that SMEs are aware of the importance of financial statements data in credit assessments, they might have an incentive to direct their financial statements at banks. More precisely, SMEs might strive to exploit their asymmetric information advantage over banks by manipulating earnings with the intention to achieve decent credit terms. The results presented in Section 3.2 show that SMEs have significantly higher total accruals in the period prior to borrowing new bank debt than in other periods. Moreover, a higher bank debt proportion is accompanied by higher total accruals. Hence, particularly bank-dependent firms seem to alter their accounting behavior prior to the important corporate financing event of borrowing new bank debt. Finally, the study investigates whether earnings manipulation is detected by banks or whether it is effective and influences the cost of debt of German SMEs. Empirical

results in Section 3.2 indicate that SMEs, which report positive discretionary accruals are rewarded in terms of a lower cost of debt. This might imply that banks do not see through earnings manipulation.

Section 3.3 contains results of a comprehensive survey of German SMEs, which intends to further analyze the research questions posed in Section 3.1 and 3.2. First, the survey aims to verify or falsify the results concerning the impact of Basel II on the cost of debt and the requirements to obtain a loan for SMEs since 2007. A large proportion of survey respondents complained about a higher effort needed to obtain a new bank loan since 2007. Moreover, for the majority of survey participants both the collateral demanded by banks and the strictness of covenants increased since Basel II. In addition, almost half of surveyed SMEs experience higher costs of bank debt since the amendment of the reform. The second part of the survey aims to investigate whether SMEs apply measures of earnings manipulation in the period prior to borrowing new bank debt. The majority of SMEs admit that they would use both certain means of real activities and accrual manipulation in order to achieve decent credit terms in the subsequent debt contract negotiation.

Taking these empirical results into consideration, the dissertation shows that certain managerial decisions of German SMEs are influenced by debt holders. Results in Sections 3.1 and 3.3 indicate that SME bank lending was affected by Basel II and the financial crisis. The cost of debt of German SMEs is significantly higher since Basel II, even after controlling for potential influences of the financial crisis. These higher costs of debt might have additional side effects on further corporate financing and/or investment decisions. Furthermore, results in Sections 3.2 and 3.3 indicate that bank debt lending influences accounting choices of German SMEs, particularly in the period before borrowing new bank debt. SME use both means of real activities and accrual management in order to achieve decent credit terms. This change of accounting behavior might be accompanied by effort, additional effects on other corporate contracts, and notable economic costs.

Content Overview

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List of Abbreviations

AG	Aktiengesellschaft
BA	Berufsakademie
Bafin	Bundesanstalt für Finanzdienstleistungsaufsicht
BilMoG	Bilanzrechtsmodernisierungsgesetz
EBIT	Earnings before interest and taxes
EBITDA	Earnings before interest, taxes, depreciation and amoritization
e.g.	For example
EstDV	Einkommensteuer-Durchführungsverordnung
EU	European Union
GAAP	Generally accepted accounting principles
GDP	Gross domestic product
GmbH	Gesellschaft mit beschränkter Haftung
GmbH & Co. KG	Gesellschaft mit beschränkter Haftung & Compagnie Kommanditgesellschaft
HGB	Handelsgesetzbuch
i.e.	That is
IFRS	International financial reporting standards
IHK	Industrie- und Handelskammer
IPO	Initial public offering
IRB	Internal ratings based approach
KFW Development Bank	Kreditanstalt für Wiederaufbau
Marisk	Mindestanforderungen an das Risikomanagement
Max	Maximum value
Min	Minimum value
Obs.	Observations
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary least squares

POLS	Pooled ordinary least squares
PPE	Property, plant and equipment
QIS 3	Third quantitative impact study
R&D	Research and development
RW	Risk weight
S.D.	Standard deviation
SEO	Seasoned equity offering
SME	Small and medium-sized companies
UK	United Kingdom
U.S.	United States
VWA	Verwaltungs- und Wirtschaftsakademie
WZ	Wirtschaftszweige

1. Introduction

Understanding corporate financing and identifying the optimal allocation of equity and debt capital has occupied researchers for at least 50 years. One study that is especially representative of early corporate finance research is the work of Modigliani and Miller (1958). The authors postulate a theorem of irrelevance of a company's capital structure for both the market value of a company and its capital costs. In other words, they postulate that different proportions of equity and debt capital do not influence the market value or the cost of the capital of a firm. The theorem is based on the supposition that the probability distribution of cash flows is independent of the capital structure (Jensen and Meckling 1976). However, subsequent research identifies several important factors that were neglected by Modigliani and Miller (1958). Their theoretical model does not consider taxes, insolvency risks, or asymmetric information, and it assumes a perfect capital market. Consequently, the irrelevance of a firm's capital structure for capital costs does not hold under more realistic assumptions (e.g., Modigliani and Miller 1963; Jensen and Meckling 1976; Leland 1994; Leland and Toft 1996).

In their ground-breaking article of 1976, Jensen and Meckling build on Modigliani and Miller (1958) and demonstrate across several aspects that corporate financing is affected by agency problems. The authors state that the agency cost of debt is one explanation for why the probability distribution of cash flows (and consecutively the cost of capital) is *not* independent of capital structure. Agency conflicts between equity owners and debt holders arise from an asymmetric distribution of information between the stakeholders about the risk-return structures of undertaken investments. Information asymmetry exists if the controlling owner has more relevant information about the company's operations than the non-controlling owner. Debt holders likely do not have the same insight into company information as equity holders. Thus, they suffer from an information disadvantage. It is the outcome of debt contracts that creditors bear the risk of an investment failure but do not capture gains of a successful investment in the same magnitude. Most of the gains are paid out to equity owners. As a result, equity owners might have an incentive to invest in a suboptimal way if a company is partially financed by debt. The chance of winning (combined with the limited investment at risk) might be an incentive for equity owners to undertake risky investments (Jensen and Meckling 1976). Because rational creditors know about their detrimental situation, they likely demand a premium to cover their risk and monitoring costs (Harris and Raviv 1991). These costs were called the agency cost of debt by Jensen and Meckling (1976).

In general, creditors can reduce these agency problems by limiting the discretion of equity owners and by influencing managerial decisions. One option is to design complex debt contracts with restrictions and covenants that directly limit the discretion of equity owners.[1] However, monitoring the compliance involves high effort and monitoring costs (Jensen and Meckling 1976). Creditors that hold

[1] See Section 2.3.3.2 for further details.

significant shares of a firm might also increase their direct influence on managerial decisions by becoming part of the supervisory board of a company (Dittman et al. 2009). A rising stake of a creditor likely enhances his incentive to gain influence on managerial decisions of a company (Jensen and Meckling 1976).

This dissertation investigates several facets of whether debt lending influences the managerial decisions of borrowers, and if so, how. More precisely, the thesis focuses on the influence of bank debt lending on accounting decisions and the corporate financing of debtors. Concerning corporate financing, the focus is not on restrictions or covenants in debt contracts as mentioned above, but on the influence of bank debt lending on the cost of debt and capital structure (represented by the volume of credit granting by banks) of firms. Alterations of the cost of bank debt and/or the capital structure might consecutively influence investment decisions of the respective companies. With regard to accounting decisions, the thesis analyzes whether an important corporate financing event, i.e., the event of borrowing new bank debt, creates an incentive for borrowers to alter their external annual statements. Accordingly, the central aim of the dissertation is to deliver empirical evidence that essential managerial decisions are not solely made by managers and equity owners but also influenced and driven by debt capital investors. This dissertation inspects selected aspects that have been ignored by research until now. In order to make a sophisticated statement about the influence of creditors on corporate decision making, particular emphasis of this dissertation is placed on the empirical examination of the corporate financing and the accounting behavior of *borrowers* (and not creditors).

German small and medium-sized enterprises (*SMEs*) are the objects of discussion. These companies are particularly suitable for the investigation of the influence of bank debt lending on managerial decisions, as they rely on an internationally outstanding financing concept. Their average equity proportion amounted to only 28 percent in 2012 (KFW Development Bank 2013). Traditionally, Germany is a bank-based economy where capital market financing is rather uncommon. Private debt provided by commercial banks is thus the central external financing source of German SMEs (Harhoff and Körting 1998; Achleitner et al. 2011; Gerum et al. 2011). According to statistics of the KFW Development Bank (2012), 42 percent of all annual investments in 2012 of German SMEs were financed by bank loans. Moreover, it is common for German SMEs to have long-standing relationships with one single housebank (Behr and Güttler 2007). Consequently, the German setting is optimal for analyzing whether a few powerful, external creditors influence corporate decisions.

This dissertation encompasses three separate empirical analyses, which inspect selected aspects of the influence of bank debt lending on certain managerial decisions of German SMEs. The first empirical study (Section 3.1) deals with potential changes to SME corporate financing due to the amendment of the Basel II Capital Accords for banks in 2007 and throughout the financial crisis. The Basel II Capital Accords encompass comprehensive alterations for banks concerning the credit assessment of debtors. These alterations might have led to higher costs and a higher risk awareness of banks. Based on a large

sample of archival accounting data of German SMEs, the first study of this dissertation aims to empirically investigate whether banks pass on possibly higher costs of capital provision to debtors in terms of tighter credit conditions. Thus, the study investigates whether regulatory changes negatively affect the cost of debt of SMEs. The study intends to control for potential influences of the financial crisis of 2007 and 2008 on corporate credit granting in an attempt to best separate the impending impact of Basel II. Until now, there has been no *ex-post* evidence regarding this research question for Germany. It is of high importance to identify potentially negative macroeconomic effects of Basel II with regard to the ongoing tightening of bank regulation. Basel 2.5 and Basel III go beyond Basel II and further exacerbate certain (capital) requirements for banks. If Basel II entails a negative effect for German SMEs, the planned intensification of regulation might lead to an additional negative impact.

The central topic of the second empirical study (Section 3.2) is the analysis of potential influences of bank debt lending on certain accounting decisions of German SMEs. Due to the high relevance of bank debt financing, credit institutions are likely the most important external stakeholders of SMEs besides state treasury. At least since Basel II, banks are required to base their credit assessment on objective ratings. These ratings commonly rely on financial data, extracted from financial statements. The importance of bank debt as a financing resource and knowledge about the importance of financial statements in a credit assessment might be an incentive for SMEs to direct their annual statements at this stakeholder group. More precisely, SMEs might strive to exploit their asymmetric information advantage over banks by manipulating earnings with the intention to achieve decent credit terms. Based on the same archival data set of German SMEs used in the first study, the present study attempts to uncover whether SMEs manipulate their earnings particularly in the periods prior to borrowing new bank debt. Moreover, the study empirically investigates whether a potential incentive for earnings manipulation is correlated with the extent of the dependence on bank debt. Finally, the study analyzes whether earnings manipulation is detected by banks or whether it is effective and influences the cost of debt of German SMEs. If earnings manipulation appears to be effective, this might be indicative of inefficiencies in bank lending. On the one hand, banks might already have included this distortion in their pricing. On the other hand, effective earnings manipulation that is accompanied by lower debt interest rates might lead to a mispricing of the loan portfolios of banks and/or to a miscalculation of the portfolio risk of banks due to distorted ratings.

The third empirical study (Section 3.3) intends to further analyze the research questions posed in study one and two. The empirical analysis is based on a survey of a comprehensive sample of German SMEs. By using the survey method, additional insights into qualitative effects of Basel II regulatory changes on SMEs bank debt lending can be gained. The survey aims to identify potential effects of Basel II on the requirements to obtain a loan (e.g., the effort to obtain a loan or changes of demanded collateral or covenants) and to verify or falsify the results concerning the impact of the reform on debt interest rates of study number one. Moreover, the survey intends to reveal whether SMEs intentionally use their

accounting discretion to optimize their annual statements directed at banks prior to raising new debt. The survey method is especially valuable in this context, as it enables a more direct assessment of incentives of SMEs behind certain accounting decisions instead of making inferences on behalf of aggregated archival data. In addition, the study analyzes whether SMEs manipulate real business activities prior to borrowing new bank debt.

The remainder of this dissertation is structured as follows: Chapter 2 contains a short theoretical foundation that is limited to essential aspects that are relevant to understand the hypotheses deduced in the subsequent empirical analyses. After a brief outline of the positioning of SMEs in Germany (2.1) there follows a description of the particularities of corporate financing of these companies (2.2). Section 2.2 also includes remarks on the Basel Capital Accords (2.2.2) and the financial crisis of 2007 and 2008 (2.2.3). Section 2.3 starts with an outline of the accounting system in Germany (2.3.1), which is followed by a general comment on earnings management (2.3.2) and a more specified one on earnings management of German SMEs in the context of bank debt financing (2.3.3). Chapter 3 is subdivided into three parts, i.e., the three mentioned separate empirical analyses. Section 3.1 analyzes the impact of Basel II and the financial crisis on bank debt financing of German SMEs. The second study (3.2) investigates whether German SMEs use measures of earnings manipulation in the context of bank debt financing. Section 3.3 contains the examination of the extensive survey of German SMEs. All three sections start with a short introduction, which is followed by the respective hypotheses development section and a description of the research design. Afterwards, empirical results are presented in all three chapters along with a brief summary of the main findings. Finally, Chapter 4 summarizes the major results of all empirical analyses and draws conclusions.

2. Theoretical Background

This chapter aims to provide the necessary informational background to ease the understanding of the hypotheses and results presented in the subsequent empirical analyses. Therefore, relevant aspects in the context of German SME corporate financing and accounting are illustrated. The chapter starts with a short description of the importance of SMEs in Germany in Section 2.1. Section 2.2 contains remarks about special characteristics of SME corporate financing in Germany, the Basel Capital Accords, and the financial crisis of 2007 and 2008. Section 2.3 briefly describes relevant framework conditions under which German SMEs prepare their annual financial statements. Moreover, the section encompasses declarations of various general concepts of earnings management and more specific inferences about the earnings management of German SMEs.

2.1. SMEs in Germany

“The Mittelstand, Germany’s thriving strand of midsized, family-owned export champions, are the envy of the world” (Financial Times 2012). According to statistics of the Federal Ministry of Economics and Technology (2013), German SMEs comprise significantly more hidden champions and are more

innovative than SMEs in other EU countries. Even in times of financial crisis in 2007 and 2008, Germany's SMEs outperformed counterparts of all other members in the EU27 in terms of annual growth in employment, real value added, and real productivity (European Commission 2012). Ayyagari (2007) presents data from the World Bank Review on Small Business Activities from the 1990s that discloses that the GDP per capita of German SMEs is also markedly higher in comparison to UK and U.S. SMEs. These figures display some of the causes why the German Mittelstand enjoys high international reputation.

SMEs account for around 99.6 percent of all companies in Germany in 2011 (Institute for Small Business Research 2014).[2] In figures, SMEs encompassed about 3.6 million firms that generated around 2.1 trillion euro of total turnover in 2011 (almost 37 percent of total corporate turnover and 54.8 percent of total net value added in Germany). Neglecting micro companies, SMEs amounted to 360,607 companies in 2011. Moreover, SMEs in Germany occupy 59.4 percent of all employees subject to social security deduction (Institute for Small Business Research 2014). Consequently, SMEs are indispensable to Germany's long-term economic success.

All empirical analyses in this dissertation rely on the SME definition of the EU recommendation 2003/361: SMEs are categorized into micro firms (less than 10 employees and either less than € 2 million of sales revenues or € 2 million of total assets), small firms (10-49 employees and either € 2-10 million of sales revenues or € 2-10 million of total assets) and medium-sized firms (50-249 employees and either € 10-50 million of sales revenues or € 10-43 million of total assets) (European Commission 2011).

2.2. Selected Aspects of SME Corporate Financing in Germany, the Basel Capital Accords and the Financial Crisis

Besides their economic importance, German SMEs are also distinguishable from other countries' SMEs in terms of their financial structure (Nelles and Klusemann 2003; Behr and Güttler 2007). Their particularities are examined in the next section. In addition, this chapter describes important regulatory changes that might have affected SME corporate financing. The presented empirical analyses are conducted on data from years 2003 to 2012. Unfortunately, the world economy was shaken by the financial crisis of 2007 and 2008. As the impact of the crisis might influence several empirical results, this dissertation devotes one chapter to this topic.

2.2.1. Particularities of SME Corporate Financing in Germany

German SMEs typically rely on a financing concept with a markedly low equity ratio. Thus, the corporate financing of German companies differs significantly from the corporate financing of U.S. companies (Hackethal and Schmidt 2000). Whereas U.S. SMEs have an equity ratio of approximately

[2] Definitions of SMEs by the Institute for Small Business Research, Bonn, differ slightly from those of the European Commission and include companies with fewer than 500 employees or € 50 million annual turnover. Financial figures did not change significantly during the last five years.

50 percent on average, SMEs in Germany commonly have average equity proportions of about 28 percent (Berger and Udell 1998; Behr and Güttler 2007; Vos et al. 2007; KFW Development Bank 2013).[3] Moreover, the financing of SMEs clearly differs from large companies. Berger and Udell (1998) state that the peculiarity of small business finance is due to informational opacity. In contrast to large companies, small firms do not receive much public attention, which implies that little becomes known about their contracting behavior.

Financial statements of small firms have only to be partially published and do not have to be audited by law.[4] Thus, SMEs often experience difficulties in building confidence and credibility with external investors (Diamond 1991). This explains why German SMEs rarely use equity and debt capital market financing (Achleitner et al. 2011). In addition, private equity and mezzanine capital do not play an important role in SME financing (Nelles and Klusemann 2003; Behr and Güttler 2007; Achleitner et al. 2011).[5] Hence, internal financing and *private* debt are the central financing sources of SMEs in Germany. Traditionally, Germany is a bank-based economy (Harhoff and Körting 1998; Gerum et al. 2011). Statistics of the KFW Development Bank (2012) reveal that about 42 percent of all annual investments in 2012 of German SMEs are financed by bank loans.[6] Consequently, banks belong to the most important external stakeholders of German SMEs. As consequence of the comparably high debt ratio, German SMEs have always been confronted with financial straits, non-investment grade ratings, and high costs of capital (Audretsch and Elston 1997; Börner et al. 2010).

Due to the conspicuous relevance of bank credit and its significant contribution to SME cost of capital, bank relationships are of utmost importance for German SMEs. It is common for companies to have long-lasting relationships with only one housebank or very few banks, i.e., relationship lending (German Federal Statistical Office 2010). Relationship lending is often theoretically explained by the reduction of asymmetric information between banks and firms over time. Economic theory states that a removal of asymmetric information can lead to a lowering of agency and transaction costs and thus be mutually beneficial. On the bank side, loan decisions are simplified by the more comprehensive provision of information as it is less likely that lenders will solely rely on financial statement data but rather on a complete set of financial reports to determine the creditworthiness of a firm. On the part of the company, loan costs, collateral requirements, and credit availability can be positively influenced (Petersen and Rajan 1994).

Besides theory, the empirical evidence about the effect of relationship lending on firms' debt costs is controversial. Some authors conclude that a one-bank-relationship is beneficial for company ratings and loan costs (Petersen and Rajan 1994; Berger and Udell 1995; Harhoff and Körting 1998; Machauer

[3] The equity ratio of 28 percent is valid for the year 2012. SMEs steadily increased their equity ratio during the last 10 years (KFW Development Bank 2013).

[4] See Section 2.3.1.

[5] About 92 per cent of German companies are family controlled. Approximately 89 per cent are also managed by the owner (Stiftung Familienunternehmen 2011).

[6] See Audretsch and Elston (1997) and Harhoff and Körting (1998) for a detailed examination of SME financing in Germany.

and Weber 1998; Lehmann and Neuberger 2001). Degryse and Van Cayseele (2000) state that SMEs in Belgium pay higher loan interest rates the longer a bank relationship has existed. They justify this increase by the growing information monopoly of the bank which might lead to hold-up problems. Other studies predict no difference to transactional banking, often justified by the higher costs of establishing and maintaining relationships (Elsas and Krahnen 1998; Baas and Schrooten 2006).[7] However, the influence of banks on corporate finance is undeniable and often even strengthened by the fact that banks are extensively represented on the supervisory boards of companies (Dittman et al. 2009).

2.2.2. The Influence of the Basel Capital Accords on SME Financing

The Basel Capital Accords are an internationally endorsed initiative for the regulation of the banking sector. Until now, there have been two revisions of the first accord. In the following section, relevant aspects of the three capital accords are presented that might influence SME corporate debt financing. In addition, a short summary of current impact studies of the regulatory changes on the real economy is provided.

2.2.2.1. The Basel Capital Accords

As a consequence of several bank crises in the 1970s, the newly founded Basel Committee on Banking Supervision passed the "Basel Capital Accord (Basel I)" in 1988. Its major goal was to improve the quality of banking supervision and to determine homogenous minimum capital requirements for bank lending in order to achieve consistent regulation of credit risks.[8] This guideline reached an equalization of the competition between banks and led to an equal treatment of credit borrowers of the same creditworthiness class no matter how risky the underlying commitment was. One adverse effect for which the Basel I accord was often criticized, was the incentive for banks to accommodate riskier commitments on average rather than diversifying their portfolio. By claiming equal underlying equity capital for all risk classes banks would obviously prefer riskier borrowers as they could pass on the costs of equity capital more easily to their clients by demanding higher interest rates. This criticism is often considered as an important trigger of a series of turbulences in the financial markets, initiating a revision of the Basel I accord in 1999 (Basel Committee on Banking Supervision 1988; Schuhmacher 2006).

Basel II entered into force on January 1, 2007, as a much more detailed version of Basel I and consisting of three pillars.[9] Pillar II deals with the supervisory review process and tries to identify the overall risk of a bank and the main influential elements on its risk situation. In Germany, Pillar II was translated into national law with the amendment of MaRisk *(Mindestanforderungen an das Risikomanagement*)

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[7] A vast strand of literature discusses further aspects and effects of relationship lending, see e.g., Berlin and Mester 1998; Boot and Thakor 2000; Degryse and Van Cayseele 2000; Elston 2003; Behr and Güttler 2007.

[8] Banks had to build up a required minimum quote of regulatory equity capital at the level of eight percent of their risk-weighted assets. The individual risk weights (RW) were determined by categories of the on-balance-sheet assets (Basel Committee on Banking Supervision 1988): cash, claims on governments and central banks: RW=0 percent; claims on banks incorporated in the OECD: RW=20 percent; loans fully secured by mortgage on residential property: RW=50 percent; claims on the private sector (including corporations) and other assets: RW=100 percent.

[9] For a more detailed explanation of the components of Basel II see for example Wilkens et al. (2001) or Szczesny (2003).

by the Federal Financial Supervisory Authority (*Bundesanstalt für Finanzdienstleistungsaufsicht* or *BaFin*).[10] Pillar III aims at market discipline by developing a set of disclosure requirements for banks, especially concerning their capital structure and risk profile.

Pillar I takes up the main aspects of Basel I by defining the minimum capital requirements of credit institutions for credit risk, market risk, and operational risk. The major objectives of Pillar I were to achieve a stronger orientation of a bank's equity capital requirement towards the actual underlying risks and to improve the internal risk management of banks. Whereas the principle of constantly underlying at least eight percent of regulatory equity capital to its risk-weighted assets was maintained, methods for determining the risk weights of assets changed. Risk weights were no longer predefined by debtor classes, but calculated for every single debtor (Basel Committee on Banking Supervision 2003a). The basic concept was that claims on corporations with a lower credit rating had to be backed with a higher amount of equity capital, which would generate higher costs for the bank. Ratings generally approximated the default risk of a certain company, which was determined by a detailed assessment of the company's current financial situation (Basel Committee on Banking Supervision 2004). Financial statements commonly play a key role in the rating procedure. According to the German rating agency Creditreform AG (2011a), a quantitative ratio analysis of the firm's capital structure and profitability essentially contributes to the company's rating. A comprehensive survey of German banks of Haller et al. (2008) unveils that financial statements account for up to 80 percent of the total credit decision. However, Brunner et al. (2000) show that quantitative, qualitative, historical, and forward-looking information plays a role in ratings.

Banks can choose between a modified version of the former standardized approach and the internal ratings based (*IRB*) approach for the calculation of risk weights.[11] Under the standardized approach, the risk weights of assets are based on assessments of external rating agencies. Risk weights for claims on corporations range from 20 percent for companies with an AAA rating to 100-150 percent for non-investment grade rated firms (Basel Committee on Banking Supervision 2003a). The IRB approach is premised on sophisticated internal ratings. If banks meet certain regulatory minimum requirements they are entitled to determine the risk weights of assets based on self-collected quantitative and qualitative criteria. Although the application of an internal rating might be disadvantageous in matters of inter-bank comparability, the benefits of permitting a more comprehensive appraisal of the debtor and the incentive for banks to develop a reasoned risk management are not to be condemned.

Depending on the level of sophistication of the internal risk management, banks can be certified to use either the Foundation IRB or the Advanced IRB. One major requirement is that the chosen approach is also used for loan pricing and internal risk management. By being certified to use Foundation IRB, banks are allowed to individually assess a debtor's probability of default whereas other risk parameters,

[10] For details see the Federal Institute for the Supervision of Financial Services (2014).
[11] For details about the different approaches see Szczesny (2003) and the Basel Committee on Banking Supervision (2003a).

e.g., the loss-given default are prescribed by the regulatory authority. If banks meet stricter standards, they may use Advanced IRB, which also entitles them to determine the loss-given default and the expected exposure at default of a certain debtor. For both approaches, the minimum equity capital requirement is then calculated by the product of the exposure of default, the risk weight of assets, and the fixed rate of eight percent equity capital. The risk weight of assets is determined by the specific loss-given default, the probability of default, and the effective maturity of a particular loan (Schäfer 2003; Szczesny 2003).[12] According to estimations of the Federal Association of German Banks (2010) about 60 percent of all corporate loans in Germany are rated under IRB, although only 49 credit institutions are permitted to use this approach (Federal Institute for the Supervision of Financial Services 2013).

In contrast to Basel I, the New Basel Capital Accord (Basel II) contains special relief for SMEs. Under IRB, banks can choose to treat SME credit as retail if the overall amount of credit exposure does not exceed one million euros and stays below 0.2 percent of the bank's total retail portfolio (Redak and Tscherteu 2002; Basel Committee on Banking Supervision 2004). Retail loans normally refer to loans to individuals, such as credit cards, residential mortgages, or home equity loans. As long as banks do not differentiate between the treatment of loans to individuals and loans to SMEs, they are entitled to assign SMEs to this credit category (Allen et al. 2004).[13]

As reaction to the financial crisis of 2007 and 2008, several regulatory initiatives were originated to further stabilize the banking sector. Those initiatives include Basel 2.5 with additional capital requirements for market risks, a newer version of MaRisk that adds on the minimum requirements for the internal risk management of banks, and Basel III. The latter revision of the Basel Accords mostly prescribes stricter guidelines concerning the quality of regulatory equity capital and additional leverage and liquidity ratio demands for banks. One aim of the reform is to organize the determination of regulatory equity capital in a more transparent way for all market participants (Quignon 2011).[14]

2.2.2.2. The Impact of Basel II and Basel III on the Real Economy

Studies about the impact of the Basel II reform on the real economy are rare. One strand of recent literature tries to measure the effects on banks. The third quantitative impact study (QIS 3) was conducted by the Basel Committee of Banking Supervision (2003b) in 2002 and involved over 350 banks in 43 countries. Results concerning changes to capital requirements of banks are unclear. Some banks report an increase and others a decrease of required equity capital due to Basel II (Basel Committee on Banking Supervision 2003b). Schwaiger (2004) comes to a similar conclusion. Blum (2008) identifies that an additional restriction of Basel II regarding the leverage ratio of banks would improve the standards' effectiveness.

[12] For a detailed description of the calculation of capital requirement see Basel Committee on Banking Supervision (2003a).
[13] The risk weighting factor for retail loans is 75 percent (Basel Committee on Banking Supervision 2004).
[14] For details about Basel III see for example Moody's Analytics (2011), Quignon (2011), Hartmann-Wendels (2013), German Central Bank (2014).

Concerning the effects of the retail categorization for SMEs on the capital requirements of banks previous research concludes that, if classified as retail, less minimum equity capital is required from banks for given default probabilities. This distinction is justified by the assumption that small business loans and retail credits are less sensitive to systematic risks (Dietsch and Petey 2004). Altman and Sabato (2005) further hypothesize that the supply of credit for SME can be expanded, and this may imply a lower cost of credit. They also developed a credit risk model for U.S. SMEs that confirms their results (Altman and Sabato 2007). However, Jacobson et al. (2005) explicitly analyze the credit portfolios of two Swedish banks and conclude that regardless of whether they are classified as retail or corporate, no difference in capital requirement for SMEs is observable.

A further stream of literature concentrates on the fact that Basel II might have pro-cyclical effects on bank behavior in the economic cycle and thus on lending to the real economy. Nevertheless, the results of the investigations are ambiguous (Heid 2007; Saurina and Trucharte 2007; VanHoose 2007). Concentrating on further macroeconomic effects of Basel II, one major study by the Bank for International Settlements in 2010 displays an additional amount of equity capital needed by banks of over 165 billion euros (Bank for International Settlement 2010).

Scellato and Ughetto (2010) carried out an analysis based on a survey of 2,168 Italian SMEs in 2003 that evaluated whether Basel II might lead to financial constraints on investments for innovative SMEs. They conclude that Basel II might have a negative effect on the capital costs of young innovative SMEs. Results of a theoretical analysis of Repullo and Suarez (2004) indicate that low risk companies are rewarded with lower loan rates under IRB, whereas risky firms will face higher loan costs. Saurina and Trucharte (2004) do not find significant changes in corporate lending for Spanish SMEs due to Basel II. Nonetheless, the only quantitative study that focuses on *ex-post* measureable effects on the company side is a survey of SMEs in the period of 2007 to 2010 executed by the OECD in 18 countries. Results indicate an increase in the debt interest rates of 34 to 54 percent for the questioned SMEs, while only 10 to 29 percent of the survey participants faced decreasing interest rates. In addition, 34 to 39 percent of the surveyed SMEs complained about increased collateral (OECD 2012). However, this study does not include SMEs in Germany.

Basel III will be gradually implemented from 2013 to 2019. Nevertheless, international institutions have already begun carrying out studies on the economic impact of the Basel III amendment. The Basel Committee on Banking Supervision estimates a rise in lending spreads of about 13 basis points across countries (Basel Committee on Banking Supervision 2010b). That approximation is confirmed by an extensive impact study by the OECD, which states that lending spreads will face a rise of approximately 15 basis points (Slovik and Cournède 2011). Cosimano and Hakura (2011) draw similar conclusions.

The German Association for Small and Medium-Sized Enterprises conducted an investigation focusing on the impact on German SMEs and came to the conclusion that Basel III will decrease the volume

of loans to SMEs by 2.47 percent and increase interest spread by 54 basis points until 2019 (German Association for Small and Medium-sized Businesses 2011a). A comprehensive study of the Bavarian industry association in cooperation with the Technical University of Munich predicts an increase of the amount of interest expenses that need to be paid by companies in the EU of 14 to 24 billion euros. Moreover, the authors postulate an *extra* burden of 25 to 40 basis points for loans to *SMEs* in comparison to big company credits (Verband der Bayerischen Wirtschaft 2012).

Hartmann-Wendels (2013) further points out that a far-reaching restriction of total credit granting to corporations as consequence of Basel III in Germany cannot be excluded. This is especially true for the corporate lending of big banks. Overall, higher interest rates might lead to a lower credit demand and a decrease of investments. The Bank for International Settlement (2010) predicts a negative impact of the reform on the real economy of about 10 basis points per additional percent of required equity capital. Estimations of the Institute of International Finance (2011) even go beyond with an expected decrease of the GDP of 3.2 percent in total for the following five years for the U.S., the Euro area, Japan, the UK, and Switzerland.

2.2.3. The Impact of the Financial Crisis of 2007–2008

The effects of the financial crisis of 2007 and 2008 on the global economy are complex.[15] Starting with a subprime-crisis in the U.S. in 2007, the first mentionable impact of the crisis on the real economy was noticeable in autumn 2008. The bankruptcy of the investment bank Lehman Brothers in September 2008 initiated a collapse of stock markets worldwide. Many banks had to admit losses running into billions due to extraordinary depreciation on bad mortgage loans. The interbank market dried up as banks lost their mutual trust (Illing 2013). Consequently, bank refinancing interest rates rose to a maximum of 4.25 percent in September 2008 (German Central Bank 2013a). The real economy in Germany reacted with a harsh slump of incoming orders in autumn 2008 and sales in winter 2009.[16]

High refinancing interest rates in 2008, mistrust between banks and the economic downturn raised concerns about potential financing restrictions on the credit market that may have led to a credit crunch. A credit crunch can generally be driven by both the demand and supply side. On the demand side, companies might have requested fewer loans owing to a reduction of investments in prospect of an economic collapse. Puri et al. (2011) argue that this is the case for German retail credit demand in 2008. In contrast, Ivashina and Scharfstein (2010) state that there was a “run” on corporate bank credits at the peak of the crisis to ensure access to new liquidity. Focusing on the supply side, banks might have had difficulties in obtaining access to refinancing capital and thus might have granted fewer loans to corporations. Ivashina and Scharfstein (2010) observe this effect in the U.S. during the crisis. However, neither a drop in credit demand nor a clear decline of granted loans by banks is visible from aggregated data for Germany. Indeed, according to statistics of the German Federal Bank (2013b), the aggregated

[15] See Lo (2012) for a comprehensive literature review of the financial crisis.
[16] See German Federal Statistical Office (2013) for detailed information.

credit volume granted by German banks to German companies rose significantly in the years 2008 and 2009. Nevertheless, though a credit crunch is not visible from aggregated data, it could still exist (Cohen-Cole et al. 2008).[17]

Federal banks reacted to the threat of a credit crunch and a recession by sharply lowering interest rates. Within nine months, refinancing interest rates dropped to one percent and remained at this level till 2011 (German Central Bank 2013a). National governments responded by creating rescue packages for distressed companies and countries amounting to over one trillion euro. Nonetheless, the GDP in the EU-27 states declined sharply between 2008 and 2009, i.e., by 4.3 percent (Eurostat 2013).

2.3. Selected Aspects of SME Accounting in Germany

The following section briefly describes relevant aspects regarding the accounting standards valid for SMEs in Germany (Section 2.3.1). In addition, the section declares how and in which form companies are able to exercise their legally permitted accounting discretion (Section 2.3.2). These general statements are then customized to SMEs in Germany (Section 2.3.3).

2.3.1. General Accounting Framework Conditions

As a classical representative of a continental European accounting system, accounting in Germany is based on code-law, embodied by the German Commercial Code (*Handelsgesetzbuch* or *HGB*). In general, legal enforcement in Germany is considered to be strong (Leuz et al. 2003). Moreover, corporate governance in Germany is stakeholder-oriented. One central aspect of the German generally accepted accounting principles (*GAAP*) is the principle of prudent accounting, which aims at protecting investors and preserving equity. This principle is transcribed by a conservative calculation of earnings (Szczesny and Valentincic 2013). In contrast to the "true and fair view" concept followed by the International Financial Reporting Standards (*IFRS*), losses tend to be recognized more timely than revenues. Moreover, balance sheet items are generally evaluated conservatively under German GAAP (Leuz and Wüstemann 2003; Szczesny and Valentincic 2013).[18] Hence, Ball et al. (2000) and Ball and Shivakumar (2005) classify the German accounting system as having a high level of unconditional conservatism.

Traditionally, financial statements of German firms are closely linked with tax statements (Haller 2002). Regulated by § 238 HGB and § 140 of the Tax Code (*Abgabenordnung*), German book-keeping companies also need to prepare their annual tax statements on the basis of German GAAP financial statements. The "authoritative principle" (*Maßgeblichkeitsprinzip*, § 5 Income Tax Act) prescribes that tax statements have to be prepared on the foundation of commercial statements. Thus, accounting decisions in commercial statements influence tax statements in the same manner. The obligation to prepare tax statements for tax offices declares why tax offices are likely the second most important addressee of

[17] This and possible resulting effects on the debt capital costs of German SMEs will be discussed in Section 3.1.4.

[18] However, Hellmann et al. (2013) state that German accounting is drifting towards an Anglo-American accounting system since the Modernization Act of German GAAP in 2009.

annual statements of German SMEs besides banks. Until the amendment of the Accounting Law Modernization of German GAAP in 2009 (*Bilanzrechtsmodernisierungsgesetz* or *BilMoG*), the "reverse authoritative principle" (*Umgekehrte Maßgeblichkeit*) was responsible for an additional unification of commercial and tax statements.[19] It regulated that special tax rules, e.g., tax depreciation, had to be simultaneously applied in commercial statements. Consequently, the German accounting system has often been described as a classical one-book accounting system (*Einheitsbilanz*) (Schanz and Schanz 2010).

Although firms have the legal option to prepare two separate statements, they likely avoid this due to higher costs of preparation (Ball and Shivakumar 2005). If SMEs prepare two statements, they are obliged to produce a "transition report" (*Anpassungs-* or *Überleitungsrechnung*) for tax offices (Szczesny and Valentincic 2013). The abolishment of the reverse authoritative principle by BilMoG reduces tax law influences on commercial statements that might distort the realistic presentation of the economic performance of a firm. In addition, the BilMoG limited the existing authoritative principle (Deutscher Bundestag 2008).

Apart from the reduction of tax influences, one aim of BilMoG is to create a competitive, cheap, and simple accounting alternative to the IFRS. This should be achieved by the convergence of German GAAP with IFRS.[20] In this regard, BilMoG aims to reach a more decision-useful financial reporting information level for financial statement addressees (e.g., banks) in comparison to the previous German GAAP (Deutscher Bundestag 2008; Fülbier and Klein 2013). As management ownership is common for German SMEs, companies might not have targeted a highly decision-useful *external* presentation of their actual economic situation (Szczesny and Valentincic 2013).[21] However, the formalization of credit ratings in the course of Basel II and the legal obligation to publish financial reports in the German Federal Gazette (*Bundesanzeiger*) caused a significant gain of importance of the informational function of financial reports (Göllert 2008; Fülbier and Gassen 2010; Fülbier and Klein 2013). The more useful information level should be achieved by a reduction of discretion in the recognition and valuation of assets, and elimination of disclosure options (Melcher and Schaier 2009; Böcking and Dutzi 2010). In summary, the new regulatory changes caused a divergent development from the previous one-book accounting approach towards a two-book accounting approach. This separation allows for the reduction of a potential conflict of interest between tax saving and pleasing banks by a separate optimization of both statements, directed at the respective addressee (Haller et al. 2009; Zwirner and Künkele 2012).[22]

[19] Most rules of BilMoG have to be applied by firms beginning in 2010.

[20] For detailed discussions about the internationalization and harmonization of accounting, the adoption of IFRS and the draft of IFRS for SMEs and their consequences and implications, see for example Eierle et al. 2007, Fülbier and Gassen 2010, and Fülbier and Klein 2013.

[21] About 92 percent German companies are family controlled. Approximately 89 percent are as well managed by the owner (Stiftung Familienunternehmen 2011).

[22] Even if bank debt financing is of subordinate importance for some SMEs the preparation of a one-book account remains difficult unless the companies ignore certain possibilities of tax optimization (e.g., special tax depreciations).

BilMoG might thus contribute to a reduction of the informational asymmetry between firms and debt capital investors.[23]

In addition, the reform is directed at facilitating accounting for SMEs and sole traders. Sole traders were recently exempted from their legal obligation to keep books if their annual revenues stayed below € 500,000 and their net profits were beneath € 50,000 for two consecutive years (§ 241 a HGB). In general, only corporations are obliged to disclose their GAAP financial statements in Germany. The extent of required disclosure of annual statements is graduated by company size and legal form (§ 267 HGB). Small corporations are only required to disclose their balance sheets plus annex. In contrast, medium-sized and large corporations are obliged to publicly unfold additional components of their annual statements (§ 326 HGB).

Financial statements based on the local GAAP of small corporations do not have to be audited by law (§ 316 HGB). However, tax statements have to be submitted to tax authorities by all corporations and may be audited at a later point of time. Consequently, it is common for SMEs to outsource the preparation of annual statements to tax advisors (European Commission 2008). Although an audit is possible for all corporations, independent of their size, the actual probability of an audit is low for small companies (Szczesny and Valentincic 2013).

2.3.2. Earnings Management in General

German GAAP offers plenty of possibilities for accounting discretion, expressed by options concerning the recognition and valuation of balance sheet items. This discretion can be used by managers to report earnings that differ from their true economic value. Both a conservative and an income-increasing bias are conceivable. Academics defend both ways of understanding this distortion as inducing positive or unfavorable economic effects on the quality of financial reports (Ewert and Wagenhofer 2012). Hence, the extent of applied earnings management is often used as one proxy for measuring the quality of earnings in financial reporting. According to Dechow et al. (2010), high quality earnings are those that contain better information about specific aspects of the financial performance of a company that are relevant for a particular decision made by a particular decision-maker.[24]

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[23] New accounting options encompass, for instance, tax saving depreciation options that can be chosen in tax statements without having negative consequences on rating relevant financial indicators caused by lower book values of assets in commercial statements. A further option is the newly adopted possibility of capitalizing development costs (§ 248 (2) HGB). Young and innovative firms can use this option to recognize intangible assets in order to signal their economic value to banks and to improve their ratings. A similar effect could be obtained by the new possibility to capitalize tax loss carry forwards as deferred tax assets (§ 274 (1) HGB). The capitalization rule for tax loss carry forwards (§ 274 (1) HGB) does not provide an actual option concerning the capitalization of tax loss carry forwards. It is rather an obligation when an offsetting of the tax loss carry forwards with profits is probable during the next five years. However, the assessment of this fact is difficult to control for an external auditor, as it depends on the appraisal of the firm. Thus, this rule can be seen as a capitalization option right. Compare § 274a HGB regarding the exemption of small corporations from the obligation to record deferred taxes. Both capitalization options are not allowed in tax statements. Hence, a capitalization does not result in a higher tax income and higher tax liability. For a detailed overview of single opportunities of a separate optimization see Zwirner and Künkele (2012).

[24] See Dechow et al. (2010) for an extensive comment on earnings quality. This study does not aim to draw conclusions about the quality of financing reporting of German SMEs, but focuses on the analysis of potentially applied earnings management methods and motives behind this behavior.

On the one hand, accounting choices can be used by managers to make financial statements more informative. If managers choose certain expensive accounting choices over inexpensive ones they are able to credibly signal their good financial performance to addressees (Healy and Wahlen 1999; Dechow and Skinner 2000). This understanding of the term "earnings management" insinuates good intentions of managers with regard to the presentation of financial statements and likely explains why regulators permit accounting choices in general (Ewert and Wagenhofer 2012).[25]

On the other hand, Healy and Wahlen (1999) define earnings management as occurring "[…] when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting practices." This definition is in line with the understanding of the term "earnings management" as accounting discretion that can be used by managers to intentionally obscure the real economic performance of a company by systematically making use of the legal scope of accounting principles in order to advantageously influence contracts or stakeholders (Leuz et al. 2003).

Generally speaking, Beatty and Harris (1998) note that earnings management may arise from information asymmetry. Information asymmetry exists if the management (controlling owner) has more relevant information about the company's operations than the equity owner (non-controlling owner). This asymmetry may lead to higher costs of external financing, suboptimal investment decisions, and biased business valuations (Jensen and Meckling 1976). Agency problems may occur when existing information asymmetry is exploited by the better-informed party over the less informed party's expense in order to promote private interests.

Jensen and Meckling (1976) further subdivide agency problems into two groups. Type I agency problems originate from a separation of ownership and management. The closer the relationship between owners and managers, the less severe is the internal hidden-action and hidden-information agency problem with which companies have to deal.[26] In contrast, a loose relationship might provide the incentive for managers to assert their private interests, e.g., to maximize their compensation at the owners' expense. Type II agency problems arise from a separation of internal, controlling (e.g., equity owners) and non-controlling (e.g., debt holders) stakeholders. Controlling managers and owners might strive for private rents and control benefits (e.g., high returns of risky investments).[27] If non-controlling stakeholders discover these benefits, they will probably interfere (e.g., debt holders by imposing tighter credit conditions on debtors). Therefore, the incentives of influential owners and management to cover their benefits

[25] See for example Dechow and Skinner (2000) for a more detailed discussion about the term "earnings management". Ewert and Wagenhofer (2012) comprehensively discuss the interconnections between earnings management, conservatism and earnings quality.

[26] For a more detailed explanation of these agency problems, please see Jensen and Meckling (1976).

[27] Please also see statements in Chapter 1.

by using means of earnings management in order to avoid external interference might be strong (Leuz et al. 2003; Ali et al. 2007).

The more important the disclosure on economic performance data is, e.g., for an investment decision by an external stakeholder, and the more important the stakeholder, the higher is the incentive for managers to use measures of earnings management to cover up bad performance or to meet certain earnings targets to positively influence a stakeholder's decision (Leuz et al. 2003). However, the effectiveness of earnings management depends on the degree of asymmetric information advantage the accountant has over the contract partner. It builds on the assumption that stakeholders do not detect earnings management or are not able to detect earnings management because of a restricted access to relevant insider information (Beatty and Harris 1998; Healy and Wahlen 1999; Dechow and Skinner 2000).

2.3.2.1. Real Activities Versus Accruals Management

Accounting discretion comprises both real activity management, which distorts cash flows, and accruals management, which distorts accruals (and consequently earnings).[28] The basic intention of accrual accounting is to ease investors' assessment of a company's economic performance by applying accounting principles like matching or revenue recognition. For instance, other things equal, a temporary decline in inventory leads to a current decrease of accruals and a current increase of cash flows from operations, followed by a decrease of cash flows from operations in the subsequent period. Hence, cash flow effects reverse over time. As those noisy alterations of cash flows are balanced by accruals, reported earnings tend to be smoother. Reported earnings are considered to deliver more useful information for investor's evaluation and contracting purposes (Dechow and Skinner 2000; Ball and Shivakumar 2005; Ball and Shivakumar 2006).

However, the choices of accrual accounting depend on the individual management and therefore provide discretion for opportunistic earnings management, which can lead to a misstatement of the real economic performance of a firm. For example, managers can choose between several methods for the valuation of inventories that finally lead to different amounts of earnings.

This kind of earnings management is commonly analyzed by using models that separate the proportion of accruals that is assumed to be abnormal from the normal part. Dechow et al. (2010) identify some of the most popular models for measuring accrual manipulation as the Jones (1991) model, the Modified Jones model (Dechow et al. 1995), the Dechow and Dichev approach (2002), and the Francis et al. model (2005).[29] The basic assumption behind these models is that a certain amount of accruals reflects the fundamental performance adjustments that are normal (e.g., a certain level of depreciation) for a certain company with certain firm characteristics (e.g., industry affiliation). Deviations from this normal level,

[28] Note that accruals management underlies the assumption that cash flows are free of manipulation, although there is evidence that this is not the case (e.g., Roychowdhury 2006).

[29] Models for measuring earnings management by abnormal accruals vary. As this dissertation does not apply most these models, they are not described in detail. See for example Dechow et al. (2010), Dechow et al. (2011), or Dechow et al. (2012) for comments on model alternatives and their suitability for tackling earnings management.

i.e., the abnormal or discretionary component, are assumed to be deliberately induced by measures of earnings manipulation. These methods suggest that the abnormal part represents an element of earnings that is consciously manipulated by managers and of low quality (Dechow et al. 2010).

A more recent study by Dechow et al. (2011) that examines the misstatements of financial statements of U.S. companies in the period of 1982 to 2005 (Accounting and Auditing Enforcement Releases of the U.S. SEC) reveals that those discretionary accruals models in fact tend to have a little power to identify earnings manipulation. They recommend using models that rely on total accruals or working capital accruals for the examination of manipulation.[30]

According to Roychowdhury (2006), real earnings manipulation is defined as "departures from normal operational practices, motivated by managers' desire to mislead some stakeholders into believing certain financial reporting goals have been met in the normal course of operations." Real activities management becomes real activities manipulation if the management pursues this track on a level that is considered to be above normal under the given economic circumstances of a company. This approach directly alters cash flows and only in some cases accruals. Real activities offer greater discretionary scope for manipulation than accruals. Hence, real activities manipulation is more difficult to detect for outsiders. Typical measures of real earnings manipulation include the postponing of a cost-intensive project into the subsequent period or the granting of discounts to boost sales at the end of the fiscal year.

Real activities and accruals management do not rule each other out but are used as substitutes depending on the costs and consequences of the application of the particular measure (Zang 2012). Whereas real activities management comprises a distortion of business transactions before the preparation of annual accounts (*ex-ante*), accruals management refers to measures that are applied *ex-post* on existing business figures, e.g., by exercising discretion in the recognition of balance sheet items. Real earnings manipulation usually involves higher economic costs compared to accruals management, as it might have a bigger impact on the future economic objectives of a company. For instance, sales discounts might accelerate sales in the current period but may tend to be lower in sum compared to the sales level that could have been achieved under normal circumstances without discounts during the subsequent period (Roychowdhury 2006; Ewert and Wagenhofer 2007).

Previous empirical research widely focused on the analysis of accrual management. Dechow et al. (2010) give an extensive overview of current research in this field. However, a comprehensive survey of over 400 executives reveals that 80 percent of the questioned managers use measures of real earnings management, but measures of accruals management are rarely used to achieve desired accounting numbers (Graham et al. 2005). This might be because real earnings management is easier to hide from external stakeholders and probably more effective than accruals management in reaching certain earnings

[30] A recent comment from Ball (2013) supports this attitude.

targets. Executives seem to accept high economic costs and potential long-term effects of real activities management in order to meet short-term objectives, e.g., better loan conditions.

One important goal of real activities and income-increasing accruals management might be to meet certain earnings targets. It is especially relevant to managers if missing the benchmark is linked to important economic consequences for the company, e.g., negative stock reactions. Since publication of the work of Burgstahler and Dichev (1997), who provide large sample evidence concerning a kink in the distribution of reported earnings around the zero threshold, accounting researchers have assumed that the avoidance of losses is an indication of earnings management (Dechow et al. 2010). Degeorge et al. (1999) state that besides reporting positive profits, profit growth and meeting analysts' expectations are important thresholds that determine earnings management. The extensive summary provided by Dechow et al. (2010) indicates mixed evidence regarding whether loss avoidance is an indication of earnings management. The evidence of the connection between meeting analysts' forecasts and earnings management, however, confirms the assumption that target beating is linked to earnings management. Evidence concerning the consequences of whether meeting or failing earning targets is desirable in the context of better performance is mixed.[31]

2.3.2.2. Conservatism

Although conservatism – similar to earnings management – also leads to a distortion of financial figures, the two concepts are premised on different assumptions. While earnings management arises from individual accounting choices, (unconditional) conservatism emerges from the adoption of entire accounting standards (Ewert and Wagenhofer 2012).

Conservatism has been in the focus of accounting literature at least since Basu's (1997) paper that brought forth counterintuitive results concerning the incorporation of news in earnings. His concept of conditional conservatism involves the asymmetric timeliness of earnings reflecting good and bad news.[32] Basu (1997) states that accounting tends to incorporate bad news more quickly in earnings than good news, which is reasoned by the higher requirement to verify good news (e.g., unrealized gains) compared to bad news (e.g., unrealized losses).[33] In contrast, the concept of unconditional conservatism is not dependent on sudden news on earnings but is a general bias towards choosing accounting methods that result in relatively low book values of net assets. It is achieved by an acceleration of expenses and a deceleration of income recognition. Consequently, average net income and the book value of equity are lowered by this bias. This understatement commonly leads to a buildup of accounting slack.

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31 See Dechow and Skinner (2000) and Dechow et al. (2010) for an extensive related literature overview.

32 See Watts (2003) for a more detailed definition of conditional conservatism and a deeper discussion concerning economic reasons.

33 Basu's (1997) model measures earnings as a function of equity market returns. It assumes efficient markets and that accrued losses are reflected in returns. See for example Dechow et al. (2010) for a discussion of specific issues of Basu's (1997) model.

Conditional and unconditional conservatism are considered to be disjunctive concepts. Accordingly, as unconditional conservatism is regarded as preceding conditional conservatism, a rather high level of unconditional conservatism would involve a rather low level of conditional conservatism (Penman and Zhang 2002; Beaver and Ryan 2005; Ball and Shivakumar 2005; Gassen et al. 2006).

From an economic perspective, conditional conservatism can be explained by several theories. First, Watts (2003) postulates that conditional conservatism supports efficient debt, compensation and corporate governance contracting. The stricter requirement for verifying gains over losses and the delay of the recognition of gains compared to losses are optimal for contracts' performance measures, as they avoid an overstatement of net assets and earnings. That, in turn, reduces the likelihood of contract violation. In addition, conservatism decreases the litigation costs of shareholders, reduces the present value of tax payments, and lessens political costs of financial reporting standard setters and regulators (Watts 2003). Dechow et al. (2010) note that timely loss recognition is also determined by the demand of equity investors for decision usefulness. They further quote that equity markets seem to believe that conditional conservatism improves earnings quality. However, there is a lack of evidence concerning the question of whether this is just a perception of equity investors or whether conditional conservatism is really desirable in the context of decision usefulness.

In contrast to conditional conservatism, the economic role of unconditional conservatism is more opaque. Ball and Shivakumar (2005) question a contracting benefit of unconditional conservatism. They suggest that rational contracting partners would see through and reverse this bias. Consequently, they consider unconditional conservatism as being inefficient (if the bias is not discovered) or at best neutral (if the bias is discovered). In addition, Beaver and Ryan (2005) mention that the consequent buildup of reserves increases the scope of discretionary accounting that managers can apply. For a more detailed discussion about the justification and potential benefits of conservatism and relationship of earnings management with earnings quality, see Ewert and Wagenhofer (2012).

2.3.3. Earnings Management of German SMEs in the Context of Debt Contracting

The previous chapter described several forms of earnings management that are conceivable in general. However, extensive literature has identified that earnings management is not applied in a homogeneous way; it varies between companies due to specific incentives and influence factors. There is broad evidence that reveals certain factors that are likely to drive earnings management. Among those factors are differences between diverse institutional settings, company specific characteristics, or the influence of certain stakeholders. The following summary of previous evidence is limited to aspects that are relevant for the later presented empirical analyses.

2.3.3.1. Institutional and Ownership Structure Influences on Earnings Management of German SMEs

Previous literature identified that the characteristic of earnings management is strongly influenced by a country's institutional and capital market structure. Ball et al. (2000) point out that earnings are less timely and less conservative in code-law countries compared to common-law countries in incorporating losses. They predict that information asymmetry in code-law countries is rather dissolved by strong accounting standards and strict enforcement. In contrast, conservatism appears to be a willingly utilized instrument to lower information asymmetry in common-law countries. The study was carried out on more than 40,000 firms in seven countries.

Bushman and Piotroski (2006) support Ball et al. (2000) by finding that earnings are less timely for countries that are characterized by weak investor rights and judicial systems of low quality. Results of a cross-country analysis of Leuz et al. (2003) indicate that countries with a less-developed stock market and concentrated ownership tend to have higher levels of earnings management, gauged by income smoothing, loss avoidance and the magnitude of total accruals.[34] They illustrate this with the justification that few influential owners try to cover private control benefits from external stakeholders by measures of earnings management.

Burgstahler et al. (2006) examine the differences between private and public companies' earnings management within 13 European countries. They conclude that the intensities of earnings management – measured by income smoothing, loss avoidance, and the magnitude of total accruals – are higher for private firms. This distinction is based on different reporting incentives of the compared groups. The authors argue that dispersed owners of public companies have a greater demand for disclosed information than owners of private firms, as the latter tend to have closer relationships and a more intensive exchange of information with the management. Because the demand of capital markets for earnings informativeness is higher, public firms seem to avoid the management of earnings. Coppens and Peek (2005) find that in six out of eight investigated European countries, private firms avoid the disclosure of small losses. However, loss avoidance does not seem to be an incentive for companies in countries with a tight relationship between financial and tax accounting.

Ball and Shivakumar (2005) compare the level of conservatism of private and public firms. As a consequence of the lower demand for external disclosure, they postulate that reported earnings of private firms are less informative and less timely than those of public ones. Nevertheless, they do not claim that regulation should demand a higher level of information provision. Instead, they argue that lower quality earnings are in this case an optimal economic outcome, taking the costs of disclosure and a lack of demand into consideration.

[34] Income smoothing encompasses accounting choices that decrease the fluctuation of reported earnings around a level that is assumed to be normal for a certain company (Moses 1987). This dissertation does not analyze income smoothing of German SMEs. See Dechow et al. (2010) for a broad overview of related literature.

A further investigation by Peek et al. (2010) concerning the differences of private and public firm reporting reveals that the demand of lenders for conservatism increases when relationship lending loses importance. Hence, conservative accounting tends to be more pronounced for larger, public firms. Nichols et al. (2009) investigate the difference in degrees of conditional conservatism between public and private banks. Congruent with Ball and Shivakumar (2005), they conclude that earnings reported by private banks are less conservative.

In Germany, private companies are predominant.[35] Hence, stock markets are less developed and have weak investor rights compared to countries like the U.S. or the UK (Leuz et al. 2003). Both public and private companies prepare financial statements based on the same accounting standards, regardless of their size.[36] However, their statements address different stakeholder groups (Ball and Shivakumar 2005). Public companies tend to rely on a fragmented financing structure by various equity investors. This approach demands a high level of publicly disclosed information to allow numerous investors to evaluate the firm's economic situation. Accordingly, the fragmented structure of investors inclines to lead to type I agency problems between managers and stakeholders (Jensen and Meckling 1976; Ali et al. 2007).

Unlike public companies, private firms are dominated by few owners with generally close relationships with the management. Moreover, bank debt financing is common (Leuz et al. 2003). This is especially true for German SMEs – about 92 percent of which are family controlled, and approximately 89 percent are managed by the owner (Nelles and Klusemann 2003; Behr and Güttler 2007; Stiftung Familienunternehmen 2011). This implies that type I agency problems between owners and managers are rather low (Ali et al. 2007). Tight relationships between firms and their few investors promote an intensive direct communication and insider access to corporate information instead of encouraging detailed public disclosure of financial statements. The low demand for public information thus commonly results in a disclosure of annual statements limited to what is legally required (Ball et al. 2000; Leuz and Wüstemann 2003; Ball and Shivakumar 2005; Burgstahler et al. 2006). Consequently, type II agency problems between controlling owners and external stakeholders are rather high for private firms and even higher in a relationship-based system (Leuz et al. 2003; Leuz and Wüstemann 2003; Ali et al. 2007). Overall, the high ownership concentration, close ties between owners and management, and the high dependence on a few external investors in German private SMEs lead to low type I agency problems but high type II agency problems. The main addressees of external financial reporting besides the state treasury are most likely influential debt borrowers, i.e., banks.[37]

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35 There are only 945 listed (and over 970,000 unlisted) companies in Germany in 2012 according to the DAFNE database.

36 However, the extent of legally required disclosure is graded by company size as mentioned above.

37 Previous literature has focused on the influence factors and determinants of external financial reporting in general. Ball et al. (2008) and Holthausen and Watts (2001) suggest that financial reporting is primarily demanded by debt markets, and not by equity markets. As balance sheets usually do not reflect the market value of assets, but book values, they are not a demanded source for direct valuation for equity investors. In contrast, debt contracts are often based on reported financial statements that exclude items that go beyond the book value of assets, e.g., goodwill. These items are excluded because they are not individually salable in the case of liquidation. Thus, their value is set to zero (Holthausen and Watts 2001). They rather build on book values of assets and liabilities as approximations of a company's resources.

Taking the previous studies into consideration, Germany can be classified as a code-law system with a low-developed stock market, concentrated ownership, weak investor rights, and a high level of unconditional conservatism due to prudent accounting. It is likely that German companies face rather pronounced forms of income smoothing, loss avoidance and total accruals, but they face low levels of conditional conservatism (in international comparison). Focusing on private companies – especially on SMEs – in contrast to public firms, one might expect a rather low level of conditional conservatism but measures like income smoothing, loss avoidance or high total accruals tend to be rather common. Those causes and effects complement each other. Moreover, the limited significance of public disclosure offers the opportunity for private companies to manage earnings adapted to specific external stakeholders. As banks are likely the main addressees of financial statements one may infer that bank debt relationships are a dominant driver for earnings management of German private SMEs.

2.3.3.2. The Influence of Debt Contracting on Reporting Decisions

Prior research provides strong evidence concerning the role of financial reporting and earnings manipulation in debt contracting. Founding aspects for earnings management and conservatism are various. One part of the literature focuses on manipulated earnings in the context of debt covenant restrictions. (e.g., Sweeney 1994; Ahmed et al. 2002; Dichev and Skinner 2002; Ball et al. 2008; Beatty et al. 2008; Nikolaev 2008; Zhang 2008).[38] The central argument for managed earnings is the following: debt contracts commonly contain restrictive covenants that are premised on financial ratios to alert borrowers of potential financial risks of their lenders. They aim to mitigate the type II agency conflict between equity investors and debt borrowers (Ahmed et al. 2002). By covenants that restrict shareholders' investment and financing decisions, debt borrowers try to limit the opportunistic maximization of shareholders' wealth and to preserve their interests. For instance, covenants may encompass certain leverage ratio or interest coverage ratio limits that could prevent the payout of dividends or the raising of new debt (Smith and Warner 1979; Leftwich 1983).

Empirical evidence hypothesizes that debt borrowers prefer a rather conservative accounting approach as it accelerates the violation of covenants and enables a timely signaling of a company's default risk. Thus, lenders can reduce their monitoring costs and investment risk by claiming conditional conservatism. In addition, managers might commit to permanently adopt conditional conservatism to build a reputation (e.g., Ahmed et al. 2002; Ball et al. 2008; Beatty et al. 2008; Nikolaev 2008; Zhang 2008). However, Ball and Shivakumar (2005) propose that the demand for conditional conservatism is rather low for private companies. In the case of Germany, the high level of unconditional conservatism (reasoned by the principle of prudence) demands low conditional conservatism and is advantageous to creditors, as it accelerates the breach of covenants and limits the payouts to shareholders. Consequently, the

[38] Ball and Shivakumar (2008) and Dechow et al. (2010) refer to several related studies.

number of covenants in German debt contracts tends to be lower than in countries where prudence is not a central principle.

Besides conservatism as a demand of debt borrowers, earnings management plays a second role in the context of covenants. Commonly, a violation of covenants is likely followed by a renegotiation or termination of the underlying debt contract. Hence, the avoidance of covenant violation provides a great incentive for earnings management. Sweeney (1994) investigates covenant violations and the accounting responses of companies. She concludes that firms use measures of income-increasing earnings management to avoid covenants being violated. Dichev and Skinner (2002) find that companies tend to intentionally beat certain covenant targets of private lending agreements in order to avoid covenant violation. Dechow et al. (2010) note that this behavior is an indication of manipulation and might lower earnings quality for other decisions.[39]

A further stream of literature focuses on earnings manipulation prior to raising capital. Instead of avoiding the renegotiation or termination of a current debt contract, the incentive here is to convince the investor to agree to a new contract and to optimize contracting conditions by opportunistic accounting behavior. Dechow et al. (2010) mention several studies that analyze the accounting behavior of companies in the periods before raising equity capital. They suggest that accounting choices in these periods clearly differ from other years. For instance, Teoh et al. (1998) find that initial public offering (IPO) candidates have high positive abnormal accruals during the issue year. The study is based on a sample of 1,682 IPO firms obtained from the Compustat database. Cohen and Zarowin (2010) show that firms use both real activities manipulation and accrual based earnings management around seasoned equity offerings (SEOs), depending on the costs of the respective approaches. In contrast, Ball and Shivakumar (2008) conclude that IPO candidates report more conservatively in order to satisfy the higher quality demands of accounting information users of public firms. The authors further question the reliability of the results presented by Teoh et al. (1998). They doubt the trustworthiness of discretionary accruals measures to detect event-driven earnings management.[40]

However, evidence that examines earnings management and conservatism in the context of raising debt is limited. Dietrich et al. (2001) inspect the extent of managerial discretion in revaluation increments before raising debt for UK investment property firms. They conclude that managers use income-increasing and income-smoothing accounting choices prior to raising debt, but this does not seem to be true for equity issuing. Liu et al. (2010) support these results. They inspect earnings management before bond issues from U.S. companies and find that managers adopt income-increasing accounting choices

[39] Dechow et al. (2010) refer to several related studies.

[40] For this reason, the usage of discretionary accruals to measure earnings manipulation is avoided in the present dissertation. Empirical analyses rather rely on the total accruals model recommended by Ball and Shivakumar (2006) to circumvent similar misspecifications.

when there is an incentive to achieve lower costs of borrowing.[41] Both studies concentrate on markets where equity capital market financing is predominant. Consequently, the incentives for earnings management driven by debt financing are rather low. In contrast, corporate debt financing plays an inevitable role in Germany (Hackethal and Schmidt 2000).

Although the following studies do not explicitly analyze earnings manipulation around debt financing events, they are closely linked to this topic. Choi (2007) investigates the interconnection between the extent of bank dependence of relatively small public firms and income statement conservatism and finds that highly bank-dependent companies report more conservatively. Bigus et al. (2009) and Bigus and Hakenes (2014) examine both empirically and theoretically whether relationship lending induces conservative reporting. The authors conclude that relationship lending requires opaque company reporting to guarantee a housebank's informational rent, and that conservative reporting facilitates relationship lending. Bigus et al. (2009) also study the impact of conservatism on the cost of debt. They state that higher conservatism is followed by higher costs of debt, as it enlarges the information rent (and thus the power) of the bank in a private company context. Liu et al. (2010) come to the conclusion that earnings management is effective and rewarded by a lower cost of debt. In contrast, Ahmed et al. (2002) document that accounting conservatism is followed by a lower cost of debt capital in general. Similar, Francis et al. (2004; 2005) investigate whether accounting quality has an impact on the costs of capital and find that poor accounting quality is associated with higher costs of capital. The authors state that accruals quality is a proxy for the non-diversifiable information risk that investors associate with the opaque mapping process of earnings into cash flows. Poor accruals quality increases this information risk for investors and is consequently aligned with higher risk premiums (Easley and O'Hara 2005).

3. Empirical Analyses

This chapter encompasses three separate empirical studies on the influence of bank debt lending on corporate financing and the accounting behavior of German SMEs. Section 3.1 analyzes whether the cost of debt of German SMEs is affected by the regulatory changes of Basel II and the financial crisis of 2007 and 2008. Section 3.2 investigates whether bank debt lending provides an incentive for German SMEs to manipulate their earnings. Moreover, a second central question in this section is whether a potential earnings manipulation of German SMEs is effective and rewarded in terms of lower costs of debt. The empirical analyses of Section 3.1 and 3.2 motivated the survey of German SMEs presented in Section 3.3. The evaluation of the survey delivers additional evidence on both the impact of Basel II on the costs of debt and on earnings manipulation of German SMEs in the context of bank debt financing.

[41] Obermann (2011) inspects earnings management of German companies prior to raising bank debt. He concludes that debt-raising does not have an influence on earnings management. However, his empirical analysis is rather superficial. Therefore, this study is not mentioned further in this dissertation.

3.1. Debt Costs of German SMEs Caught in Between Basel II and the Financial Crisis

The smallness and flexibility of SMEs can be a blessing for their customers as they can quickly respond to changes of their needs. However, this characteristic is a hazard when it comes to finance. SMEs in Germany traditionally have low equity ratios.[42] They base their investment financing mostly on bank credit. Precisely because they are extremely sensitive to bank credit, their concern was large when it became known that the New Basel Capital Accord (Basel II) would substantially change banks' loan assessment. Already, "more than 40 % of companies complain[ed] about ever-increasing demands for collateral, higher interest margins from banks, meager offerings for new loans and increased reporting requirements" (German Association for Small and Medium-sized Businesses 2011a). The credit crunch was blamed on "a failure of regulation" (German Association for Small and Medium-sized Businesses 2011b). Those are just two out of many statements that show the anger and displeasure of representatives of German SMEs about the perceived impact of the regulatory amendment on credit granting to SMEs. However, more impartial statements about the effect of Basel II on SME financing are controversial. Renowned national and international institutions, such as the OECD or the Federal Bureau of Statistics, claim negative effects, whereas an extensive study of the German Central Bank postulates no perceptible deterioration (German Central Bank 2003; German Federal Statistical Office 2010; Slovik and Cournède 2011).

We investigated the effect of Basel II on the cost of debt and the capital structure of German SMEs premised on financial analysis of archival balance sheet data. Unfortunately, the amendment of Basel II in 2007 was followed by the financial crisis, which made it difficult to separate the regulatory effect from the impact of the crisis. Since the reform and crisis are global, we were not able to find appropriate control groups. We therefore tested different assumptions about possible interdependencies between credit costs, credit shortage, and the insolvency risk of companies.

To the best of our knowledge, ours is the first study to determine the *ex-post* effects of the regulatory amendment and the crisis in Germany. We add to previous research by focusing on the companies' side and displaying potential changes of their financial situation that are attributable to the regulatory amendment and the crisis. Previous research predominantly examined regulatory effects on banks and their capital requirements and then extrapolated alterations of credit conditions (Altman and Sabato 2005; Altman and Sabato 2007). Most of the research on the impact of the financial crisis on lending is based on U.S. data (e.g., Ivashina and Scharfstein 2010; Puri et al. 2011). The current initiatives of Basel 2.5 and Basel III will further intensify the regulation of Basel II for banks, especially concerning the quality of regulatory equity capital. Therefore, additional negative effects on corporate credit granting cannot be excluded (Hartmann-Wendels 2013). Unlike the broad literature that focuses on the *ex-ante* expected impact of Basel III on corporate credit costs (e.g., Basel Committee on Banking Supervision 2010b;

[42] Mean calculations in our sample display an average equity ratio of 27 percent. The ratio increases from about 25 percent in 2003 to about 30 percent in 2010. SMEs seem to have gradually improved their capital structure over the last decade.

Cosimano and Hakura 2011; Slovik and Cournède 2011), our study provides first archival data-based evidence that can be used as basis for further analysis that expects to argue a negative effect of Basel III on the real economy.

3.1.1. Hypotheses Development

A typical credit interest calculation by banks consists of the following four components: the refinancing interest rate on capital markets with identical maturity, a surcharge for the expected loss of the debtor (calculated by multiplying the probability of default and the loss-given default), an additional charge for the credit processing, and a supplement for covering the costs of the equity capital provision (Hartmann-Wendels 2011). Whereas Basel II might have had an effect of the two last mentioned components, the financial crisis probably had an impact on the two first mentioned components. We established hypotheses for the two influence factors on the debt capital costs of German SMEs separately.

First, we assumed that banks adopted Basel II rating approaches for credit risk assessment since 2007. Due to the new statutory regulated minimum requirements banks could no longer base their extension of credit on old risk measurement systems, but they apparently had to revise their approaches for the assessment of risk weights of individual borrowers. Besides applying the IRB approach banks could also use external rating systems established by renowned organizations that commonly rely on much more comprehensive data sets as an alternative (Federal Association of German Banks 2010; Creditreform Rating AG 2011b). In the course of this revision, we assumed a considerable change in rating procedure and bank lending by virtue of Basel II. Moreover, we presume that banks base their credit decisions more on ratings since the reform and that an internal rating is somehow premised on financial ratio analysis.[43] Consequently, we postulated higher total costs of the more formalized rating process for banks after Basel II.

Second, higher interest margins in debt contracts after the reform might be attributable to a higher costs of equity provision for banks. Under Basel I, banks were allowed to use one determined risk weight for one entire asset class, no matter how risky the underlying debtor was. Risky loans with high returns were particularly attractive to debtors. Since Basel II, banks have had to assess the risk weights of each granted credit, although they only need to meet the minimum equity capital requirements for their overall credit portfolio. Assuming a constant credit portfolio, Pillar I requirements of Basel II might therefore imply the need of being equipped with a higher amount of regulatory equity capital due to potentially higher risk weights. Nippel (2004) extensively discusses causes and effects in this context. He concludes that higher costs or amount restrictions of credit portfolios of banks are not in principle caused by the potentially higher equity reserves. However, he states that this scenario is conceivable, especially when banks have limited access to fresh equity capital. We assumed that this was the case during the financial

[43] Empirical results of a survey of German banks support this assumption. See Haller et al. (2008).

crisis (Illing 2013). As banks consequently might face higher costs of equity capital provision, their pursuit to refinance those costs by imposing tighter credit terms on debtors is reasonable.

Third, as SMEs in Germany traditionally perform poorly when it comes to ratio analysis, for example because of lower amounts of equity capital, they tend to end in lower ratings compared to bigger companies.[44] Even if the unobservable insolvency risk did not change during the reform process, the more formalized internal rating process might have led to a higher risk awareness of banks and to lower ratings (German Central Bank 2002). We assumed a negative correlation between the rating and the costs of loans. Hence, SMEs, in particular those with comparably lower ratings, might suffer from Basel II and finally end up with higher costs of loans. Taken the above presented arguments into consideration, we postulated the following relationship:

Hypothesis (1): The cost of debt capital for SMEs ceteris paribus is higher after the Basel II reform.

On the contrary, if banks apply the Standardized Approach for ratings, unrated companies − and most SMEs belong to this group –are still ranged in the same risk-weight class (normally a risk weight of 100 percent) as they were before Basel II (Basel Committee on Banking Supervision 2003a). Therefore, there is no necessity to change the amount of required equity capital, which by implication should not eventuate in higher costs of credit. We did not know the individual bank's choice concerning the rating approach (IRB or Standardized Approach). Since we assumed that most banks have changed their rating approach considerably since Basel II, we did not expect that counteracting effect to be dominant.

Unfortunately, the amendment of Basel II was followed by the financial crisis. It is difficult to separate the effect of the reform and the one of the crisis on the costs of debt capital of German SMEs. We were not able to set up an appropriate control group as both the reform and the crisis had a global impact. Hence, we controlled for several possible interdependencies between credit costs, credit shortage and the insolvency risk of companies.

First, the cost of debt of SMEs analyzed in our models might be affected by both the rise of refinancing interest rates in 2007 and 2008 at the beginning of the financial crisis and their following drop in winter 2009.[45] Hence, we explicitly controlled for refinancing interest rates to avoid alterations of the costs of debt being due to this development. Second, the economic slump in Germany might influence the individual economic situation of SMEs and result in altered credit ratings, which, in turn, might change individual loan interest rates. We therefore included a rating proxy provided by the German rating agency Creditreform Rating AG in our models to depict changes in the insolvency risk of SMEs. Of course, banks might have added an additional risk premium on newly granted loans regardless of the individual company risk to install a buffer in prospect of the crisis. However, we could not control for this factor.

[44] Dietsch and Petey (2004) indicate that by clearly declaring SME as riskier compared to larger companies.
[45] See German Central Bank (2013a) for further details about the development of interest rate levels.

Third, increasing refinancing interest rates in 2007 and 2008, lack of trust between banks, and the economic downturn might have led to a credit crunch. This may be the reason for a rise of corporate credit costs. But, neither a drop in credit demand nor a clear decline of granted loans by banks to German companies is visible from aggregated data (German Central Bank 2009; German Central Bank 2013b). However, a credit crunch could exist without being observable at first sight (Cohen-Cole et al. 2008). During 2007 and 2008, bank refinancing interest rates rose to 4.25 percent (German Central Bank 2013a). According to a bank lending survey, credit standards for corporate loans granted by German banks tightened significantly in the second half of 2007 and in 2008 (German Central Bank 2009). In a study by Campello et al. (2010), the majority of over 1,000 questioned CFOs in the U.S., Europe, and Asia admitted that attractive investments were not undertaken by the respective firms during the crisis in 2008 due to financing constraints. We therefore concluded that a credit crunch had mostly likely taken place in 2007 and 2008.

We further suggested that a crunch might only have affected certain companies, especially small or highly risky ones. If banks have restricted resources to grant loans, they more likely prefer borrowers with a low insolvency risk in order to avoid additional defaults and write-downs in their portfolio, i.e., a "flight to quality" (Bernanke et al. 1996). As less risky company loans are normally imposed with lower interest rates, this would speak in favor of a decrease of the average interest rates of newly granted loans. From a company perspective, such a risk selection during times of crisis should also be reflected in a diverse probability of obtaining a loan and a differing total volume of granted loans for risky and less risky companies.

In addition, a supply driven credit crunch should be visible in SMEs' investment financing structure. In times of a supply driven credit crunch, companies might not be able to finance investments by bank credit. Companies might be forced to limit investments to the amount of internal funds available or to use alternative financing sources. Consequently, we assumed that investments of German SMEs are *more* highly correlated with internal financing during a period of credit crunch (years 2007 and 2008) than in other periods (Fazzari et al. 1988; Duchin et al. 2010).

Hypothesis (2): Investments of German SMEs are ceteris paribus more intensively financed by internal funds in a period of a supply driven credit crunch than in other periods.

3.1.2. Research Design and Data

We used all available observations of German unlisted SMEs from the September 2011 version of the Bureau van Dijk DAFNE database that fulfilled the SME criteria of the European Commission. There were in total 326,552 observations of 40,819 companies with financial data for the period from

2003 to 2010.[46] The data was from unconsolidated, firm-level financial statements.[47] All firms in our sample followed local German GAAP. The sample excluded firms with single owners as the reform of the German Commercial Code (BilMoG) scrapped the obligation to publish any financial statements for sole traders in 2009 (§ 241a HGB) (Federal Ministry of Justice 2011). We excluded all observations belonging to financial services and agricultural industries. Balance sheets of firms belonging to these industries likely differ from those of other industries. We applied Stata 12 to our calculations.

We used a proxy variable for the costs of debt capital of a company i in year t, named $Interest_{it}$, as dependent variable for our calculations. We calculated the cost of debt proxy by dividing the total interest expense by the average value of total assets of the current and the previous year, based on Binsbergen et al. (2010). Due to data availability problems we were not able to precisely calculate the ratio of interest expenses attributable to the amounts owed to credit institutions. We had data on the total amount of bank loans, but we lacked detailed and reliable data concerning the assignable interest expenses. A closer look at the distribution of the variable indicates that $Interest_{it}$ is not normally distributed, but skewed. To perform an OLS regression we therefore recoded $LnInterest_{it}$ by calculating ln($Interest_{it}$).[48]

$Risk_{it}$ describes the insolvency risk of a certain company. The variable is based on a rating available in the DAFNE database, provided by the Creditreform Rating AG. The rating variable categorizes companies into four risk groups.[49] Since we did not have detailed information about negative credit characteristics or internal evaluations of banks for individual companies in our sample, we had to base statements about a company's financial standing on this external rating. This variable aims at controlling for a potential change in an individual company's insolvency risk, especially during the financial crisis. Thereby, we tried to minimize the possibility that a rise of debt capital costs was due to an alteration of a certain company's risk situation.

To test our Basel II hypothesis (1), we needed three binary variables. Most important, we created an indicator variable $Reform_{it}$ to control for the influence of the Basel II amendment with a value of one, referring to the years 2007 to 2010. We would have preferred to establish a control group of companies that were not affected by Basel II. However, all banks in Germany as well as all comparable international

[46] Missing values in our dataset are coded as zero. Therefore, we eliminated all observations equal to zero for our calculations. Thereby, we could have eliminated observations with economically correct zero values, but we did not expect this effect to significantly influence our calculations, as this might only be accurate in rare cases. We limited our sample to observations with an $Eqratio_{it}$, an $Interest_{it}$ rate and a ratio of amounts owed to credit institutions to total liabilities with values between 0 and 1. A detailed examination of the dataset indicates a bias by outlying observations. Thus, we excluded the 100th percentile of total assets. This restriction leads to an unbalanced panel with 62,199 observations with non-missing data for our major regression model. As consequence of this harsh reduction of observations, we assumed that we sorted out small companies in particular. Creating a balanced panel would lead to a severe reduction of observations. Therefore, we allowed the panel to be unbalanced.

[47] Our dataset only allows for a distinction between consolidated group accounts and 'unconsolidated' accounts. Within the unconsolidated accounts, we were not able to reliably differentiate between companies that do and do not belong to a group. Thus, our dataset might be distorted by observations that are affiliated. Affiliated companies might have the possibility to negotiate loan conditions with the consolidated group accounts and consequently receive better conditions in general. However, Szczesny and Valentincic (2013) also use data from unconsolidated financial statements for their analysis.

[48] A similar approach was used by Graham et al. (2008).

[49] The following insolvency risk groups are included: Category one stands for low default risk; category two for a moderate default risk; category three for a high default risk; and category four for a very high default risk.

counterparts had to adopt the reform contents. Consequently, a dummy approach was the only way to capture the Basel II effect in our dataset. Under IRB, banks can choose to treat SME credit as retail loan. As previous research plausibly indicated a lower amount of capital requirement for banks for retail credit, we assumed that those loans are therefore priced more favorably (Altman and Sabato 2005). Unfortunately, we were not able to identify a specific company's bank commitment. However, we created an indicator variable $Retail_{it}$ equal to one if the amount owed to one credit institution was smaller than one million euro. We first divided the overall amount owed to credit institutions by the number of banks a company has and used this proxy to demonstrate that those banks could treat the respective company as a retail customer. However, we could not observe which internal rating classifications banks choose for individual SMEs. The variable $Refret_{it}$ is a product of the two preceding variables, examining a possible interaction effect between the Basel II reform and retail credits.

$Eqratio_{it}$ stands for a company's equity ratio and controls for the individual firm's capital structure.[50] The $Housebank_{it}$ indicator variable was added to control for the effect of relationship lending. A value of one refers to a relationship with one single bank in contrast to several bank relationships (Elsas and Krahnen 1998).[51] We used the natural logarithm of total assets, called $Size_{it}$, in our models to control for possible nonlinear and disproportionate effects in patterns of size, growth and failure rates of companies (Mansfield 1962). In addition, increasing company size could display a growing bargaining power in loan negotiations, as the company might gain importance as a customer for the bank. $Parent_{it}$ is an indicator variable equal to one if the firm has a controlling parent company and therefore might not be in a position to formulate an independent accounting policy.[52] Furthermore, if the company is affiliated it might have the option to make use of the group's creditworthiness.

GDP_{it} expresses the influence of the economic cycle measured by price adjusted GDP data and is supplemented by the indicator variables $Y2008_{it}$ and $Y2009_{it}$. This controls for the influence of the financial crisis and the amendment of the reform of German GAAP in 2009.[53] The variable $Refin_{it}$ represents the refinancing interest rate banks have to pay to borrow money from the European Central Bank and controls for the macroeconomic development of interest rates.[54] We further controlled for additional industry influences with $Manufacturing_{it}$ as the reference group. Wholesale and retail trade, and repair of motor vehicles and motorcycles were pooled in the variable $Trade_{it}$; professional, scientific, and tech-

[50] Graham et al. (2008) also included a control variable for the capital structure. The higher the equity ratio, the lower is the expected default risk of a company. Thus, a higher equity ratio might lead to lower costs of capital.

[51] We know that this is a rather rough proxy for relationship lending. We had to rely on this rather rough proxy as we did not have detailed data concerning the individual bank-company relationships. Our results might be slightly biased as companies with several bank relationships might still have one powerful housebank. However, Petersen and Rajan (1994) also use the number of bank relationships a one indicator of relationship lending.

[52] We had information about the major owner of a company, but our variable does not differentiate between persons and corporations. Thus, we manually sorted persons. That might lead to some dissonance, but we did not expect a significant influence from that discrepancy. Berger and Udell (1995) also use governance structure as a control variable.

[53] We also included a control variable for the overall credit volume granted from German banks to German companies based on aggregated data of the German Central Bank (2013b), but the variable had to be excluded because of multicollinearity.

[54] Graham et al. (2008) use the LIBOR to show the macroeconomic development of refinancing interest rates of banks.

nical services are in the variable $Service_{it}$; construction companies are in $Construct_{it}$; and all other industries in the variable $Other_{it}$.[55] Thereby, differences of the economic development of specific industries and in the pattern of credit granting and collateralization can be illustrated (Berger and Udell 1995; Graham et al. 2008).

Concerning our Basel II hypothesis (1), we started by estimating the following model using pooled ordinary least squares (*POLS*) under the assumption that the error term ε_{it} is independent of the explanatory variables. This provided first cross-sectional evidence on whether the Basel II reform affects the cost of debt of SMEs. We applied the POLS regression to point out interesting effects of the time constant variables. For instance, the results of the $Housebank_{it}$ variable are of special interest. In addition, we used a fixed-effect panel regression to control for unobserved firm-specific effects (Brüderl 2010).[56] The Hausman test strongly rejects the null hypothesis that fixed-effect models and random-effect models are identical, favoring a fixed-effects approach (Hausman 1978). The following model is equivalently used in both the POLS and fixed-effects panel approach, although time constant dummy variables are excluded in fixed-effects regression (i.e., $Housebank_{it}$, $Parent_{it}$, $Trade_{it}$, $Service_{it}$, $Construct_{it}$ and $Other_{it}$) (Brüderl 2010).

$$LnInterest_{it} = \beta_0 + \beta_1 Risk_{it} + \beta_2 Reform_{it} + \beta_3 Retail_{it} + \beta_4 Refret_{it} + \beta_5 Eqratio_{it} + \beta_6 Housebank_{it} + \beta_7 Size_{it} + \beta_8 Parent_{it} + \beta_9 GDP_{it} + \beta_{10} Refin_{it} + \beta_{11} Y2008_{it} + \beta_{12} Y2009_{it} + \beta_{13} Trade_{it} + \beta_{14} Service_{it} + \beta_{15} Construct_{it} + \beta_{16} Other_{it} + \varepsilon_{it} \quad (1)$$

In order to test our credit crunch hypothesis (2), we referred to a model used by Duchin et al. (2010). The model is based on a method originally described by Fazzari et al. (1988). It aims to test whether companies' investments are highly dependent on internal financing. The dependence should be visible by a significant positive relationship between internal funds and investments. An intensification of this positive correlation during a certain period indicates that companies tend to rely even more on internal investment funding than at other times. That is an indicator for potential external financing restrictions during a crisis. We use a company's current investments $Invest_{it-1,t}$ as dependent variable, following Lenger and Ernstberger (2011). It is calculated by the change of property, plant, and equipment (*PPE*) from t-1 to t, scaled by lagged total assets. In order to explicitly focus on the impact of the financial crisis, we limit our data set to observations in the years 2003 to 2008. We left out 2009, as this year differs from the other crisis years due to the sudden severely negative effects on the real economy. Moreover, a credit crunch most likely took place in 2007 and 2008.

We established a dummy variable $Crisis_{it}$ that is equal to one if the corresponding observation is in 2007 or 2008 and equal to 0 in the period of 2003 to 2006. Moreover, the variable $Cash_{it}$ represents a company's cash reserves (scaled by lagged total assets) available for investments at the beginning of a

[55] We used the Wirtschaftszweige (*WZ*) Code 2008 of the German Federal Statistics Office as foundation for the industry classification.

[56] For details concerning the applied econometric approach, please see for example Brüderl (2010).

period. To control whether the financial crisis had an effect on cash financing, we further set up the variable $Cashcrisis_{it}$ which is defined as the interaction of $Crisis_{it}$ and $Cash_{it}$. We also included $Newcredit_{it\text{-}1,t}$ in our model. The variable depicts whether companies raise new bank debt to finance their investments, and it is calculated by the change of amounts owed to credit institutions from t-1 to t, scaled by lagged total assets.[57] We interacted $Newcredit_{it\text{-}1,t}$ with $Crisis_{it}$ to reveal the effects of the financial crisis on bank debt financing, called $Newcreditcrisis_{it\text{-}1,t}$. The independent variable Cfo_{it} represents the cash flow of operations of company i in period t, scaled by lagged total assets.[58] It approximates further internal funds available for investment financing. In addition, we added $Dsales_{it\text{-}1,t}$ to our regression. The depicted sales growth controls for a company's future profitability.[59] The variable is measured by the change in sales from t-1 to t, scaled by lagged total assets (Duchin et al. 2010; Lenger and Ernstberger 2011). We used a fixed-effects panel regression approach, confirmed by the Hausman test, for the following models under the assumption that the error term ε_{it} is independent of the explanatory variables (Hausman 1978).

$$Invest_{it-1,t} = \beta_0 + \beta_1 Crisis_{it} + \beta_2 Cash_{it} + \beta_3 Cashcrisis_{it} + \beta_4 Newcredit_{it-1,t} + \beta_5 Newcreditcrisis_{it-1,t} + \beta_6 Dsales_{it-1,t} + \beta_7 Cfo_{it} + \varepsilon_{it} \quad (2)$$

For all our models, we controlled for the possible influence of powerful observations and for unspecified heteroscedasticity by applying White's (1980) heteroscedasticity correction.

3.1.3. Empirical Results Concerning Basel II

The section contains three parts. Section 3.1.3.1 shows the results of descriptive analyses. Regression results are presented in Section 3.1.3.2, and this is followed by a sensitivity analysis in Section 3.1.3.3.

3.1.3.1. Descriptive Analyses

Table 1 shows the structure of our sample. Table 2 provides an overview of the characteristics of the endogenous and explanatory variables used in our models. Table 3 displays correlations between the variables and corresponding variance inflation factors of model (1). In a first step, we focused our descriptive analyses on interesting structural changes in our dataset, as they contain additional explanatory power (see Table 4).

First, results concerning the insolvency risk of our companies display that the average default probability is not higher after the Basel II amendment. At first sight, these results are surprising, particularly

[57] The definition of this variable differs slightly from the one used in Section 3.2. The purpose here is to analyze any changes in the investment behavior of SMEs. Section 3.2 includes a stricter, time-shifted alternative of this variable. The purpose there is to identify more subtle incentives in the accounting behavior of SMEs.

[58] The cash flow variable available in the DAFNE database does not equal the operating cash flow. Therefore, we use the balance sheet approach to calculate the operating cash flow by subtracting total accruals from earnings before extraordinary items. We use the following approach mentioned by Ball and Shivakumar (2005) to calculate accruals. See Section 3.2 for more detailed statements about this approach. $Acc_{it}=\Delta Inventory_{it\text{-}1,t}+\Delta Debtors_{it\text{-}1,t}+\Delta Other\ Current\ Assets_{it\text{-}1,t}$ - $\Delta Creditors_{it\text{-}1,t}$ - $\Delta Other\ Current\ Liabilities_{it\text{-}1,t}$-$Depreciation_{it}$

[59] Former studies used Tobin's Q instead of sales growth to control for future profitability. However, as we did not have data to calculate Tobin's Q for private companies, we follow Lenger and Ernstberger (2011).

in regard to the financial crisis. One possible explanation might be that companies anticipated rising debt costs at the forefront of Basel II and hence tried to improve their ratings. This effect might be especially vital for SMEs, as their dependence on banks and their ratings is greater than for big companies (Siemens Financial Services 2003; Institute for Small Business Research 2011b). Since Basel II, banks might have been forced to rely on company ratings. Before the amendment, quantitative ratings for small companies were rather uncommon. SMEs might consciously have improved their financial ratios (e.g., by using measures of earnings management or steady improvements of their capital structure) with regard to Basel II modifications, and they might have ended up with a better risk classification than without this improvement. Thus, the adverse effects of Basel II could be less encompassing than mentioned above.

Since we did not change our risk variable over time systematic changes within the estimated insolvency risk for SMEs are most probably attributable to alterations of the underlying financial ratios. Ratios like the equity ratio might have increased over time and eventually will result in a lower insolvency risk. Our descriptive results are consistent with this assumption, and we observed a significant rise of the equity ratio on the 1 percent level over time (from a mean value of about 25 percent in 2003 to about 30 percent in 2010). Regarding further capital structure changes, we inspected several debt balance sheet positions. However, we cannot draw convincing conclusions about the exact compositional changes of debt capital because our data availability is limited in that point. Results indicate a non-significant overall change of amounts owed to credit institutions. Taken into consideration, our analysis indicates a significant change in capital structure. Nevertheless, this change is a gradual alteration over many years and − as we cannot control for further internal company effects – this finding might not be explicitly attributable to the Basel II reform.

Table 1 – Sample Description

Criteria	Categories	Obs.
Total		62199
Size (employees)	Small companies	14064
	Medium-sized	36269
	Not classified	11866
Industries	Manufacturing	22895
	Trade	17705
	Services	2496
	Building	5232
	Others	13871
Risk	1 = low	8523
	2	35635
	3	16100
	4 = high	1941
Costs of debt	0-3 percent	44668
	3.01-5 percent	14669
	5.01-10 percent	2774
	>10 percent	88
Bank debt proportion	0-20 percent	29712
	20.01-40 percent	17971
	40.01-60 percent	10197
	>60 percent	4319

Table 1 displays characteristics of companies adopted in model (1). The number of observations is limited to the respective observations included in regressions of model (1).

Table 2 – Description of Variables Used in Model (1) and (2)

Variable Name	Description	Calculation	Obs.	Mean	S.D.	Min	Max
$LnInterest_{it}$	Debt costs	Ln of (total interest expense$_t$/ ((total assets$_t$ + total assets$_{t-1}$) /2)	62199	-4.183	1.136	-17.151	-1.009
$Risk_{it}$	Default risk	Based on DAFNE database rating where 1 is the best category and 4 the worst	62199	2.184	0.698	1	4
$Reform_{it}$	Basel II reform dummy	Equals 0 for years 2003-2006, 1 for years 2007-2010	62199	0.668	0.471	0	1
$Retail_{it}$	Dummy for retail credit	Equals 1 if amounts owed to credit institutions is less than 1 million euros per bank	62199	0.584	0.493	0	1
$Refret_{it}$	Dummy for interaction effect of the reform and retail variable	Equals 1 if the variable retail equals 1 after 2007	62199	0.388	0.487	0	1
$Eqratio_{it}$	Equity ratio	Book value of equity$_t$, scaled by total assets$_t$	62199	0.271	0.193	8.7E-07	1.0E+00
$Housebank_{it}$	Housebank dummy	Equals 1 if the number of banks equals one, 0 otherwise	62199	0.205	0.403	0	1
$Size_{it}$	Company size	Ln of total assets$_t$	62199	9.023	0.883	1.915	11.568
$Parent_{it}$	Group dependency dummy	Equals 1 if company has at least one parent group	62199	0.300	0.458	0	1
GDP_{it}	Economic development	Price-adjusted value of GDP$_t$, reference year 2005	62199	0.930	3.139	-5.1	3.7
$Refin_{it}$	Interest development	Inter-bank refinancing interest rate	62199	2.816	1.066	1	3.85
$Trade_{it}$	Wholesale and retail trade, repair of motor vehicles and motorcycles industry dummy	Equals 1 if company belongs to that industry	62199	0.285	0.451	0	1
$Service_{it}$	Professional, scientific and technical services	Equals 1 if company belongs to that industry	62199	0.040	0.196	0	1
$Construct_{it}$	Construction industry	Equals 1 if company belongs to that industry	62199	0.084	0.278	0	1
$Other_{it}$	Other industries	Equals 1 if company belongs to that industry	62199	0.223	0.416	0	1
$Y2008_{it}$	Dummy for year 2008	Equals 1 if observation is in year 2008 in order to control for effects of the financial crisis	62199	0.224	0.417	0	1
$Y2009_{it}$	Dummy for year 2009	Equals 1 if observation is in year 2009 in order to control for effects of the financial crisis	62199	0.191	0.393	0	1
$Credit_{it}$	Proportion of amounts owed to credit institutions in relationship to total assets	Amounts owed to credit institutions$_t$/total assets$_t$	62199	0.253	0.203	1.27E-08	0.969

(Continued)

$Invest_{it-1,t}$	Investment in PPE	$(PPE_t - PPE_{t-1})$/total $assets_{t-1}$	23836	0.013	0.073	-0.154	0.556
$Crisis_{it}$	Dummy for credit crunch period	Equals 1 if observation is in year 2007 or 2008	23836	0.461	0.499	0	1
$Cash_{it}$	Cash reserves	Cash reserves of the corresponding observation	23836	0.073	0.101	0	0.733
$Cashcrisis_{it}$	Interaction term of cash reserves and crisis dummy	Product of $Crisis_{it}$ and $Cash_{it}$	23836	0.017	0.057	0	0.717
$Newcredit_{it-1,t}$	New bank debt	$(\Delta$Amounts owed to credit $institutions_{t-1,t})$/total $assets_{t-1}$	23836	0.008	0.115	-0.689	0.712
$Newcreditcrisis_{it-1,t}$	Interaction term of new bank debt and crisis	Product of $Crisis_{it}$ and $Newcredit_{it-1,t}$	23836	0.006	0.081	-0.689	0.705
Cfo_{it}	Cash flow of operations	(Earnings before extraordinary $items_t$ - ($\Delta Inventory_{t-1,t}$ + $\Delta Debtors_{t-1,t}$ + ΔOther Current $Assets_{t-1,t}$ - $\Delta Creditors_{t-1,t}$ - ΔOther Current $Liabilities_{t-1,t}$ - $Depreciation_t$)/total $assets_{t-1}$	23836	0.078	0.186	-0.789	0.695
$Dsales_{it-1,t}$	Sales growth	$(Sales_t - sales_{t-1})$/total $assets_{t-1}$	23836	0.184	0.553	-2.086	4.002
$Lrisk_{it}$	Low company default risk	Equals 1 if observation belongs to the DAFNE Risk category 1 (compare description above)	62199	0.098	0.298	0	1
$Mrisk_{it}$	Mid company default risk	Equals 1 if observation belongs to the DAFNE Risk category 2 (compare description above)	62199	0.381	0.486	0	1
$Hrisk_{it}$	High company default risk	Equals 1 if observation belongs to the DAFNE Risk category 3 or 4 (compare description above)	62199	0.190	0.392	0	1

Table 2 displays descriptions of all variables used in model (1) and (2). Observations are limited to the respective number of observations used in model (1) or (2).

Table 3 – Variable Correlation and Variance Inflation Factors of Model (1)

		1		2		3		4		5		6		7		8		9	
1	$LnInterest_{it}$	1.00																	
2	$Risk_{it}$	0.28	***	1.00															
3	$Reform_{it}$	-0.16	***	-0.03	***	1.00													
4	$Retail_{it}$	0.07	***	-0.15	***	-0.05	***	1.00											
5	$Refret_{it}$	-0.11	***	-0.10	***	0.79	***	0.41	***	1.00									
6	$Eqratio_{it}$	-0.40	***	-0.54	***	0.14	***	0.01	***	0.14	***	1.00							
7	$Housebank_{it}$	0.03	***	-0.01	***	0.00		0.14	***	0.06	***	-0.01	***	1.00					
8	$Size_{it}$	-0.58	***	-0.09	***	0.19	***	-0.21	***	0.10	***	0.58	***	-0.03	***	1.00			
9	$Parent_{it}$	-0.07	***	-0.10	***	0.00		0.07	***	0.04	***	0.04	***	0.22	***	0.03	***	1.00	
10	GDP_{it}	0.00		0.01	***	-0.10	***	0.02	***	-0.05	***	-0.08	***	0.00		-0.08	***	0.00	
11	$Refin_{it}$	-0.24	***	0.00		0.11	***	-0.09	***	0.03	***	0.22	***	0.00		0.39	***	0.00	
12	$Y2008_{it}$	-0.15	***	-0.01	***	0.38	***	-0.06	***	0.27	***	0.15	***	0.00		0.24	***	0.00	
13	$Y2009_{it}$	-0.11	***	-0.02	***	0.38	***	-0.04	***	0.28	***	0.15	***	0.00		0.20	***	0.00	
14	$Trade_{it}$	0.00		0.04	***	0.00		0.01	***	0.00		-0.04	***	-0.04	***	-0.02	***	-0.07	***
15	$Service_{it}$	0.02	***	0.00		0.00		0.03	***	0.02	***	0.01	***	0.09	***	-0.01	***	0.06	***
16	$Construct_{it}$	0.00		0.12	***	0.00		0.05	***	0.02	***	-0.05	***	-0.05	***	0.00	***	-0.11	***
17	$Other_{it}$	0.01	***	-0.05	***	0.00		-0.08	***	-0.03	***	0.00		0.14	***	0.00		0.18	***

(Continued)

		10		11		12		13		14		15		16		17	VIF
1	$LnInterest_{it}$																
2	$Risk_{it}$																1.47
3	$Reform_{it}$																4.31
4	$Retail_{it}$																3.44
5	$Refret_{it}$																4.43
6	$Eqratio_{it}$																1.47
7	$Housebank_{it}$																1.08
8	$Size_{it}$																1.40
9	$Parent_{it}$																1.16
10	GDP_{it}	1.00															18.14
11	$Refin_{it}$	0.37	***	1.00													6.21
12	$Y2008_{it}$	0.01	***	0.56	***	1.00											3.39
13	$Y2009_{it}$	-0.85	***	-0.43	***	-0.14	***	1.00									18.47
14	$Trade_{it}$	0.00		0.00		0.00		0.00		1.00							1.29
15	$Service_{it}$	0.00		0.00		0.00		0.00		-0.18	***	1.00					1.07
16	$Construct_{it}$	0.00		0.00		0.00		0.00		-0.17	***	-0.09	***	1.00			1.17
17	$Other_{it}$	0.00		0.00		0.00		0.00		-0.37	***	-0.18	***	-0.17	***	1.00	1.34

Table 3 displays correlations of variables used in model (1) and corresponding variance inflation factors. We normally would exclude variables with a variance inflation factor above 10. However, the variables GDP_{it} and $Y2009_{it}$ are of special interest in this case. Therefore, we adopted them in our model. This may imply some multicollinearity between the variables. For variable descriptions, please see Table 2.

Table 4 – Descriptive Analysis with Regard to Model (1)

Panel A	**$Risk_{it}$**			**$Eqratio_{it}$**		
	Obs.	**Mean**	**S.D.**	**Obs.**	**Mean**	**S.D.**
Before Reform	20667	2.222	0.690	20667	0.257	0.185
After Reform	41532	2.165	0.701	41532	0.278	0.196
t-test mean(yes)-mean(no)=0	9.652	***		-12.7493		***
	$Credit_{it}$					
	Obs.	**Mean**	**S.D.**			
Before Reform	20667	0.251	0.200			
After Reform	41532	0.253	0.204			
t-test mean(yes)-mean(no)=0	-1.1478					

Panel B	**$Risk_{it}$**					
Category	**1**	**2**	**3**	**4**	**Total**	**Mean**
2004	366	2112	1061	190	3729	2.29
Percent	9.8	56.6	28.5	5.1	100	
2005	537	3161	1524	217	5439	2.26
Percent	9.9	58.1	28.0	4.0	100	
2006	1512	6683	2994	310	11499	2.18
Percent	13.2	58.1	26.0	2.7	100	
2007	1952	8277	3625	410	14264	2.17
Percent	13.7	58.0	25.4	2.9	100	
2008	2068	7889	3588	392	13937	2.17
Percent	14.8	56.6	25.7	2.8	100	
2009	1909	6657	2954	376	11896	2.15
Percent	16.1	56.0	24.8	3.2	100	
2010	179	856	354	46	1435	2.19
Percent	12.5	59.7	24.7	3.2	100	
Total	8523	35635	16100	1941	62199	
Percent	13.7	57.3	25.9	3.1	100	

Table 4 displays descriptive analysis with regard to model (1). Observations are limited to respective observations used in model (1). Panel A contains mean comparison two-tailed t-test of variables $Risk_{it}$, $Eqratio_{it}$ and $Credit_{it}$ by the dummy variable $Reform_{it}$. Panel B shows the development of the variable $Risk_{it}$ over time. For variable descriptions, please see Table 2.

3.1.3.2. Regression Results

Table 5 displays the results of the estimations concerning Model 1 for both POLS and fixed-effects regressions. First, the rising default risk of a company is associated with higher interest expenses. Second, although statements about the impact of Basel II on SME financing are controversial, we can give a plain answer concerning this question for German SMEs in our sample. Hypothesis (1) can be confirmed because our $Reform_{it}$ variable is positive for both POLS and fixed-effects alternatives, and it is significant at the one percent level, which leads to the conclusion that Basel II increased the cost of debt.

The variable $Retail_{it}$ indicates − as expected − a negative correlation between the interest rate and a company with a credit volume of less than one million euro per bank. We might thus infer that banks tend to pass on the lower cost of less equity capital requirement to companies by granting retail credits. $Retail_{it}$ is significant at the one percent level. Furthermore, it might be expected that the effect is even more significant after the Basel II relief for SME-retail classification. $Refret_{it}$, the interaction variable of reform and retail is strongly significant in our panel regression; however, it only shows low significance in our pooled alternative. This implies that small loans in particular have been priced at a lower level

since Basel II. This effect is not explainable by the financial crisis. However, we used a quite rough measure for the retail classification of credit exposure. As $Retail_{it}$ is determined by amounts owed to one credit institution of less than one million euro, we might also have selected those companies with a low bank debt ratio (and higher equity ratios)[60] and consequently low interest rates. Moreover, it might be that our data quality, particularly for small companies, which tend to be in the retail category, is bad. Hence, observations included in our regressions tend to belong to slightly bigger companies and consequently comprise less retail cases. The retail relieve for SMEs can only be applied by banks using the IRB approach. According to the Federal Association of German Banks, only about 60 percent of all corporate loans are rated under IRB (Federal Association of German Banks 2010). A dilution of the effect of the $Refret_{it}$ variable is therefore not deniable.

Our control variable for the equity ratio shows significant impact on the cost of debt. That result supports former research that financials of a company play a leading role in credit assessment (Haller et al. 2008). A rise of equity is accompanied by a decrease of the cost of debt. The influence of the $Housebank_{it}$ variable is significant at the one percent level but negative in our POLS regressions, which means it is consistent with former research (Petersen and Rajan 1994; Berger and Udell 1995; Harhoff and Körting 1998). Relationship lending seems to reduce the costs of debt significantly. Our control variables for group affiliation and company size show additional interpretation content in POLS regressions. Group affiliation and an increasing company size lead to significantly lower costs of debt, which is intuitively clear. However, the influence of $Size_{it}$ is insignificant in the fixed-effects regression.

General economic development measured by price adjusted GDP in variable GDP_{it} causes significant positive coefficients in POLS regression, but it causes slightly significant negative effects in panel regression. The variable $Refin_{it}$ controls for economic development as well. A rise of the inter-bank interest level leads to a significant decrease of the costs of debt in POLS regression but a significant increase in fixed-effects regression. This noisy relationship of those two variables might be explained by the fact that both encompass the impact of the economic development on a single company. A closer look at the development of $Refin_{it}$ shows that there was a remarkable rise of interest rates from 2006 to 2007 (from approximately 2.8 percent to 3.8 percent annually on average), which is somehow coinciding with the Basel II amendment (German Central Bank 2012b). However, our calculations reveal that the $Reform_{it}$ variable is strongly significant *besides* the $Refin_{it}$ control variable.[61] $Y2008_{it}$ controls for the impact of the financial crisis and shows significant higher costs of debt for the year 2008. Our control variable for the financial crisis and the German GAAP reform in $Y2009_{it}$ is negatively significant in the panel regression but not significant in our POLS regression. All industry control variables show significant influence in POLS regression.

[60] We confirmed this assumption by a comparison of mean values in our dataset.

[61] A t-test of $Refin_{it}$ before and after the Basel II amendment discloses a significant rise of the variable. Nevertheless, a Wald-test confirms that $Reform_{it}$ and $Refin_{it}$ measure different effects.

Table 5 – Regression Results of Model (1)

Variable	Model 1			
	POLS		Fixed Effects	
Cons	-2.999	***	-4.150	***
	[0.076]		[0.456]	
$Risk_{it}$	0.293	***	0.073	***
	[0.007]		[0.006]	
$Reform_{it}$	0.075	***	0.028	***
	[0.014]		[0.010]	
$Retail_{it}$	-0.587	***	-0.142	***
	[0.015]		[0.016]	
$Refret_{it}$	-0.030	*	-0.046	***
	[0.016]		[0.011]	
$Eqratio_{it}$	-1.509	***	-1.479	***
	[0.03]		[0.064]	
$Housebank_{it}$	-0.273	***	-	
	[0.012]		-	
$Size_{it}$	-0.093	**	0.030	
	[0.007]		[0.05]	
$Parent_{it}$	-0.108	***	-	
	[0.01]		-	
GDP_{it}	0.017	***	-0.008	**
	[0.005]		[0.004]	
$Refin_{it}$	-0.036	***	0.012	**
	[0.008]		[0.006]	
$Y2008_{it}$	0.104	***	0.041	***
	[0.017]		[0.011]	
$Y2009_{it}$	0.045		-0.072	**
	[0.042]		[0.029]	
$Trade_{it}$	-0.040	***	-	
	[0.009]		-	
$Service_{it}$	-0.381	***	-	
	[0.027]		-	
$Construct_{it}$	-0.451	***		
	[0.015]			
$Other_{it}$	-0.309	***	-	
	[0.012]		-	
Obs. (groups)	62199		62199	(19627)
F-value	1254.51		219.1	
p-value	0		0	
R^2 (within)			0.09	
R^2 (between)			0.21	
R^2 (overall)	0.28		0.21	
Wald-Tests	F-value		F-value	
$Retail_{it}$= $Refret_{it}$	390.73	***	16.91	***
GDP_{it}= $Refin_{it}$	24.51	***	6.43	**

Table 5 displays results of pooled OLS and fixed-effects panel regressions of model (1): $lninterest_{it} = \beta_0 + \beta_1 risk_{it} + \beta_2 reform_{it} + \beta_3 retail_{it} + \beta_4 refret_{it} + \beta_5 eqratio_{it} + \beta_6 housebank_{it} + \beta_7 size_{it} + \beta_8 parent_{it} + \beta_9 GDP_{it} + \beta_{10} refin_{it} + \beta_{11} y2008_{it} + \beta_{12} y2009_{it} + \beta_{13} trade_{it} + \beta_{14} service_{it} + \beta_{15} construct_{it} + \beta_{16} other_{it} + \varepsilon_{it}$. The values in squared parentheses are standard errors. (- denotes time constant, omitted variables in the fixed-effect panel regression). *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. For variable description, please see Table 2.

3.1.3.3. Sensitivity Analysis

We assumed that Basel II particularly affects the conditions of new credit loan contracts. In order to measure the effect of Basel II more precisely, we limited our examination to observations with a rise of bank debt from the preceding to the current year. By this limitation, we ensured that a company raised new credit and had to negotiate new loan conditions. We re-estimated our model with the reduced number of observations (see Table 6). The table also reports results for the excluded subsample. The results display the following: $Reform_{it}$ is significant on the one percent level both in POLS and panel regression. This confirms hypothesis (1). The excluded subsample only shows very low significance for the $Reform_{it}$ variable in POLS regression. In a fixed-effects panel regression, the variable coefficient is negative. This is consistent with our expectations that new bank loans in particular are charged with higher costs of debt attributable to Basel II.[62]

We furthermore included $Credit_{it}$ (=amounts owed to credit institutions, scaled by total assets) and other debt capital proxies in our models to control for other debt financing influences. We did not observe any alterations of our hypotheses in comparison to our main model. We did not include $Credit_{it}$ in our main models as a comparison of a random sample of our companies with actual annual statements showed that the data in our database for this certain balance sheet position is not reliable. About 25 percent of our randomly sampled companies disclosed values for bank loans, but their data were not included in our database, whereas data for other main balance sheet positions were correct. Nevertheless, the data reported in our database are correct.[63]

To further validate our results, we substituted our dependent variable by a cost of debt proxy used by Pittman and Fortin (2004). We re-defined our dependent variable by the ratio of interest expenses to average total liabilities of t-1 and t. The re-estimation of our models generated similar results with similar significance.[64]

Moreover, we inspected the effects of the insolvency risk of companies on the costs of debt capital to further detail (see Table 7). Therefore, we split $Risk_{it}$ into three categories for low-risk ($Lrisk_{it}$), mid-risk ($Mrisk_{it}$, reference category), and high-risk ($Hrisk_{it}$) companies and used those subcategories in our main regression model alternatives. Instead of using $Reform_{it}$ as a single indicator for the Basel II reform, we created interaction terms of these risk categories with the Basel II dummy variable ($Lriskref_{it}$, $Mriskref_{it}$, $Hriskref_{it}$). As expected, low insolvency risk ($Lrisk_{it}$) leads to lower costs of debt, whereas high risk ($Hrisk_{it}$) is followed by higher cost of debt compared to the reference group. Panel regression results show a significant rise of the cost of debt for all risk classes after the Basel II reform except the lowest

[62] We supposed that companies that have a high proportion of bank debt might face higher costs of debt. We limited our sample by gradually increasing the proportion of $Credit_{it}$ in 10 percent steps (from 10 to 80 percent). The results were not significant for values bigger than 40 percent, which could be attributable to few observations.

[63] $Refret_{it}$ lost significance when adding $Credit_{it}$. Both variables depict the relationship between bank debt and interest rates. A further reason to neglect $Credit_{it}$ in our model is multicollinearity, tested by variance inflation factors.

[64] Signs of the equity ratio changed due to the altered relationship with the dependent variable. We assumed that the positive coefficient offsets effects by the default risk measure.

one. The results indicate that high-risk companies suffered from the Basel II reform, whereas the costs of debt were significantly lower for low-risk companies. This might insinuate that banks passed through higher costs due to regulation to badly rated companies.

Table 6 – Regression Results of Sensitivity Analysis of Model (1) – New bank debt

Variable	New bank debt				No new bank debt			
	POLS		Fixed Effects		POLS		Fixed Effects	
Cons	-3.202	***	-3.586	***	-2.808	***	-3.585	***
	[0.112]		[0.553]		[0.104]		[0.701]	
$Risk_{it}$	0.296	***	0.075	***	0.302	***	0.074	***
	[0.011]		[0.011]		[0.009]		[0.009]	
$Reform_{it}$	0.114	***	0.092	***	0.033	*	-0.028	***
	[0.021]		[0.017]		[0.018]		[0.013]	
$Retail_{it}$	-0.565	***	-0.200	***	-0.622	***	-0.174	***
	[0.023]		[0.023]		[0.019]		[0.023]	
$Refret_{it}$	-0.082	***	0.003		0.017		-0.075	***
	[0.025]		[0.018]		[0.019]		[0.016]	
$Eqratio_{it}$	-1.723	***	-1.696	***	-1.396	***	-1.443	***
	[0.053]		[0.12]		[0.035]		[0.084]	
$Housebank_{it}$	-0.313	***	-		-0.238	***	-	
	[0.019]		-		[0.014]		-	
$Size_{it}$	-0.081	***	-0.040		-0.109	***	-0.024	
	[0.011]		[0.06]		[0.01]		[0.077]	
$Parent_{it}$	-0.161	***	-		-0.074	***	-	
	[0.017]		-		[0.012]		-	
GDP_{it}	0.035	***	0.030	***	0.008		-0.030	**
	[0.008]		[0.006]		[0.006]		[0.005]	
$Refin_{it}$	-0.028	**	-0.012		-0.033	***	0.041	**
	[0.012]		[0.01]		[0.01]		[0.008]	
$Y2008_{it}$	0.146	***	0.161	***	0.079	***	-0.050	***
	[0.026]		[0.019]		[0.022]		[0.014]	
$Y2009_{it}$	0.158	**	0.233	***	-0.011		-0.237	**
	[0.069]		[0.05]		[0.053]		[0.038]	
$Trade_{it}$	-0.048	***	-		-0.032	***	-	
	[0.014]		-		[0.012]		-	
$Service_{it}$	-0.404	***	-		-0.354	***	-	
	[0.041]		-		[0.034]		-	
$Construct_{it}$	-0.466	***			-0.449	***		
	[0.022]				[0.019]			
$Other_{it}$	-0.353	***	-		-0.299	***	-	
	[0.02]		-		[0.014]		-	
Obs. (groups)	29203		29203	(15993)	32996		32996	(15432)
F-value	476.71		98.17		850.44		173.34	
p-value	0		0		0		0	
R^2 (within)			0.10				0.13	
R^2 (between)			0.21				0.22	
R^2 (overall)	0.27		0.20		0.31		0.23	

Table 6 displays pooled OLS and fixed-effects regression results of model (1): $lninterest_{it} = \beta_0 + \beta_1 risk_{it} + \beta_2 reform_{it} + \beta_3 retail_{it} + \beta_4 refret_{it} + \beta_5 eqratio_{it} + \beta_6 housebank_{it} + \beta_7 size_{it} + \beta_8 parent_{it} + \beta_9 GDP_{it} + \beta_{10} refin_{it} + \beta_{11} y2008_{it} + \beta_{12} y2009_{it} + \beta_{13} trade_{it} + \beta_{14} service_{it} + \beta_{15} construct_{it} + \beta_{16} other_{it} + \varepsilon_{it}$. The sample is split into companies that do and do not raise new bank debt (i.e., observations with a positive delta of amounts owed to credit institutions (current year and previous year)). *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$ The values in squared parentheses are standard errors. (- denotes time constant, omitted variables in panel regression). For variable description, please see Table 2.

Table 7 – Regression Results of Sensitivity Analysis of Model (1) - Risk Alternatives

Variable	Model 1	
	Fixed Effects	
Cons	-4.050	***
	[0.452]	
$Lrisk_{it}$	-0.051	**
	[0.021]	
$Hrisk_{it}$	0.033	***
	[0.011]	
$Lriskref_{it}$	-0.080	***
	[0.023]	
$Mriskref_{it}$	0.023	**
	[0.011]	
$Hriskref_{it}$	0.064	***
	[0.012]	
$Retail_{it}$	-0.148	***
	[0.016]	
$Refret_{it}$	-0.035	***
	[0.011]	
$Eqratio_{it}$	-1.455	***
	[0.064]	
$Size_{it}$	0.036	
	[0.05]	
GDP_{it}	-0.010	***
	[0.004]	
$Refin_{it}$	0.012	**
	[0.006]	
$Y2008_{it}$	0.038	***
	[0.011]	
$Y2009_{it}$	-0.083	***
	[0.029]	
Obs. (groups)	62199	(19627)
F-value	177.79	
p-value	0	
R^2 (within)	0.09	
R^2 (between)	0.21	
R^2 (overall)	0.21	

Table 7 displays fixed-effects regression results of the following model (1) alternative: $lninterest_{it} = \beta_0 + \beta_1 lrisk_{it} + \beta_2 hrisk_{it} + \beta_3 lriskref_{it} + \beta_4 mriskref_{it} + \beta_5 hriskref_{it} + \beta_6 retail_{it} + \beta_7 refret_{it} + \beta_8 eqratio_{it} + \beta_9 size_{it} + \beta_{10} GDP_{it} + \beta_{11} refin_{it} + \beta_{12} y2008_{it} + \beta_{13} y2009_{it} + \varepsilon_{it}$. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. The values in squared parentheses are standard errors. For variable description, please see Table 2.

3.1.4. Empirical Results Concerning Basel II and the Financial Crisis

This chapter contains results concerning Basel II and the financial crisis. Section 3.1.4.1 starts with descriptive analyses and is followed by regression results in Section 3.1.4.2.

3.1.4.1. Descriptive Analyses

In this section, we investigate potential effects of the financial crisis on corporate credit costs on a disaggregated company level. First, we focus on company investments to inspect whether we can observe demand driven credit constraints. Companies might have invested more prudently during the crisis due to uncertain future economic prospects. A decline of investments might lead to a drop in the demand of external financing sources. On an aggregated level, this may induce a demand driven credit crunch. On the other hand, a decrease of investments might also be reducible to financing restrictions on the supply side. Campello et al. (2010) note that although little data is available on investment cancellation in Europe, 69 percent of the questioned managers were inclined to cancel investments during the crisis. However, this is not obvious from our archival data. German SMEs' average investments remained unchanged in the early stage of the financial crisis, i.e., in 2007 or 2008, and only declined in 2009. We also observe this development if we subdivide our sample into our four risk categories (see Table 8).[65]

Second, we inspect the bank debt financing of our sample to further detail. A closer look at the average volume of amounts owed to credit institutions per year does not reveal a significant change of the bank debt ratio during the crisis. In addition, we did not find a noticeable decrease of newly granted bank credits during the respective period. Hence, we did not find indicators of credit amount restrictions in our sample. However, we cannot control for whether SMEs sought additional debt financing that was not granted.

Table 8 – Descriptive Analysis with Regard to Model (2)

	$Invest_{it-1,t}$			$Credit_{it}$			$Newcredit_{it-1,t}$		
	Mean	**S.D.**	**Obs.**	**Mean**	**S.D.**	**Obs.**	**Mean**	**S.D.**	**Obs.**
2004	0.006	0.068	3091	0.277	0.224	3091	-0.004	0.103	3091
2005	0.010	0.069	4121	0.268	0.222	4121	0.003	0.107	4121
2006	0.013	0.073	5628	0.265	0.221	5628	0.009	0.119	5628
2007	0.014	0.071	5474	0.267	0.229	5474	0.017	0.123	5474
2008	0.018	0.080	5522	0.257	0.224	5522	0.010	0.113	5522
2009	0.005	0.065	5154	0.245	0.211	5154	-0.011	0.105	5154
2010	0.016	0.077	1102	0.261	0.208	1102	0.002	0.115	1102
Total	0.012	0.072	30092	0.262	0.222	30092	0.005	0.113	30092

Table 8 displays descriptive results with regard to model (2). The table depicts the development of variables $Invest_{it-1,t}$, $Credit_{it}$ and $Newcredit_{it-1,t}$ over time.

[65] Results contradict those of Duchin et al. (2010). In the U.S., real effects of the crisis are already noticeable in 2008.

3.1.4.2. Regression Results

Table 9 shows the results of Model 2, Table 10 the corresponding variable correlations. The variable $Crisis_{it}$ is slightly significant, indicating that German SMEs invested more during the crisis years of 2007 and 2008 than in the years of 2003 to 2006. If we further consider the rise of the aggregated credit volume granted to German companies during the crisis, this might be an indication of a "run" on corporate bank credits (German Central Bank 2009; Ivashina and Scharfstein 2010; German Central Bank 2013b). As $Cash_{it}$ is strongly significant and positive, we conclude that investments are indeed internally financed by cash reserves during our sample period. Moreover, cash financing seems to be even more important for investments during the financial crisis, which can be deduced from the (significantly) positive value of $Cashcrisis_{it}$. We prudently infer that SMEs might have had to use more cash reserves for investment financing as a result of restrictions on alternative external financing resources, which might be due to potential credit constraints.

Table 9 – Regression Results of Model (2)

Variable	**Model 2**	
	Fixed Effects	
Cons	-0.008	***
	[0.001]	
$Crisis_{it}$	0.003	**
	[0.001]	
$Cash_{it}$	0.160	***
	[0.014]	
$Cashcrisis_{it}$	0.022	*
	[0.012]	
$Newcredit_{it-1,t}$	0.235	***
	[0.013]	
$Newcreditcrisis_{it-1,t}$	-0.023	
	[0.016]	
$Dsales_{it-1,t}$	0.008	***
	[0.001]	
Cfo_{it}	0.055	***
	[0.004]	
Obs. (groups)	23836	(10604)
F-value	94.77	
p-value	0	
R^2 (within)	0.16	
R^2 (between)	0.12	
R^2 (overall)	0.14	

Table 9 displays fixed-effects panel regression results of model (2) $invest_{it-1,t} = \beta_0 + \beta_1 crisis_{it} + \beta_2 cash_{it} + \beta_3 cashcrisis_{it} + \beta_4 newcredit_{it-1,t} + \beta_5 newcreditcrisis_{it-1,t} + \beta_6 dsales_{it-1,t} + \beta_7 cfo_{it} + \varepsilon_{it}$. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. The values in squared parentheses are standard errors. For variable description, please see Table 2.

Newcredit$_{it\text{-}1,t}$ has additional explanatory content. The highly significant relationship between newly raised bank debt and investments allows us deduce that investments of German SMEs are highly financed by new bank credit. However, the interaction term *Newcreditcrisis*$_{it\text{-}1,t}$ is not significant. Thus, corporations in our sample did not change their extent of their bank debt financing during 2007 and 2008. A company's future profitability, represented by *Dsales*$_{it\text{-}1,t}$, is positively correlated with company investment, which is intuitively clear. In addition, the significant value of the operating cash flow variable reveals that additional internal funds are used for investment financing. Taking these results into consideration, there are hints that speak in favor of a change of the investment financing behavior of German SMEs that might be due to a financing supply restriction. In unreported investigations, we inspected whether especially risky companies might suffer from financing constraints. This would be support for the proposition that banks might have preferred less risky companies as debtors (flight to quality). However, we did not find a clear pattern in our data. Consequently, we are not able to convincingly identify a credit crunch for German SMEs during the crisis period of 2007 and 2008.

Table 10 – Variable Correlation and Variance Inflation Factors of Model (2)

	1	2	3	4	5	6	7	8	VIF
1 Invest$_{it\text{-}1,t}$	1.00								
2 Crisis$_{it}$	0.02 ***	1.00							1.16
3 Cash$_{it}$	0.04 ***	0.00	1.00						1.22
4 Cashcrisis$_{it}$	0.02 ***	0.29 ***	0.46 ***	1.00					1.36
5 Newcredit$_{it\text{-}1,t}$	0.29 ***	0.00	0.00	0.00	1.00				2.05
6 Newcreditcrisis$_{it\text{-}1,t}$	0.22 ***	0.05 ***	0.00	0.01 ***	0.80 ***	1.00			1.97
7 Dsales$_{it\text{-}1,t}$	0.12 ***	-0.06 ***	0.02 ***	0.01	0.09 ***	0.05	1.00		1.01
8 Cfo$_{it}$	0.03 ***	0.03 ***	0.08 ***	0.07 ***	-0.23 ***	-0.17 ***	-0.10 ***	1.00	1.08

Table 10 displays correlations and variance inflation factors of model (2). All values of VIF stay below 10. For variable descriptions, please see Table 2.

To sum up our findings regarding the influence of the financial crisis and Basel II on the costs of debt of German SMEs, we draw the following conclusions: we both control for the development of refinancing interest rates and the insolvency risk of individual companies in Model 1. Descriptive analysis does not show a rise of the average default risk of our sample companies over the investigated period. However, we still find an increase of the costs of debt capital of German SMEs after 2007 *besides* these effects. Moreover, the crisis might have led to demand or supply driven credit restrictions which may reason a change of the costs of debt. We therefore inspect whether our data discloses a decline of company investments during the crisis as indication of a drop in bank debt demand. We did not find a change of investment behavior for the years of 2007 and 2008, but a slight decline of investments in 2009. As we supposed that a credit crunch most likely might have taken place in 2007 and 2008, the decrease in 2009 does not directly affect our analysis.

Focusing on investment financing, our data depicts a slight change of corporate investment financing behavior during the crisis. German SMEs seem to use more cash reserves to finance their investments

in 2007 and 2008 than in the non-crisis period of 2003 to 2006. This might be due to financing constraints on the supply side, potentially due to a restrictive lending behavior of banks. However, we did not observe a change of the extent of bank debt investment financing in the corresponding period. Thus, we were not able to convincingly infer whether a supply driven credit crunch might have taken place. We further examined whether credit restrictions might only have affected highly risky companies. This might be an indication of a "flight to quality" lending behavior of banks. Again, we were not able to identify a clear pattern in our data. There is no change in the extent of credit granting for any risk group observable. Nevertheless, we could not control for whether all investments planned by companies could be financed or whether some had to be canceled (Campello et al. 2010). Higher average investments during the crisis and the rise of the aggregated credit volume granted to companies might allow the inference that there was a "run" on corporate bank debt in 2007 and 2008 (German Central Bank 2009; German Central Bank 2013b). However, we cannot persuasively prove this suspicion.

We therefore conclude that no significant change took place in the extent of bank credit granting to German SMEs during the financial crisis. Nonetheless, we still observe a significant rise of debt costs of German SMEs after the Basel II amendment. Results of a bank lending survey, which indicate that banks increased their credit margins in 2007 and 2008, support our findings (German Central Bank 2009; German Central Bank 2013b). Hence, we postulated that banks made use of the special situation of the financial crisis and raised credit standards for SME loans. We cannot identify whether the higher margin is due to a higher risk premium added by banks in prospect of the crisis or whether it is attributable to Basel II.

3.1.5. Summary and Conclusion

This paper is one of the very few studies that empirically measure the impact of Basel II and the financial crisis on SMEs. To the best of our knowledge, this paper is the first to focus on an *ex-post* analysis of the effect of the regulatory amendment and the crisis in Germany. We concentrate on SMEs as they are of utmost importance for Germany's economy and tend to be neglected by research. We postulate that banks have a higher risk awareness and higher total costs due to the more formalized rating process since Basel II. Those extra costs are likely to be passed on to debtors – especially to those with lower ratings – by disadvantageous credit conditions, finally resulting in higher costs of debt for borrowers. With SMEs mostly falling into this low-rated category because of comparably low equity ratios, the impact of the regulatory amendment on debt cost should be noticeable.

We used a fixed-effects and POLS regression approach on behalf of a comprehensive sample of archival accounting data of German SMEs extracted from the DAFNE database for our analyses. We approximated the costs of debt by dividing total interest expense by the average value of total assets of the respective and the previous year, based on Binsbergen et al. (2010). The results presented here are robust throughout all model expansions and indicate a significant rise of the costs of debt of German SMEs since 2007. Basel II contains special relief for SMEs as banks might treat them as retail customers

if the granted credit amount does not exceed one million euro. As retail classification induces lower capital requirements for banks, costs of loans in this case might have decreased or at least remained constant. We therefore examined the influence of this retail credit effect on the cost of debt of SMEs. We find that retail loans are priced more favorably.

Unfortunately, the amendment of Basel II was immediately followed by the financial crisis of 2007 and 2008. It is therefore difficult to separate the effects of the regulation and the crisis on the debt capital costs of our sample companies. We therefore control for several aspects that might influence our analyses. We adopted refinancing interest rates, the GDP development, and an insolvency rating proxy as independent variables in our models to capture potential influences of the economic development. We did not observe a rise of the average company risk during our sample period that might lead to an overall increase of debt costs.

Furthermore, we inspect corporate investments during the financial crisis. We did not find evidence concerning a change of investment behavior of SMEs during 2007 and 2008. However, we detected a significant rise of investment financing through cash reserves. This might be an indication of a higher dependence of SMEs on internal financing during the crisis and consequently might be due to external financing restrictions. Nevertheless, our data neither shows a significant change of the extent of bank debt investment financing nor an alteration of average new credit granting. Therefore, we conclude that there was no significant change of the extent of bank credit granting during the financial crisis.

However, we find a significant rise in the costs of debt for German SMEs since 2007, which indicates a significant change in the lending behavior of banks. We therefore suggest that banks since Basel II passed on higher costs of capital provision and the formalized rating procedure to debtors by imposing higher credit margins on SME loans. We cannot exclude the possibility that the higher margins are reasoned by higher risk premiums demanded by banks in prospect of the financial crisis. In addition, we were not able to evaluate whether the interest margins in our sample are commensurate with the respective involved company default risk. This is especially valid for the period before the Basel II amendment. It might be that margins were not risk adequate before Basel II, but were too low, because of the lack of an objective, formalized rating procedure. A more formalized rating might have revealed a requirement to increase margins to a higher, risk adequate level. We would need detailed information of individual company loans to figure that out. No matter what may be the fundamental reason behind banks' behavior, German SMEs have been affected by tighter credit standards since 2007. Considering the broad literature that is focusing on the *ex-ante* expected impact of Basel III on the real economy, ours is the first archival data-based evidence that can be used as a basis for further analyses.

3.2. Earnings Manipulation of German SMEs in the Context of Bank Debt Lending

This part of the dissertation examines several aspects of whether bank debt lending influences the accounting decisions of German private SMEs. It is especially interesting to pursue this question in Germany as the country's banking system ranks among the five biggest banking systems worldwide, and German banks have often been praised for their outstanding efficiency in financing SMEs (Harhoff and Körting 1998; European Banking Federation 2011a; b). This study critically questions this statement and calls attention to potential inefficiencies in bank debt contracting.

German SMEs are an appropriate object for this investigation because their external financing is mainly based on bank debt (KFW Development Bank 2012). Therefore, banks are likely the most important external stakeholders of German SMEs after the state treasury. In addition, disclosure requirements for SMEs regulated by local GAAP are limited. A low demand for external reporting furthermore explains why financial reporting of German SMEs is often reduced to the legally required minimum.[66] We thus supposed that private bank debt contracts of SMEs are affected by agency conflicts between the contracting parties and argue that these contracts are a prominent driver for earnings manipulation. More precisely, we assumed that the situation of limited publicly available information provides the opportunity for SMEs to exploit the advantage of asymmetric information over the contracting counterparty by managing earnings in order to achieve better contracting conditions (Ball et al. 2000; Leuz and Wüstemann 2003; Ball and Shivakumar 2005; Burgstahler et al. 2006).[67]

At least since Basel II, banks have been required to base their loan condition assessment on an objective rating that is mostly premised on financial statement analysis (Haller et al. 2009). In addition, there is evidence that earnings build the foundation for many financial ratios used in debt contracting (Haghani et al. 2008; Haghani et al. 2009; Creditreform Rating AG 2011a). Higher earnings are consequently advantageous as they likely lead to better ratios, which in turn might result in better loan conditions.

One central hypothesis of this study is that the incentive for SMEs to opportunistically exploit accounting discretion rises with their proportion (and consequently their dependence) of bank debt financing. An additional vital supposition is that the borrowing of new bank debt is one crucial corporate finance event for SMEs. Under the assumption that bank loan interest rates account for a significant proportion of the companies' costs of debt and that loan conditions are predominantly determined at the beginning of a new loan contract we suggest that German SMEs have an incentive to manipulate earnings in the periods prior to raising new bank debt. We therefore predict that German SMEs report non-conservatively in these periods.

[66] See Section 2.3.3.1.
[67] See Chapter 1.

Moreover, we investigate whether earnings manipulation is effective and rewarded in terms of decent credit conditions. More precisely, we analyze whether companies that report exceptionally high total accruals have lower costs of debt capital than counterparts that report average accruals.

We contribute to previous literature in several ways. Dietrich et al. (2001) inspect the extent of accounting discretion in revaluation increments before raising debt. They conclude that managers use income-increasing and income-smoothing accounting choices prior to raising debt. In contrast, our examination comprises more general approaches to measure earnings management prior to debt-raising, i.e., total accruals manipulation. Liu et al. (2010) investigate earnings management before bond issues and find that managers adopt income-increasing accounting choices with the incentive to achieve lower costs of borrowing. Previous research concentrates on countries with strong capital markets and supremacy of equity financing. On the contrary, SMEs in Germany are highly dependent on bank debt financing. We focused on private debt relationships with few major contracting parties instead of public debt issuing with a dispersed group of investors. We expected that the incentive of SMEs to please the single private debt investor is rather high. Contrary to Choi (2007), we supposed that higher bank dependence is accompanied by more non-conservative reporting. Whereas Bigus et al. (2009) investigate accounting practices of German SMEs independent of a certain event, we analyzed whether potential *event-driven* earnings manipulation of SMEs is effective and rewarded in terms of lower costs of debt.

3.2.1. Hypotheses Development

Bank debt provides the foundation for over 40 percent of SMEs' investment financing (KFW Development Bank 2012). Over 60 percent of all bank loans are long-term loans with a maturity above five years.[68] Hence, loan interest rates determine a major proportion of the company's debt capital costs for several years.[69] SMEs' incentive to achieve optimal loan conditions is obvious.

Since Basel II, banks are required – at the very least – to rely on widely standardized internal and external ratings for the assessment of loan conditions. Those ratings are generally based on financial ratio analysis (Basel Committee on Banking Supervision 2004; Haller et al. 2008). Hence, financial statements are commonly demanded by banks in the context of a credit assessment (e.g., Brunner et al. 2000; Grunert et al. 2005). A survey of representatives of 32 German banks in 2008 reveals that balance sheet data accounts for at least 50 percent of the rating evaluation of 84 percent of the questioned institutions (Haller et al. 2009). There is no clear evidence concerning the question which financial ratios are the most important ones. However, there are studies that indicate that commonly used financial ratios in debt contracting include, e.g., the EBITDA interest cover ratio, the debt service cover ratio and the leverage ratio that strongly depend on a company's earnings (Haghani et al. 2008; Haghani et al. 2009). The Creditreform AG mentions over 30 more ratios, such as the return on equity, that play an important

[68] The figure is based on own mean calculations over the years 2005-2010 relying on statistics of the German Central Bank (2012).

[69] Renegotiations of loan terms might play a further significant role. However, we were not able to identify these events in our data set. Thus, we focused on newly raised bank debt.

role in debt contracting of which a significant proportion is based on earnings (Creditreform Rating AG 2011a). Hence, higher earnings are advantageous, as they might lead to better ratios and might result in better loan conditions. We propose that SMEs are aware of the importance of financial figures in credit assessments.

Dechow et al. (1996) mention that the incentive to attract external financing at low cost is an important driver for earnings management. Accordingly, we propose that the event of raising new bank debt provides an incentive for earnings manipulation for German SMEs. This proposition builds on the assumption that relationships between private SMEs and banks are susceptible to type II agency problems because the effectiveness of earnings management depends on the degree of the asymmetric information advantage the accountant has over the contracting partner.[70] Nevertheless, one could argue that it is not apparent whether managers have incentives to use their accounting discretion opportunistically. Shivakumar (2000) and Ball and Shivakumar (2008) extensively comment on the opportunistic use of accounting discretion in the context of equity capital raising. They state that investors are able to infer earnings management and to recalculate earnings without bias. Hence, earnings manipulation would be ineffective in this context.

The same might be valid in the case of German SMEs. In a relationship-based system, banks likely have direct access to private company information, which consequently reduces the asymmetric information disadvantage of banks. This means that banks should be able to detect opportunistic earnings manipulation.[71] However, this line of argumentation only applies if banks *do* have comprehensive and detailed knowledge about a certain company's business and use this information in their credit assessment. We question whether all bank-company relationships are that close in general. One has to differentiate between long-standing relationships and single credit granting.

In private bank debt situations, it is likely one single person, i.e., the corporate customer relationship manager, who determines individual corporate credit conditions. Accordingly, the credit assessment in private bank debt relationships differs significantly from public debt or equity assessments where the pricing is based on an evaluation of various capital market participants and professional analysts. Taking a closer look at the qualification of corporate client advisors in banks, we find that a typical advisor completed an apprenticeship as banking officer and sometimes has an additional certificate of the Chamber of Industry and Commerce (*IHK*) or an administrative and economic academy (*BA* or *VWA*) in busi-

[70] As banks do not have the same access to internal company information as equity investors, type II agency problems between SMEs and debt investors are rather high (Leuz et al. 2003; Leuz and Wüstemann 2003; Ali et al. 2007). It is reasonable that banks try to mitigate the disadvantage of asymmetric information. Therefore, banks try to collect comprehensive data of a certain company for their credit assessment. Further strategies to mitigate the information asymmetry are to build long-term relationships, to claim collateral, and/or to include covenants in debt contracts (Elsas and Krahnen 1998; Lehmann and Neuberger 2001).

[71] Certain accounting options might generally be undone by banks. For instance, it is likely that banks do not include capitalized self-established intangible assets (§ 248 (2) HGB) in their credit evaluation, as these items are likely not of stable value.

ness administration. This education likely does not contain theoretical concepts of earnings management. A deeper understanding of earnings management, of course, might be given with a gain in experience. In addition, according to Huber (2011), who conducted interviews with 24 German banks, a typical corporate client advisor has to serve approximately 70 corporate clients on average.

Taking these facts into consideration, we supposed that (experienced) corporate customer relationship managers are able to detect earnings manipulation in the annual accounts of long-standing clients. However, numerous of the average 70 clients of one advisor are companies that apply for a credit for the first time. We doubt that corporate client advisors are able to correctly assess the extent of applied accounting discretion in such cases, even if they have access to private company information.[72] Earnings manipulation might be effective in such cases. Nevertheless, it remains an empirical question of whether German SMEs use their accounting discretion opportunistically. We aim to tackle this issue in our empirical investigations.

We propose that German SMEs use measures of earnings manipulation in the context of bank debt financing that result in non-conservative (and thus income-increasing) financial figures. As German GAAP involves a high level of unconditional conservatism, we did not expect to observe conditional conservatism.[73] In contrast to Choi (2007), we supposed that the incentive to report non-conservatively is higher for SMEs that are more dependent on bank debt financing. The more important an external stakeholder is, the higher is the incentive for managers to intentionally use accounting discretion to cover up bad performance or to meet certain earnings targets to positively influence the stakeholder's decision (Leuz et al. 2003).

Hypothesis (3): German SMEs ceteris paribus use more non-conservative accounting choices the higher the proportion of bank debt financing is.

We further postulated that new bank debt borrowing is a crucial event for SMEs and incites them to present themselves as optimal debtors in advance. One could therefore expect to find higher total accruals due to non-conservative reporting for companies that raise bank debt in the subsequent period, which is consistent with Liu et al. (2010). In line with our propositions above, we expected this behavior to be less pronounced for companies that have a longstanding housebank relationship.

Hypothesis (4): German SMEs ceteris paribus use more non-conservative accounting choices in the period prior to raising bank debt than in other periods.

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[72] This might be especially valid for real activities management and applied discretion in the recognition of assets or provisions. We tried to control for the real activities management measures developed by Roychowdhury (2006), but were not able to reliably calculate his measures due to missing data and the different structure of profit and loss accounts compared to U.S. financial statements. The German "Gemeinkostenverfahren" does not demand the reporting of certain profit and loss positions, for example, R&D expenses, that are needed to calculate the real activities measures.

[73] See Section 2.3.3.1.

This is closely linked to the question of whether such a potential distortion of annual statements is effective and rewarded in terms of lower costs of debt capital. For this purpose, we assumed that extremely high (low) total accruals are most likely those that are manipulated by managers in order to increase (decrease) earnings. Prior research delivers mixed results concerning this question (e.g., Ahmed et al. 2002; Zhang 2008; Bigus et al. 2009; Liu et al. 2010).[74] We tried to tackle this question separately for housebank and multi-bank relationships. Earnings manipulation might be effective in loose multi-bank relationships, but detected in longstanding housebank relationships. Correspondingly, SMEs with housebank relationships would not have an incentive to report extreme accruals. However, companies with multi-bank relationships and exceptionally high total accruals might be rewarded by lower costs of debt capital, as banks might not be able to detect earnings manipulation in loose relationships. One implication is that banks are not able to distinguish between companies that do not manipulate accruals and those that use earnings manipulation to boost earnings within a certain range due to the high information asymmetry. Banks might therefore price those firms at a comparable level (of course, under the assumption of comparing companies with similar characteristics, e.g., a similar rating). However, we did not expect to find the same cost effect for firms with housebank relationships. Besides, we anticipated a higher cost of debt for companies with multi-bank relationships compared to those with housebank relationships in general because the former likely pay a premium for higher information asymmetry (Petersen and Rajan 1994; Degryse and Van Cayseele 2000; Behr and Güttler 2007).

Hypothesis (5): German SMEs with multi-bank relationships that use more non-conservative accounting choices ceteris paribus have lower costs of debt capital.

3.2.2. Research Design and Data

The ideal data set would consist of bank loan contracts of German SMEs with detailed information about credit conditions, initiation, and termination dates as well as concrete information about the prior behavior of SMEs. However, this kind of data is not publicly available and studies concerning bank debt contracting are rare. Consequently, our investigation is based on publicly available accounting data. Our sample encompasses all available firm observations of German unlisted companies from the September 2011 version of the Bureau van Dijk DAFNE database that fulfill the SME criteria of the European Commission. There are in total 326,552 observations of 40,819 companies with financial data for the period of 2003 to 2010.[75] The data is from unconsolidated, firm-level financial statements premised on

[74] See the literature review in Section 2.3.3.

[75] Missing values in our dataset are coded equal to zero. Therefore, we eliminated all observations equal to zero for our calculations. Thereby, we could eliminate observations with economically correct zero values, but we did not expect this effect to significantly influence our calculations as this might only be accurate in rare cases. The sample is an unbalanced panel with 13,007 observations with non-missing data for our major regression model. Creating a balanced panel would lead to a further, severe reduction of observations. Therefore, we allowed the panel to be unbalanced.

local German GAAP.[76] However, firms with single owners were excluded as a current reform of German GAAP scrapped the obligation to publish any financial statements for sole traders (§ 241a HGB) (Federal Ministry of Justice 2011). The sample includes both legal forms of partnerships and corporations.

We excluded all observations belonging to financial services and agricultural industries, as financial statements of those companies might differ significantly. We applied Stata 12 to our calculations. We used a fixed-effect panel regression approach to control for unobserved firm-specific effects under the assumption that the error term ε_{it} is independent of the explanatory variables (Brüderl 2010).[77] The Hausman test strongly rejects the null hypothesis that fixed-effect models and random-effect models are identical. The test recommends a fixed-effects approach (Hausman 1978). We controlled for the possible influence of powerful observations and for unspecified heteroscedasticity by applying White's (1980) heteroscedasticity correction.

Following the suggestion of Dechow et al. (2011) to avoid discretionary accruals models to identify earnings manipulation, we focused on a model depending on total accruals in contrast to discretionary accruals. To inspect the accounting choices of SMEs in the case of bank debt financing, we referred to a model suggested by Ball and Shivakumar (2005). It investigates the relationship between cash flows and accruals, suiting private companies. The model combines two theoretical statements about this relationship. In principle, accrual accounting aims at establishing an earnings variable that is less noisy than cash flows from operations. One outcome of this assumption is that cash flows from operations are negatively correlated with accruals. However, the authors also mention a second function of accruals, i.e., the timely recognition of gains and losses or conditional conservatism. They predict a positive, but asymmetric relationship between accruals and concurrent cash flows that is reasoned by the correlation of cash flows from durable assets over time. For example, a downgrade of an investment that causes a decrease of current cash flows is probably accompanied by a demotion of future cash flows. The asymmetric relationship is expressed by a timelier recognition of (unrealized) economic losses compared to gains. Both approaches are captured in the following piecewise-linear model (Ball and Shivakumar 2005):

$$Acc_{it} = \beta_0 + \beta_1 DCfo_{it} + \beta_2 Cfo_{it} + \beta_3 DCfo_{it} * Cfo_{it} + \varepsilon_{it} \quad (3)$$

Accruals (Acc_{it}) are also measured in line with Ball and Shivakumar (2005). We adopted the balance sheet approach, although it is criticized by Hribar and Collins (2002) as producing measurement errors

[76] Our dataset only allows for a distinction between consolidated group accounts and 'unconsolidated' accounts. Within the unconsolidated accounts, we were not able to reliably differentiate between companies that do and do not belong to a group. Thus, our dataset might be distorted by observations that are affiliated. Affiliated companies may be able to negotiate loan conditions with the consolidated group accounts and consequently receive better conditions in general. However, our results clearly indicate that SMEs use measures of earnings management independent of their affiliation. Szczesny and Valentincic (2013) also use unconsolidated financial statements for their analysis.

[77] For details concerning the applied econometric approach, please see, e.g., Brüderl (2010).

due to missing cash flow data in our sample.[78]

$$Acc_{it} = \Delta Inventory_{it-1,t} + \Delta Debtors_{it-1,t} + \Delta Other\ Current\ Assets_{it-1,t} - \Delta Creditors_{it-1,t} - \Delta Other\ Current\ Liabilities_{it-1,t} - Depreciation_{it} \quad (4)$$

Cash flow from operations (Cfo_{it}) was calculated by subtracting accruals from earnings before extraordinary items (*Ergebnis der gewöhnlichen Geschäftstätigkeit*). Both cash flows and accruals are standardized by lagged total assets. $DCfo_{it}$ is an indicator variable equal to one if Cfo_{it} is negative and zero otherwise. $DCfo_{it}$*Cfo_{it} captures the interaction effect of the two variables. Referring to Ball and Shivakumar (2005), we predicted β_2 to be negative determined by the negative relationship between cash flows and accruals. We did not offer predictions for β_0 and β_1. A positive β_3 reflects the asymmetric relationship mentioned above. The authors state that the asymmetry arises due to the more timely recognition of losses compared to gains. Losses tend to be accrued when they are still unrealized (i.e., on a non-cash basis) whereas gains are recognized when realized (i.e., on cash basis). For instance, a potential default of receivables leads to negative cash flows in the current period and negative accruals in the same period. Conversely, the purchase of raw material that precedes future sales also causes negative cash flows in the current period, but contemporaneously positive accruals. The corresponding gains are realized in the period when the goods are sold. Consequently, β_3 has a positive value if accounting is based on conditional conservatism. In contrast, a negative value for β_3 indicates less conservative accounting choices. It implies that companies try to avoid the revelation of negative cash flows due to negative events by engaging in activities that boost accruals (and thereby try to outrange negative cash flows to report positive earnings). For instance, companies might attempt to cover negative cash flows that are due to a drop in sales by reducing current depreciation or by overstating receivables (e.g., by a better-than-justified valuation of receivables that are potentially at risk) in order to increase current accruals.

Ball and Shivakumar (2006) bring together basic linear discretionary accruals models with their measure for conditional conservatism. Whereas discretionary accruals models (e.g., the Jones 1991 model) assume a linear relationship between cash flows and accruals, Ball and Shivakumar (2006) expand this idea by incorporating the above mentioned asymmetric relationship. They predict a substantial

[78] We only accepted observations where both values for t-1 and t are not equal to zero for a certain balance sheet position. By this procedure, we ensured that total accruals are not distorted by observations where one value in either t-1 or t is missing. Unfortunately, published data for single balance sheet positions for SMEs is limited. This is why we allowed the balance sheet positions "surplus from overfunding of pension obligations" and "deferred taxes" as part of other current assets to equal zero if the corresponding firm-individual value is missing (Burgstahler et al. 2006). The component "other current liabilities" does not include any provisions or accrued liabilities as our data set does not allow for identifying the proportion of short-term provisions or accrued liabilities. However, we focused on short term accruals because they are simple to alter for a company without violating the principle of consistency of HGB accounting (Dechow and Dichev 2002).

improvement of explaining the variation in accruals. We adopted the combination of the Ball and Shivakumar (2005) and Dechow and Dichev (2002).[79]

In the basic version, Dechow and Dichev (2002) measure the relationship between cash flows from operations realization and current working capital accruals. Accruals are assumed to anticipate future cash inflows (outflows) and reverse when cash previously recognized in accruals is received (paid) (Dechow et al. 2010). The model comprises prior ($lCfo_{it-1}$), current (Cfo_{it}) and prospective ($fCfo_{it+1}$) operating cash flows, which are regressed on the change of working capital. The remaining unexplained part of the variation in current accruals measures accruals quality, i.e., the higher the error term the lower is accruals quality (Dechow and Dichev 2002; Francis et al. 2005). The combination of the Ball and Shivakumar (2005) and Dechow and Dichev (2002) model is organized as follows.

$$Acc_{it} = \beta_0 + \beta_1 DCfo_{it} + \beta_2 Cfo_{it} + \beta_3 DCfo_{it} * Cfo_{it} + \beta_4 lCfo_{it-1} + \beta_5 fCfo_{it+1} + \varepsilon_{it} \quad (5)$$

Due to the intertemporal shifting of cash flows, both β_4 and β_5 are expected to be positive (Dechow and Dichev 2002).

We expanded this model with two important variables to test our hypotheses. In order to investigate whether the scale of bank debt influences accrual accounting in general (hypothesis 3), we adopted the variable $Bank_{it}$ (=amount owed to credit institutions, scaled by lagged total assets) in our model.[80] According to our previous remarks, a higher bank debt proportion indicates a higher dependence of the company on bank financing. A higher dependence should induce a stronger incentive to manage earnings, driven by the objectives to reduce debt capital costs and/or to maintain the possibility to receive future loans. We therefore predicted a positive sign for β_6. To test the influence of new debt raising (hypothesis 4), we expanded the above presented model by a dummy variable New_{it+1} equal to one if a company raises a significant amount of bank debt (i.e., a positive current-year to subsequent-year delta of more than five percent of current-year total capital) in the subsequent period. We hypothesized that β_7 is positive under the assumption that debt-raising companies have higher total accruals. If companies try to widen their credit lines, they likely attempt to present themselves as better debtors for banks and

[79] Other models control for gross property, plant and equipment (*GPPE*) as one important factor to approximate normal accruals. As GPPE is difficult to measure previous research often uses PPE as proxy. This underlies the assumption that GPPE is a good estimator for an averagely constant non-discretionary proportion of long-term assets and the connected amount of depreciation over all investigated companies (Jones 1991). However, this assumption is unlikely to hold for companies in our sample. They differ enormously concerning their size, age, growth, and asset maturity, even when controlling for industry differences. Mean comparison of asset maturity of small and medium-sized companies shows that small companies have an average maturity of 5.07 years whereas this ratio is equal to 3.41 years for medium-sized companies. Even among these two groups asset maturity is hardly comparable. Small companies tend to keep assets for years after they are depreciated due to a lack of funds for new investments. Asset maturity is calculated according to the Lopez-Garcia and Mestre-Barberá (2011) equation: $asset\ maturity = \frac{fixed\ assets}{total\ assets} * \frac{fixed\ assets}{depreciation} + \frac{receivables}{total\ assets} * \frac{receivables}{total\ revenues} + \frac{inventories}{total\ assets} * \frac{inventories}{sales} + \frac{other\ assets}{total\ assets}$. Applying one average proxy for GPPE might distort the propositions about earnings management. This is also the reason why we did not present results of our sensitivity analysis using the Jones (1991) or the modified Jones model (Dechow et al. 1995). The results appear to be unreliable. Moreover, the determination of reliable figures for the 'normal' part of accruals per industry would demand an industry-specific estimation over a long period. However, our sample period is limited to eight years which might be too short to estimate resilient figures.

[80] Please see the comments made on variable $Credit_{it}$ in Section 3.1.3.3.

thus boost earnings by higher accruals in order to achieve superior ratings and lower interest rates. Predictions for β_0 to β_5 remain unchanged.

We expanded the model by control variables recommended in previous literature (Dechow et al. 2010). Bharath et al. (2008) note that accruals might capture a part of the company's default risk. Therefore, we added the variable $Risk_{it}$ to our model, which is based on a company rating provided by the DAFNE database. The variable is structured as an indicator variable ranging from values one to four, with one implying low default risk and four indicating high default risk.[81] We further included GDP_{it} in our model to control for a possible influence of the economic cycle, measured by price-adjusted GDP data. We considered this control important due to the harsh impact of the financial crisis on German SMEs during the years 2008 and 2009. As suggested by McNichols (2000), we controlled for company growth. The variable $Growth_{it-1,t}$ is computed by scaling sales growth from the previous to the current period by lagged total assets.

$$Acc_{it} = \beta_0 + \beta_1 DCfo_{it} + \beta_2 Cfo_{it} + \beta_3 DCfo_{it} * Cfo_{it} + \beta_4 lCfo_{it-1} + \beta_5 fCfo_{it+1} + \beta_6 Bank_{it} + \beta_7 New_{it+1} + \beta_8 Risk_{it} + \beta_9 GDP_{it} + \beta_{10} Growth_{it-1,t} + \varepsilon_{it} \quad (6)$$

Consistent with previous literature all major variables are winsorized at one and 99 percent.[82] Similar to Marquardt and Wiedmann (2004), we eliminated observations with an absolute value of total accruals greater than one. In addition, we limited our sample to observations with a value of $Bank_{it}$ between zero and one as closer investigation of the variable unveils unreliable outliers.

We re-ran the model in the POLS-version to inspect differences in accrual accounting of debt-raising companies between housebank and multi-bank relationships in further detail. We expanded the model with a dummy variable, called $Housebank_{it}$, which equals one if a company has a relationship with only one bank. We considered this as a proxy for relationship lending.[83] Moreover, we interacted variable New_{it+1} with $Housebank_{it}$ to reveal differences in pre-debt-raising accrual accounting. We wanted to avoid distorting our POLS results with industry effects or differences in the asset structure of individual companies. Thus, we appended the model by the variable $FixedAssets_{it}$ (book value of fixed assets in year t divided by lagged total assets) to check for the company individual proportion of fixed assets that might drive the amount of depreciation. With $Manufacturing_{it}$ being the reference group, we adopted dummies for wholesale and retail trade ($Trade_{it}$); professional, scientific and technical services (*Ser-*

[81] See also Section 3.1.2.

[82] The sample is markedly smaller than the one in Section 3.1. This is due to the time lag structure of the models used here. The harsh reduction of observations might affect especially small companies.

[83] We had to rely on this rather rough proxy as we did not have detailed data concerning the individual bank-company relationship. Our results might be slightly biased as companies with several bank relationships might still have one powerful housebank. However, Petersen and Rajan (1994) also use the number of bank relationships a one indicator for relationship lending.

vice$_{it}$); the building industry (*Construct*$_{it}$); and other industries (*Other*$_{it}$). Thereby differences in the economic development of specific industries and in pattern of credit granting and collateralization are illustrated (Berger and Udell 1995; Graham et al. 2008).

$$Acc_{it} = \beta_0 + \beta_1 DCfo_{it} + \beta_2 Cfo_{it} + \beta_3 DCfo_{it} * Cfo_{it} + \beta_4 lCfo_{it-1} + \beta_5 fCfo_{it+1} + \beta_6 Bank_{it} + \beta_7 New_{it+1} + \beta_8 Risk_{it} + \beta_9 GDP_{it} + \beta_{10} Growth_{it-1,t} + \beta_{11} Housebank_{it} + \beta_{12} New_{it+1} * Housebank_{it} + \beta_{13} FixedAssets_{it} + \beta_{14} Trade_{it} + \beta_{15} Service_{it} + \beta_{16} Construct_{it} + \beta_{17} Other_{it} + \varepsilon_{it} \quad (7)$$

For our further analysis, we limited our sample to companies that raise new bank debt in the subsequent period (*New*$_{it+1}$ equals 1). In order to examine whether accrual choices in period t had an effect on the costs of debt in t+1 (where new debt is raised), we used a model with a cost of debt proxy, named *Interest*$_{it+1}$ as the dependent variable for our calculations. For each firm-year observation, we calculated the cost of debt proxy by dividing total interest expenses in t+1 by the average value of total assets of the current (t) and the subsequent year (t+1); this is based on Binsbergen et al. (2010).[84] A closer look at the distribution of the variable indicates that *Interest*$_{it+1}$ is not normally distributed, but skewed. To perform an OLS regression, we therefore recoded *Interest*$_{it+1}$ by calculating the natural logarithm, i.e., *LnInterest*$_{it+1}$.[85]

In order to test hypothesis (5), we investigated the effect of discretionary accruals on the costs of debt. Therefore, we first calculated normal accruals *Acc*$_{it}$ based on the piecewise-linear model mentioned above. Variables are defined as above. We determined the model parameters separately for each company j that raises bank debt in the subsequent period from a cross-section of all non-debt-raising companies i, belonging to the respective industry-year (Ball and Shivakumar 2008).[86] Again, we trimmed the extreme one percent on either side of all major variables.

$$Acc_{it} = \beta_{j0} + \beta_{j1} DCfo_{it} + \beta_{j2} Cfo_{it} + \beta_{j3} DCfo_{it} * Cfo_{it} + \beta_{j4} lCfo_{it-1} + \beta_{j5} fCfo_{it+1} + \varepsilon_{it} \quad (8)$$

Discretionary accruals *Dacc*$_{jt}$ are calculated by subtracting estimated normal accruals from actual accruals for companies that raise new bank debt in the subsequent period:[87]

[84] Due to missing data, we were not able to precisely identify the ratio of interest expenses attributable to the amounts owed to credit institutions to separate the costs of bank debt. We had data on the total amount of bank loans but we were missing detailed data concerning the assignable interest expenses. However, public debt financing is unlikely. Thus, we expected bank debt-raising to have a major influence on the total costs of debt. See calculations in Section 3.1.2.

[85] A closer inspection of the distribution of the altered variable indicates that it is not truncated, but almost normally distributed.

[86] We use the WZ Code 2008 as a foundation for the industry classification. Only industry-years with minimum 80 observations are considered. This number is quite high, but we were not able to perform our regressions with fewer observations.

[87] To avoid endogeneity, we used this model without further controls for individual firm characteristics. ^ above parameters mark estimates.

$$Dacc_{jt} = Acc_{jt} - (\hat{\beta}_{j0} + \hat{\beta}_{j1} DCfo_{jt} + \hat{\beta}_{j2} Cfo_{jt} + \hat{\beta}_{j3} DCfo_{jt} * Cfo_{jt} + \hat{\beta}_{j4} lCfo_{jt-1} + \hat{\beta}_{j5} fCfo_{jt+1}) \quad (9)$$

We separately inspected the effect of positive and negative discretionary accruals on the cost of debt, as we suggested that extremely high positive accruals (i.e., less conservative reporting) led to lower costs of debt. Thus, we distinguished between discretionary accruals with positive values ($pDacc_{it}$) and with negative values ($nDacc_{it}$) and adopted two separate variables in our cost of debt model, with normal accruals being the reference group. We expected a significant negative relationship between positive discretionary accruals and the costs of debt.[88] However, no significant effect of negative discretionary accruals is expected. In addition, the model is expanded by the dummy variable $Housebank_{it}$ to control for the cost influence of relationship lending. The variable is defined as above. We create the interaction of positive discretionary accruals $pDacc_{it}$ with $Housebank_{it}$ to examine varieties in the costs of debt.

In line with former research, we controlled for capital structure influences ($Eqratio_{it}$).[89] $Parent_{it}$ is a dummy variable equal to one if a company has a controlling parent company. Controlled companies might not be able to individually decide upon their accounting policy.[90] Furthermore, if the company is affiliated, it might be able to make use of the group's creditworthiness. We used total revenues, called $Size_{it}$, in our models to control for possible nonlinear and disproportionate effects in patterns of size and the failure rates of companies (Mansfield 1962). In addition, company size might indicate the bargaining power of a firm in loan negotiations with banks. Referring to Liu et al. (2010), we added a control variable for company risk ($Risk_{it}$) in year t. To separate potential effects of the overall interest rate level, we appended variable $Refin_{it}$ to depict the development of the main refinancing operations rate that banks have to pay to borrow money from the European Central Bank.[91] Furthermore, we expanded our model by variables that control for the economic development – represented by the price-adjusted value of the GDP per year (GDP_{it}) – and added two dummy variables for the years 2008 ($Y2008_{it}$) and 2009 ($Y2009_{it}$), which are equal to one if the firm-year observation is in the corresponding year. This isolated possible effects of the financial crisis. We also controlled for industry effects (see Table 12).

$$LnInterest_{it+1} = \beta_0 + \beta_1 pDacc_{it} + \beta_2 Housebank_{it} + \beta_3 pDacc_{it} * Housebank_{it} + \beta_4 nDacc_{it} + \beta_5 Risk_{it} + \beta_6 Size_{it} + \beta_7 Eqratio_{it} + \beta_8 Parent_{it} + \beta_9 Refin_{it} + \beta_{10} GDP_{it} + \beta_{11} Y2008_{it} + \beta_{12} Y2009_{it} + \beta_{13} Trade_{it} + \beta_{14} Service_{it} + \beta_{15} Construct_{it} + \beta_{16} Other_{it} + \varepsilon_{it} \quad (10)$$

[88] Both variables equal zero for companies with non-discretionary accruals. Moreover, positive (negative) discretionary accruals equal zero if a company has negative (positive) discretionary accruals.

[89] Francis et al. (2005) and Graham et al. (2008) also control for capital structure influences on the costs of debt. A higher equity ratio is accompanied by lower costs of debt.

[90] Our data includes information about the major owner of a company, but the variable does not differentiate between natural persons and corporations. Thus, we manually sorted natural persons. That might lead to some dissonance, but we did not expect significant influence of that discrepancy. Berger and Udell (1995) as well use the governance structure as a control variable.

[91] Graham et al. (2008) use Libor to demonstrate the macroeconomic development of interest rates in their model.

Again, we trimmed extreme values by excluding the first and 99th percentiles for the applicable variables and limit our sample to observations with an equity ratio between zero and one, and a value of $Interest_{it+1}$ between zero and one.

3.2.3. Empirical Results

After a description of the sample in Section 3.2.3.1, we present results concerning earnings manipulation in Section 3.2.3.2, and we provide further results and sensitivity analyses in Section 3.2.3.3.

3.2.3.1. Sample Structure

Table 11 reflects facts about the structure of our dataset. It shows that (sorted by the respective criteria) most companies are small, older than 10 years and belong to the manufacturing industry. Table 12 provides details about all variables used in our regressions; Table 13 displays pairwise correlations between these variables and corresponding variance inflation factors for our major models.[92] To maintain comparability with our further results, we only present descriptive statistics for the sample used in our regressions. Extreme values (one percent on both sides) were excluded.

Table 11 – Sample Characteristics

Criteria	Categories	Obs.
Overall		13007
Size (total assets)	Small companies	5640
	Medium-sized	5481
Age	1-5 years	267
	6-10 years	1445
	>10 years	11287
Industries	Manufacturing	4652
	Trade	3400
	Services	436
	Building	1280
	Others	3239
Ownership	Manager = Owner	7307
	Independent Management	5700
Risk	1 = low	1353
	2	7390
	3	3600
	4 = high	664
Costs of debt	0-3%	5015
	3.01-5%	5242
	5.01-10%	2632
	>10%	118
Bank debt proportion	0-20%	5766
	20.01-40%	4033
	40.01-60%	2289
	60.01-80%	819

Table 11 displays characteristics of the sample used in model (6). The number of observations is limited to the respective number of observations used in model (6). The mean value of the bank debt proportion amounts to 26.5 per cent.

[92] We omitted variables with a variance inflation factors bigger than 10 (O'Brien 2007).

Table 12 – Summary Statistics of Variables Used in Model (7) and (10)

Variable Name	Description	Calculation	Obs.	Mean	S.D.	Min	Max
Acc_{it}	Accruals	($\Delta Inventory_{it-1,t}$+$\Delta debtors_{it-1,t}$+$\Delta$other current $assets_{it-1,t}$-$\Delta creditors_{it-1,t}$-$\Delta$other current $liabilities_{it-1,t}$-$depreciation_{it}$), scaled by lagged total assets	13007	-0.019	0.153	-0.684	0.895
Cfo_{it}	Cash flow from operations	Earnings before extraordinary $items_t$ - $accruals_t$, scaled by lagged total assets	13007	0.087	0.165	-0.584	0.693
$Dcfo_{it}$	Dummy for negative cash flows in t	Equals 1 if Cfo_{it} is negative and 0 otherwise	13007	0.229	0.421	0	1
$lCfo_{it-1}$	Lagged version of cash flow from operations	Corresponding Cfo in t-1	13007	0.079	0.170	-0.588	0.695
$fCfo_{it+1}$	Lead version of cash flow from operations	Corresponding Cfo in t+1	13007	0.097	0.167	-0.585	0.693
$Bank_{it}$	Proportion of bank debt	Amounts owed to credit institutions, scaled by lagged total assets	13007	0.278	0.212	0	0.999
New_{it+1}	New bank debt	Equals 1 if (Δbank $debt_{it,t+1,}$ scaled by total assets)>5%	13007	0.195	0.396	0	1
$Risk_{it}$	Default risk	Based on DAFNE database rating where 1 is the best category and 4 the worst	13007	2.275	0.714	1	4
GDP_{it}	GDP	Price-adjusted value of GDP in t, reference year 2005	13007	1.629	2.343	-5.100	3.700
$Growth_{it-1,t}$	Company growth	Delta of $sales_{it-1,t,}$ scaled by lagged total assets	13007	0.139	0.525	-2.078	3.976
$Neweq_{it+1}$	New equity	Equals 1 if ($\Delta equity_{it,t+1,}$ scaled by total assets)>5%	13007	0.030	0.172	0	1
$Housebank_{it}$	Dummy for relationship lending	Equals 1 if firm has only one housebank in t	13007	0.185	0.389	0	1
$FixedAssets_{it}$	Fixed assets	Book value of fixed assets, scaled by lagged total assets	13007	0.356	0.280	0	2.671
$BilMoG_{it}$	Dummy for BilMoG	Equals 1 for observations in years beginning from 2009, and 0 otherwise	13007	0.081	0.273	0	1
$LnInterest_{it+1}$	Cost of debt in t+1	Natural logarithm of the ratio of total interest expenses in t+1 divided by average of total assets in t and t+1	7411	-3.799	0.715	-12.619	-1.060

(continued)							
$pDacc_{it}$	Positive discretionary accruals	Positive values of discretionary accruals, calculated by the following formula: $Dacc_{jt} = Acc_{jt} - (\hat{\beta}_{j0} + \hat{\beta}_{j1} DCfo_{jt} + \hat{\beta}_{j2} Cfo_{jt} + \hat{\beta}_{j3} DCfo_{jt} * Cfo_{jt} + \hat{\beta}_{j4} lCfo_{jt-1} + \hat{\beta}_{j5} fCfo_{jt+1})$The variable equals 0 if accruals are non-discretionary or discretionary, but negative.	7411	0.030	0.055	0	0.317
$nDacc_{it}$	Negative discretionary accruals	Negative values of discretionary accruals, calculated by the following formula: $Dacc_{jt} = Acc_{jt} - (\hat{\beta}_{j0} + \hat{\beta}_{j1} DCfo_{jt} + \hat{\beta}_{j2} Cfo_{jt} + \hat{\beta}_{j3} DCfo_{jt} * Cfo_{jt} + \hat{\beta}_{j4} lCfo_{jt-1} + \hat{\beta}_{j5} fCfo_{jt+1})$The variable equals 0 if accruals are non-discretionary or discretionary, but positive.	7411	-0.012	0.032	-0.245	0
$Size_{it}$	Company size	Total revenues in t	7411	12877.22	20847.05	0	164813.3
$Eqratio_{it}$	Equity ratio	Book value of equity scaled by total assets	7411	0.246	0.169	0	0.874
$Parent_{it}$	Dummy for controlling parent company	Equals 1 if a company has a controlling parent company	7411	0.217	0.412	0	1
$Refin_{it}$	Macroeconomic interest rate level	Mean main refinancing operations rate in t	7411	3.210	0.785	1.230	3.850
$Y2008_{it}$	Dummy variable for year 2008	Equals 1 if firm-year observation belongs to the corresponding year	7411	0.218	0.413	0	1
$Y2009_{it}$	Dummy variable for year 2009	Equals 1 if firm-year observation belongs to the corresponding year	7411	0.044	0.204	0	1
$Trade_{it}$, $Service_{it}$, $Construct_{it}$, $Other_{it}$	Industry dummies	Equals 1 if firm-year observation belongs to the corresponding industry; the reference group is manufacturing. Other companies belong to either the trade, services, construction or other industries.	7411	-	-	0	1
$Rctotacc_{it}$	Accumulated accruals	Within-year decimal rank of: $\frac{1}{5} * \sum_{s=1}^{5} \frac{Accruals_{t-s+1}}{ln(Total\ assets)_{t-s}} * (-1)$	1577	5.700	2.856	1	10

Table 12 displays variable descriptions of all variables used in models (6), (7) and (10). The number of observations is limited to the respective observations included in regressions of model (6), (7) or (10). Acc_{it} is limited to an absolute value of 1. $Bank_{it}$ and Lev_{it} are limited to values between 0 and 1.

Table 13 – Pairwise Correlations and Variance Inflation Factors of Model (7) and (10)

Panel A		1	2	3	4	5	6	7	8	9	10	11	VIF
1	Acc_{it}	1.00											
2	$Dcfo_{it}$	0.55	1.00										2.22
3	Cfo_{it}	-0.66	-0.64	1.00									2.86
4	$Dcfo_{it}$*Cfo_{it}	-0.53	-0.54	0.75	1.00								2.46
5	$lCfo_{it-1}$	0.06	-0.15	0.31	0.22	1.00							1.13
6	$fCfo_{it+1}$	0.06	-0.13	0.31	0.20	0.30	1.00						1.14
7	$Bank_{it}$	0.09	0.11	-0.19	-0.10	0.02	0.01	1.00					1.11
8	New_{it+1}	0.05	0.04	-0.04	-0.01	-0.02	-0.16	0.01	1.00				1.08
9	$Risk_{it}$	0.01	0.29	-0.33	-0.20	-0.26	-0.20	-0.00	0.06	1.00			1.27
10	GDP_{it}	0.17	0.09	-0.08	-0.06	-0.01	0.00	0.00	0.11	0.01	1.00		1.05
11	$Growth_{it-1,t}$	0.02	0.00	-0.00	-0.01	0.02	0.02	0.63	-0.00	-0.00	-0.01	1.00	1.10

Panel B		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	VIF
1	$LnInterest_{it+1}$	1.00																	
2	$pDacc_{it}$	-0.14	1.00																1.31
3	$Housebank_{it}$	-0.13	-0.01	1.00															1.28
4	$Dacc_{it}$*$Housebank_{it}$	-0.12	0.46	0.31	1.00														1.44
5	$nDacc_{it}$	-0.08	0.15	-0.01	0.07	1.00													1.09
6	$Risk_{it}$	0.37	-0.16	-0.01	-0.07	-0.16	1.00												1.44
7	$Size_{it}$	-0.02	0.06	-0.01	0.03	-0.01	-0.01	1.00											1.08
8	$Eqratio_{it}$	-0.35	0.07	0.02	0.02	0.08	-0.52	-0.01	1.00										1.43
9	$Parent_{it}$	-0.17	0.00	0.22	0.07	-0.00	-0.10	0.01	0.08	1.00									1.08
10	$Refin_{it}$	-0.03	0.18	0.00	0.08	-0.16	-0.00	0.01	-0.03	0.00	1.00								2.71
11	GDP_{it}	-0.01	0.13	0.00	0.05	-0.12	0.01	-0.00	-0.05	0.00	0.37	1.00							7.38
12	$Y2008_{it}$	-0.03	0.14	0.00	0.08	-0.11	-0.01	0.01	0.01	0.00	0.56	0.01	1.00						3.36
13	$Y2009_{it}$	0.02	-0.16	0.00	-0.07	0.14	-0.02	0.00	0.06	0.00	-0.43	-0.85	-0.14	1.00					4.71
14	$Trade_{it}$	0.04	0.02	-0.04	0.02	0.01	0.04	0.01	-0.06	-0.07	0.00	0.00	0.00	0.00	1.00				1.24
15	$Service_{it}$	-0.09	0.01	0.09	0.02	0.00	0.00	-0.01	0.03	0.06	0.00	0.00	0.00	0.00	-0.18	1.00			1.04
16	$Construct_{it}$	0.01	-0.00	-0.05	-0.02	0.00	0.12	-0.00	-0.10	-0.11	0.00	0.00	0.00	0.00	-0.17	-0.09	1.00		1.13
17	$Other_{it}$	-0.09	-0.04	0.14	0.02	0.03	-0.05	-0.00	0.02	0.18	0.00	0.00	0.00	0.00	-0.37	-0.18	-0.17	1.00	1.19

Table 13 reports pairwise correlations for all variables used in models (7) and (10) and corresponding variance inflation factors. Panel A shows variables of model (7) and Panel B variables of model (10). All values of VIF stay below 10. For variable descriptions, please see Table 12.

3.2.3.2. Earnings Manipulation

Results of a mean comparison t-test of accruals – opposing companies that do and do not raise bank debt in the subsequent period – reveal that accruals of firm-year observations that raise debt are on average significantly higher (see Table 14). This supports hypothesis 4. Companies that aim to raise bank debt in the next period seem to manage accruals upwards in order to increase reported income. In order to confirm that this alteration of accruals is indeed event-driven, we also inspected the development of accruals over time. Table 14 shows that accruals are significantly higher for debt-raising companies in the period when debt is raised (t+1) and the two preceding years (t-1, t), and insignificantly higher in t-2. Interestingly, this effect reverses in the period after new debt is raised.[93] Accruals are significantly lower for debt-raising companies in t+2. This reversal shows that debt-raising companies try to manage accruals upwards over three periods in advance of the event but they do not sustain this behavior after the new loan is granted. We deduced that this behavior is deliberate and event-driven.

Table 14 – Descriptive Statistics Concerning the Development of Accruals Surrounding New Debt Borrowing

Mean comparison t-test	Obs.	Mean	S.D.	
Acc_{it+2}				
$New_{it+1}=0$	6349	-0.034	0.159	
$New_{it+1}=1$	1728	-0.064	0.161	t = 6.911***
Acc_{it+1}				
$New_{it+1}=0$	10498	-0.054	0.146	
$New_{it+1}=1$	2546	0.041	0.179	t = - 28.043***
Acc_{it}				
$New_{it+1}=0$	10467	-0.021	0.151	
$New_{it+1}=1$	2540	-0.010	0.164	t = - 3.319***
Acc_{it-1}				
$New_{it+1}=0$	10498	-0.011	0.157	
$New_{it+1}=1$	2546	0.002	0.173	t = - 3.631***
Acc_{it-2}				
$New_{it+1}=0$	6021	-0.004	0.165	
$New_{it+1}=1$	1406	-0.002	0.187	t = - 0.432

Table 14 reports descriptive statistics on the development of accruals prior and after new debt raising. Variable Acc_{it} is limited to an absolute value of 1. For variable descriptions, please see Table 12. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 15 displays the results of the estimations of the regression models (3) to (7). Model (3) is the basic version of the model developed by Ball and Shivakumar (2005). As predicted, coefficient β_2 is significantly negative, reflecting the negative relationship between cash flows from operations and accruals. Ball and Shivakumar (2005) predict positive values for β_3 if accounting is conditionally conservative. Our results indicate the opposite. The coefficient of the interaction term of operating cash flows and the dummy for negative operating cash flows is significantly negative on the one percent level (likewise noticeable by a positive, significant value of the dummy variable $Dcfo_{it}$ that also illustrates the

[93] Accruals are the highest in the year when new debt is raised. This is reasonable as companies likely apply for a credit with current interim financial figures.

positive relationship between negative cash flows and accruals). This signifies that companies incline to use non-conservative accounting choices in order to portray themselves in a positive light. Overall, a lack of conditional conservatism is consistent with the proposition that conditional conservatism is rather uncommon for German companies in general and even more unusual for private companies, reasoned by the highly unconditional guidelines induced by German GAAP (Ball et al. 2000; Leuz et al. 2003; Burgstahler et al. 2006; Bushman and Piotroski 2006). This is an interesting result. German SMEs seem to extensively make use of non-conservative earnings manipulation, *independent* of a certain event.

Addressing model (5), the expansion of lagged and lead operating cash flows proposed by Ball and Shivakumar (2006) does not alter the coefficients of model (1) discussed above. Results still indicate non-conservative accounting choices used by German SMEs. Moreover, both newly appended variables are significantly positive. This is consistent with the predictions made by Dechow and Dichev (2002) that cash flows reverse over time.

Turning towards results of model (6), previous statements remain unaltered. Evidence concerning hypothesis (3) is delivered by coefficient β_6. As expected, reported total accruals are significantly positively correlated with the proportion of bank debt of a company. These results oppose those of Choi (2007). We inferred that companies have a higher incentive to manipulate accruals to report higher earnings if they are strongly dependent on banks as debt capital investors. In addition, we observed a significant positive relationship between total accruals and companies that raise bank debt in the following period. This promotes the idea that debt-raising firms tend to boost earnings using non-conservative accruals. We interpreted this as strong support for hypothesis (4).

Several control variables were appended to model (6). First, a higher default risk is accompanied by lower accruals. High risk is likely associated with a low equity ratio and hence a lower scope to exercise accruals. Moreover, companies might have lower hidden reserves that they could use for accruals management. Second, a positive economic development is linked with higher accruals. It is reasonable that companies generate higher revenues that are accompanied by higher total accruals during an economic boom. Third, company growth is positively correlated with the level of accruals. This is consistent with former research as bigger and growing companies undertake more investments that lead to higher accruals (McNichols 2000).

Model (7) is the OLS-version of model (6), expanded by two variables that test for the influence of relationship lending. Results in Table 15 show that companies with one single housebank do have significantly lower total accruals.[94] Thus, we carefully regarded our expectations as confirmed. Companies with housebank relationships seem to make use of non-conservative earnings manipulation more rarely than firms with multi-bank relationships. Results of Bigus et al. (2009) indicate that close lending relationships induce conservative reporting. However, the interaction term of $Housebank_{it}$ and New_{it+1} is

[94] Please compare similar results in Section 3.3.

insignificant. That implies that firms with housebank relationships and multi-bank relationships do not differ in their accrual accounting behavior in the period prior to raising new bank debt. Though companies with close bank relationships report accruals at a lower general level compared to those with multi-bank relationships, they still appear to disclose comparatively high accruals in the period prior to raising debt. Hence, both SMEs with housebank relationships and multi-bank relationships strive for reporting non-conservatively in the period prior to raising bank debt. In addition, our control variable for the asset structure is negatively correlated with accruals which is clear as depreciation is deduced in our accruals calculation. Some industry dummies show significant influence.

Table 16 displays the results of our cost of debt model (10). Similar to the analyses of Liu et al. (2010), companies with positive discretionary accruals in t have (slightly) significantly lower costs of debt in t+1. This might be interpreted as slight support for the thesis that companies that manipulate their earnings are rewarded by lower costs of debt. We prudently dared to infer that the earnings manipulation of German SMEs is not detected by banks and seems to be effective in this context.[95] Negative discretionary accruals do not show a significant effect. In line with former research, we deduced from our model that firms with a housebank relationship have significantly lower costs of debt compared to companies with multi-bank relationships.[96] However, the interaction term of discretionary accruals and the housebank dummy is not significant. In contrast to our expectations, firms with housebank relations that report non-conservatively seem to be rewarded by lower costs of debt in the same manner as those with multi-bank relations. This result might indicate that housebanks in our sample do not see through the opportunistic accounting behavior of German SMEs.[97] Overall, the non-conservative reporting of SMEs seems to be profitable and is followed by lower costs of debt borrowing.

Control variables in our model behave in an intuitively understandable way: riskier companies pay higher interest rates.[98] Bigger companies and companies with a controlling parent have lower costs of debt. A rise of the overall interest rate level is accompanied by a higher cost of debt. Companies with a higher equity ratio have a lower cost of debt.[99]

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[95] This effect is not strongly significant, but it remains robust if we alter the calculation of discretionary accruals. In unreported computations, we split total accruals into positive and negative values to avoid distortion by the calculation of discretionary accruals. If we split both halves again and inspect the impact of high positive accruals, we find the same significant effect on the costs of debt.

[96] We want to point out again that our proxy for relationship lending is rather rough. Consequently, our results might not reliably capture the effect of relationship lending. However, these results are in line with results presented in Section 3.1.3.

[97] However, we again point out that our proxy for relationship lending is rather rough. That might limit the reliability of our results.

[98] One might argue that companies with positive discretionary accrual are those with low company risk. This might reason the lower costs of debt. However, additional analyses do not indicate a significant difference in the company risk of these companies.

[99] These results are in line with results presented in Section 3.1.3. As interpretations as similar, though the dependent variable differs slightly, please see explanations in that section for further details.

Table 15 – Regression Results of Models (3), (5), (6) to (7)

	Model 3		Model 5		Model 6		Model 7	
Variable			**Fixed-Effects**				**POLS**	
Cons	0.047		0.035		0.083		0.102	
	[22.17]	***	[13.15]	***	[12.80]	***	[28.63]	***
$Dcfo_{it}$	0.008		0.008		0.007		0.007	
	[2.45]	**	[2.54]	**	[2.38]	**	[2.89]	***
Cfo_{it}	-0.835		-0.801		-0.796		-0.694	
	[-57.98]	***	[-51.76]	***	[-55.41]	***	[-70.50]	***
$Dcfo_{it}$*Cfo_{it}	-0.159		-0.146		-0.134		-0.204	
	[-6.56]	***	[-6.04]	***	[-6.34]	***	[-10.37]	***
$lCfo_{it-1}$			0.052		0.069		0.151	
			[6.89]	***	[10.25]	***	[28.04]	***
$fCfo_{it+1}$			0.054		0.067		0.133	
			[7.33]	***	[9.80]	***	[25.05]	***
$Bank_{it+1}$					0.055		0.186	
					[5.35]	***	[5.24]	***
New_{it+1}					0.017		0.022	
					[8.22]	***	[11.34]	***
$Risk_{it}$					-0.034		-0.038	
					[-16.34]	***	[-33.28]	***
GDP_{it}					0.003		0.003	
					[10.06]	***	[10.90]	***
$Growth_{it-1,t}$					0.037		0.059	
					[15.79]	***	[30.01]	***
$Housebank_{it}$							-0.006	
							[-3.01]	***
New_{it+1}*$Housebank_{it}$							-0.004	
							[-0.89]	
$FixedAssets_{it}$							-0.064	
							[-19.34]	***
$Trade_{it}$							-0.006	
							[-3.32]	***
$Service_{it}$							-0.001	
							[-0.13]	
$Construct_{it}$							-0.001	
							[-0.42]	
$Other_{it}$							-0.019	
							[-9.83]	***
Obs. (groups)	13007	(6422)	13007	(6422)	13007	(6422)	13007	
F-value	4782.24		3162.44		2322.41		2035.09	
p-value	0		0		0		0	
R^2(overall)	0.61		0.64		0.71		0.76	
R^2(within)	0.82		0.83		0.86			
R^2(between)	0.51		0.54		0.63			

Table 15 reports fixed-effects and POLS regression results of models (3), (5), (6) and (7). The model is gradually expanded by control variables: $Acc_{it} = \beta_0 + \beta_1 DCfo_{it} + \beta_2 Cfo_{it} + \beta_3 DCfo_{it} * Cfo_{it} + \beta_4 lCfo_{it-1} + \beta_5 fCfo_{it+1} + \beta_6 Bank_{it} + \beta_7 New_{it+1} + \beta_8 Risk_{it} + \beta_9 GDP_{it} + \beta_{10} Growth_{it-1,t} + \beta_{11} Housebank_{it} + \beta_{12} New_{it+1} * Housebank_{it} + \beta_{13} FixedAssets_{it} + \beta_{14} Trade_{it} + \beta_{15} Service_{it} + \beta_{16} Construct_{it} + \beta_{17} Other_{it} + \varepsilon_{it}$. The values in squared parentheses are t-values. Extreme values are winsorized (1 and 99 percentile). The dependent variable is total accruals and limited to an absolute value of 1. For variable description, please see Table 12. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 16 – POLS Regression Results of Model (10)

Variable	Model 10	
Cons	-4.119	
	[-67.21]	***
$pDacc_{it}$	-0.298	
	[-1.90]	*
$Housebank_{it}$	-0.082	
	[-3.44]	***
$pDacc_{it}$*$Housebank_{it}$	-0.092	
	[-0.23]	
$nDacc_{it}$	0.240	
	[1.04]	
$Risk_{it}$	0.242	
	[17.65]	***
$Size_{it}$	0.000	
	[-0.26]	
$Eqratio_{it}$	-1.406	
	[-23.14]	***
$Parent_{it}$	-0.060	
	[-3.05]	***
$Refin_{it}$	0.073	
	[4.86]	***
GDP_{it}	0.006	
	[0.64]	
$Y2008_{it}$	-0.092	
	[-2.88]	***
$Y2009_{it}$	0.117	
	[1.53]	
$Trade_{it}$	-0.015	
	[-0.92]	
$Service_{it}$	-0.159	
	[-2.99]	***
$Construct_{it}$	-0.378	
	[-12.46]	***
$Other_{it}$	-0.205	
	[-8.29]	***
Obs.	7411	
F-value	136.11	
p-value	0	
R^2(overall)	0.26	

Table 16 reports the results of POLS regression model (10). $LnInterest_{it+1} = \beta_0 + \beta_1 pDacc_{it} + \beta_2 Housebank_{it} + \beta_3 pDacc_{it} * Housebank_{it} + \beta_4 nDacc_{it} + \beta_5 Risk_{it} + \beta_6 Size_{it} + \beta_7 Eqratio_{it} + \beta_8 Parent_{it} + \beta_9 Refin_{it} + \beta_{10} GDP_{it} + \beta_{11} Y2008_{it} + \beta_{12} Y2009_{it} + \beta_{13} Trade_{it} + \beta_{14} Service_{it} + \beta_{15} Construct_{it} + \beta_{16} Other_{it} + \varepsilon_{it}$. The values in parentheses are t-values. Extreme values are winsorized (1 and 99 percentile). The dependent variable is the natural logarithm of total interest expenses in t+1, divided by the average value of total interest-bearing liabilities of t and t+1. For variable descriptions, please see Table 12. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

3.2.3.3. Sensitivity Analysis and Further Results

To validate whether the results of models (3) to (7) are sensitive to the amount of newly raised debt, we exchanged the assumed threshold of a five percent positive current-year to subsequent-year delta of new bank debt to current-year total capital using a ten percent threshold. Our results remain unaltered.

Moreover, we tested whether accruals might be affected by newly raised equity capital in contrast to bank debt and re-ran model (6) with variable $Neweq_{it+1}$ instead of New_{it+1}. $Neweq_{it+1}$ equals 1 if a company raises new equity capital in the subsequent period (i.e., a positive current-year to subsequent-year delta of more than five percent of current-year total capital). Our results show that the equity variable is insignificant. We therefore conclude that newly raised equity capital does not affect accrual accounting in the same way as bank debt-raising does (see Table 17).

Table 17 – Robustness Check Concerning New Equity Raising

Variable	Model 6 Alternative	
Cons	0.095	
	[15.15]	***
$Dcfo_{it}$	0.007	
	[2.35]	**
Cfo_{it}	-0.802	
	[-55.77]	***
$Dcfo_{it}$*Cfo_{it}	-0.134	
	[-6.32]	***
$lCfo_{it-1}$	0.069	
	[10.18]	***
$fCfo_{it+1}$	0.055	
	[8.31]	***
$Bank_{it+1}$	0.028	
	[2.93]	***
$Neweq_{it+1}$	0.001	
	[0.12]	
$Risk_{it}$	-0.035	
	[-16.42]	***
GDP_{it}	0.003	
	[10.43]	***
$Growth_{it-1,t}$	0.038	
	[15.92]	***
Obs. (groups)	13007	(6422)
F-value	2306.26	
p-value	0	
R^2(overall)	0.71	
R^2(within)	0.86	
R^2(between)	0.63	

Table 17 reports fixed-effects regression results of the robustness check of model (6) with new equity instead of new debt raising. $Acc_{it} = \beta_0 + \beta_1 DCfo_{it} + \beta_2 Cfo_{it} + \beta_3 DCfo_{it} * Cfo_{it} + \beta_4 lCfo_{it-1} + \beta_5 fCfo_{it+1} + \beta_6 Bank_{it} + \beta_7 Neweq_{it+1} + \beta_8 Risk_{it} + \beta_9 GDP_{it} + \beta_{10} Growth_{it-1,t} + \varepsilon_{it}$. The values in squared parentheses are t-values. Extreme values are winsorized (1 and 99 percentile). The dependent variable is limited to an absolute value of 1. Bank debt is limited to values between 0 and 1. For variable descriptions, please see Table 12. *** p < 0.01; ** p < 0.05; * p < 0.1.

We cross-checked results regarding hypothesis 3 by expanding model (6) with interaction terms of $Bank_{it}$ and $Dcfo_{it}$, Cfo_{it}, $Dcfo_{it}$*Cfo_{it} similar to Choi (2007). All interaction terms are insignificant in value. Thus, the extent of bank dependence does not influence conservatism (see Table 18).

Table 18 – Robustness Check Concerning the Impact of the Bank Debt Ratio on Conservatism

Variable	Model 6 Alternative	
Cons	0.083	
	[12.27]	***
$Dcfo_{it}$	0.003	
	[0.56]	
Cfo_{it}	-0.800	
	[-38.30]	***
$Dcfo_{it}$*Cfo_{it}	-0.144	
	[-3.90]	***
$lCfo_{it-1}$	0.069	
	[10.26]	***
$fCfo_{it+1}$	0.067	
	[9.79]	***
$Bank_{it+1}$	0.0514	
	[4.11]	***
$Bank_{it+1}$*$Dcfo_{it}$	0.013	
	[0.99]	
$Bank_{it+1}$*Cfo_{it}	0.017	
	[0.29]	
$Bank_{it+1}$*$Dcfo_{it}$*Cfo_{it}	0.026	
	[0.28]	
New_{it+1}	0.017	
	[8.25]	***
$Risk_{it}$	-0.034	
	[-16.35]	***
GDP_{it}	0.003	
	[10.06]	***
$Growth_{it-1,t}$	0.037	
	[15.76]	***
Obs. (groups)	13007	(6422)
F-value	1865.63	
p-value	0	
R^2(overall)	0.71	
R^2(within)	0.86	
R^2(between)	0.63	

Table 18 displays results of fixed-effects regressions of robustness checks concerning model (6). $Acc_{it} = \beta_0 + \beta_1 DCfo_{it} + \beta_2 Cfo_{it} + \beta_3 DCfo_{it} * Cfo_{it} + \beta_4 lCfo_{it-1} + \beta_5 fCfo_{it+1} + \beta_6 Bank_{it} + \beta_7 Bank_{it} * DCfo_{it} + \beta_8 Bank_{it} * Cfo_{it} + \beta_9 Bank_{it} * DCfo_{it} * Cfo_{it} + \beta_{10} New_{it+1} + \beta_{11} Risk_{it} + \beta_{12} GDP_{it} + \beta_{13} Growth_{it-1,t} + \varepsilon_{it}$. The values in squared parentheses are t-values. Extreme values are winsorized (1 and 99 percentile). The dependent variable is limited to an absolute value of 1. Bank debt is limited to values between 0 and 1. For variable descriptions, please see Table 12. *** p < 0.01; ** p < 0.05; * p < 0.1.

Following Gassen et al. (2006), we controlled for the influence of unconditional conservatism on our main model. According to Givoly and Hayn (2000), a supremacy of negative accruals over time across companies is an indication of unconditional conservatism. We therefore calculate their *Rctotacc*$_{it}$ measure in two steps. First, we computed accumulated accruals according to Bigus et al. (2009):

$$Ctotacc_{it} = \frac{1}{5} * \sum_{s=1}^{5} \frac{accruals_{it-s+1}}{ln(total\ assets)_{it-s}} * (-1) \quad (11)$$

Second, *Rctotacc*$_{it}$ is the within-year decimal rank of *Ctotacc*$_{it}$, so we adopted *Ctotacc*$_{it}$ in our model (3) by creating interactions with *Dcfo*$_{it}$, *Cfo*$_{it}$, *Dcfo*$_{it}$**Cfo*$_{it}$ similar to Gassen et al. (2006). Significant

values of the interaction terms would indicate a mentionable influence of unconditional conservatism on our setting. If β_3 captures conditional conservatism by a positive value, a significant negative value of β_7 would reveal the contrary relationship of unconditional and conditional conservatism (Gassen et al. 2006). However, all interaction terms are insignificant (see Table 19).[100]

Table 19 – Robustness Check Concerning Unconditional Conservatism

Variable	Fixed-Effects	
Cons	0.107	
	[4.17]	***
$Dcfo_{it}$	0.135	
	[0.41]	
Cfo_{it}	-0.762	
	[-6.61]	***
$Dcfo_{it}$*Cfo_{it}	-0.278	
	[-1.65]	*
$Rctotacc_{it}$	-0.012	
	[-0.97]	
$Rctotacc_{it}$*$Dcfo_{it}$	-0.008	
	[-0.97]	
$Rctotacc_{it}$*Cfo_{it}	-0.007	
	[-0.43]	
$Rctotacc_{it}$*$Dcfo_{it}$*Cfo_{it}	-0.011	
	[-0.23]	
Obs. (groups)	1577	(1295)
F-value	136.26	
p-value	0	
R^2(overall)	0.64	
R^2(within)	0.83	
R^2(between)	0.63	

Table 19 displays fixed-effects regressions of the following model: $Acc_{it} = \beta_0 + \beta_1 DCfo_{it} + \beta_2 Cfo_{it} + \beta_3 DCfo_{it} * Cfo_{it} + \beta_4 Rctotacc_{it} + \beta_5 Rctotacc_{it} * DCfo_{it} + \beta_6 Rctotacc_{it} * Cfo_{it} + \beta_7 Rctotacc_{it} * DCfo_{it} * Cfo_{it} + \varepsilon_{it}$. The values in squared parentheses are t-values. Extreme values are winsorized (1 and 99 percentile). The dependent variable is limited to an absolute value of 1. For variable descriptions, please see Table 12. *** p < 0.01; ** p < 0.05; * p < 0.1.

We also investigated target beating accounting behavior of German SMEs around the zero-earnings line. Since Burgstahler and Dichev (1997), who provide large sample evidence concerning a kink in the distribution of reported earnings around the zero threshold, accounting researchers assume that the avoidance of losses is an indication of earnings management (Dechow et al. 2010). We proposed that SMEs have an especially high incentive to beat this threshold in the period prior to raising new bank debt, as earnings are an essential indicator banks use to validate a company's future development prospects. Burgstahler and Dichev (1997) base their investigation on a simple comparison of the number of companies with small losses and the number of firms with small gains. They show that significantly more (less) companies report small gains (losses) than expected assuming a normal distribution of earnings over all sample companies. They limit their measure to small losses, as it is increasingly costly to avoid large losses by earnings management (Burgstahler et al. 2006).

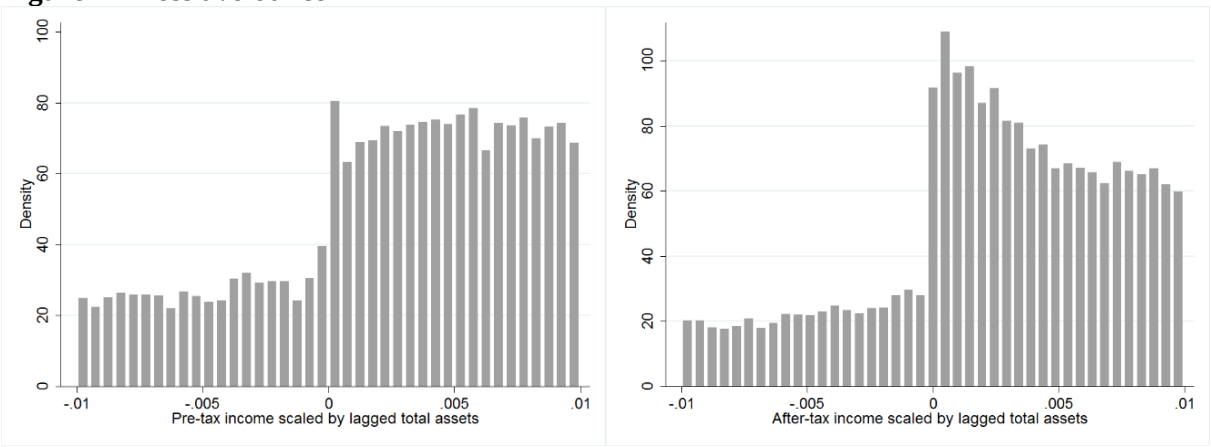
[100] However, as our overall sample is limited to years 2003 to 2010 $Rctotacc_{it}$ can only be calculated for few periods without missing values.

$$Avoid = \frac{\#\ of\ companies\ with\ small\ profits}{\#\ of\ companies\ with\ small\ losses} \quad (12)$$

The ratio is separately calculated for each industry and then aggregated by computing the mean value over all industries.[101] Firm-year observations are classified as small losses (small profits) if the company's net income is within the range of one percent of lagged total assets. To investigate whether debt raising has an influence on target beating, we compared the ratios for debt-raising and non-debt-raising firm year observations. If debt raising provides an incentive for target beating, the ratio of target beating companies should be higher. Results indicate the following: German SMEs obviously avoid the disclosure of small losses. Small profits are reported 4.174 times as often as small losses; this is, based on the one percent range around the zero earnings line of net income scaled by lagged total assets (see Table 20).[102] Recalculating this ratio solely for companies that raise bank-debt in the following period, the ratio is higher with 4.480 times as many small profit reports. Debt-raising firms consequently beat the threshold more often than non-debt-raising companies (the ratio equals 4.088 for non-debt-raising firms).

We also examined after-tax earnings and pre-tax earnings to control for tax incentives that might contemporaneously be the reason for earnings management around the zero earnings line (Coppens and Peek 2005). Besides loan condition optimization, companies might strive to reduce their income taxes. As lower earnings are accompanied by lower taxes and losses are not taxed at all, the disclosure of smaller earnings (or losses) might be an incentive for companies to manage earnings downwards (Szczesny and Valentincic 2013). However, the statement that German SMEs avoid the disclosure of small losses holds for both after-tax and pre-tax income (see Table 20 and Figure 1). Hence, taxes are (at least) not the (only) driving incentive for earnings management.

Figure 1 – Loss avoidance



[101] The WZ Code 2008 is used for industry classification.
[102] Table 20 also reports values for the five percent range around the zero earnings line. Results are similar.

Table 20 – Descriptive Results Concerning the Avoidance of Losses

Avoid = (# of companies with small profits) / (# of companies with small losses)			
1% range	Overall	$New_{it+1}=1$	$New_{it+1}=0$
Pre-tax income	2.971	3.203	2.925
After-tax income	4.174	4.480	4.088
5% range			
Pre-tax income	3.952	5.285	3.762
After-tax income	4.855	7.012	4.555

Table 20 displays descriptive results of the loss avoidance ratio. The ratio is firstly computed on industry level and afterwards aggregated by calculating the mean value over all industries.

The Modernization Act of German GAAP (BilMoG), which entered into force in 2009, changed several prescriptions regarding the recognition and valuation of assets and reduced tax influences on commercial statements that might alter earnings management of German SMEs in the context of bank lending.[103] To the best of our knowledge, there is no empirical *ex-post* evidence on the SME side concerning the influence of BilMoG on the accounting behavior of German SMEs in the context of debt contracting.

One major aim of BilMoG is to increase the informational function of annual statements for the benefit of external addressees of financial statements. Therefore, legislation reduced the influences of tax accounting on commercial statements and adopted new capitalization options to allow companies to better signal their actual economic performance to external stakeholders. This might imply that commercial and tax statements are drifting apart, which allows for a reduction of a potential conflict of interest between tax saving and pleasing banks by a separate optimization of both statements, directed at the respective addressee (Haller et al. 2009; Zwirner and Künkele 2012). SMEs might prefer independence of tax and commercial statements especially prior to the crucial event of bank-debt raising. In this case, firms would be able to use earnings management directed at banks in commercial statements that would not result in a higher tax income.

However, it is questionable whether SMEs make use of separate optimization possibilities in tax and commercial statements. As small firms tend to have limited financial and human resources, they likely avoid the preparation of two separate statements (Ball and Shivakumar 2005; Haller et al. 2007). Consequently, a cost-saving one-book accounting approach (*Einheitsbilanz*) for both financial and tax purposes is of high relevance for German SMEs (Szczesny and Valentincic 2013). Nevertheless, this one-book accounting approach is only possible if accounting options in commercial statements are exercised in conjunction with tax guidelines (as far as possible).[104] A survey of 410 German SMEs of Eierle et al. (2007) reveals that 79 percent of the questioned companies prepared a one-book account in 2007.

[103] Most options have to be applied starting from 2010, but can optionally be used in 2009 financial statements. See also Section 2.3.1. As German GAAP builds the foundation for a large part of the empirical analyses in this dissertation, and BilMoG essentially altered the German accounting system, a short outline of relevant changes and potential effects on earnings management seems inevitable.

[104] For annual tax declaration purposes, the remaining differences between commercial profit and tax profit, which, result from divergent rules, are eliminated in a reconciliation statement (§ 60 (2) EStDV). The more extensive the differences between book and tax values, the more difficult the reconciliation becomes.

The divergence of commercial and tax statements introduced by BilMoG will lead to higher declaration costs for companies as the preparation of a one-book account is aggravated by the law. Certain mandatory changes of the reform determine a deviation of both statements that cannot be avoided even if a company does not strive for a separate optimization. As the booking of mentioned deviations is elaborate, the costs of the preparation of financial statements are likely to be higher for SMEs since BilMoG. However, current research does not offer a definite conclusion as to whether SMEs benefit or suffer a disadvantage from BilMoG.

Regarding the benefits of BilMoG for external stakeholders, Haller et al. (2009) surveyed 32 German banks about their opinion concerning the changes of BilMoG and its impact on debt ratings. The authors conclude that banks do not derive a high benefit from the reform. The reasons mentioned in the paper vary. First, many of the newly adopted regulations for special balance sheet items are not of significant importance for corporate debt ratings. Capitalized development costs or tax loss carry forwards are deducted for financial analysis purposes by banks, as they provide the possibility for earnings management. Moreover, the intrinsic value of those capitalized assets can hardly be verified. Second, the abolishment of the reverse authoritative principle and the so caused exemption of tax influences on commercial statements are not of great interest for banks. Furthermore, BilMoG only affected a small part of earnings management options. Discretion in the valuation of assets, for example in the valuation of provisions, and real activities management remained unaffected by the reform.[105] BilMoG also abolished several accounting options. Göllert (2008) points out that a reduction of possibilities for accrual based earnings management creates incentives for the management of real activities, which is more difficult to detect and potentially induce higher costs. The reform might thereby induce a change from short-term to long-term oriented earnings management (Göllert 2008; Böcking and Dutzi 2010). However, there is no empirical evidence that analyzes changes in the accounting behavior of German companies since BilMoG.

In order to test whether, and if, how, BilMoG affected the accounting behavior of SMEs in our sample, we re-ran model (6) with an additional dummy, called $BilMoG_{it}$ (equal to one if the observation belonged to a year after 2009 and zero for all other years).[106] We found a significant positive value in the BilMoG dummy. German SMEs in this sample have significantly higher total accruals since the amendment of BilMoG. This may indicate that SMEs make use of their new separate optimization possibility and use more measures of accrual management since BilMoG (see Table 21). In unreported results, we additionally adopted the interaction of $BilMoG_{it}$ and New_{it+1} to inspect the influence of BilMoG on the accounting behavior of SMEs prior to raising new bank debt. However, the interaction is insignificant in value. BilMoG does not seem to influence the accounting behavior of SMEs in this context. Consequently, the results presented in Section 3.2.2 remain unchanged. Nevertheless, this is

[105] Regarding the importance of the several earnings management alternatives see Section 2.3.2.

[106] We chose year 2009 as foundation for the dummy variable, as SMEs were allowed to optionally apply certain accounting options in financial statements since 2009.

only one rough examination of the influence of BilMoG on earnings management. Future research might be vital in this context.

Table 21 – Influence of BilMoG on Accrual Accounting

Variable	Model 6	
Cons	0.076	***
	[0.007]	
$Dcfo_{it}$	0.006	**
	[0.003]	
Cfo_{it}	-0.794	***
	[0.014]	
$Dcfo_{it}$*Cfo_{it}	-0.134	***
	[0.021]	
$lCfo_{it-1}$	0.070	***
	[0.007]	
$fCfo_{it+1}$	0.069	***
	[0.007]	
$Bank_{it+1}$	0.056	***
	[0.010]	
New_{it+1}	0.017	***
	[0.002]	
$Risk_{it}$	-0.034	***
	[0.002]	
GDP_{it}	0.005	***
	[0.000]	
$Growth_{it-1,t}$	0.038	***
	[0.002]	
$BilMoG_{it}$	0.021	***
	[0.004]	
Obs. (groups)	13007	(6422)
F-value	2120.59	
p-value	0	
R^2(overall)	0.86	
R^2(within)	0.63	
R^2(between)	0.71	

Table 21 reports fixed-effects regression results of model (6): $Acc_{it} = \beta_0 + \beta_1 DCfo_{it} + \beta_2 Cfo_{it} + \beta_3 DCfo_{it} * Cfo_{it} + \beta_4 lCfo_{it-1} + \beta_5 fCfo_{it+1} + \beta_6 Bank_{it} + \beta_7 New_{it+1} + \beta_8 Risk_{it} + \beta_9 GDP_{it} + \beta_{10} Growth_{it-1,t} + BilMoG_{it} + \varepsilon_{it}$. $BilMoG_{it}$ equals 1 in years after 2009, and 0 otherwise. The values in squared parentheses are standard errors. The dependent variable is total accruals and limited to an absolute value of 1. For variable description, please see Table 12. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

3.2.4. Summary and Conclusion

Premised on archival data of a large sample of German private SMEs, we analyzed whether bank debt financing drives the accounting choices of SMEs. German SMEs typically rely on a financing concept with low equity ratios and high bank debt ratios. This concept induces concentrated ownership with a high dependence on few investors. Because SMEs are highly dependent on few external investors (i.e., banks), the influence of these stakeholders on managerial decisions of the companies is rather high. As loan interest rates account for a significant proportion of the companies' costs of debt, the incentive to optimize loan conditions is obvious. Banks widely base their loan decision on an assessment of the company's financial situation. Financial analysis of annual statements is therefore a commonly chosen approach. Frequently chosen key figures are usually based on earnings.

Under the assumption that loan conditions are tied to ratings that rely on these figures, companies have a clear incentive to present their financial reports in a better way to achieve lower interest rates. We proposed that this incentive is higher the higher the proportion of bank debt is. We further assumed that loan interest rates are mainly determined at the beginning of the contract. The present study analyzes whether German SMEs manipulate earnings by reporting non-conservatively to achieve better ratings prior to raising debt. We also investigated whether this accounting behavior is rewarded in terms of lower costs of debt.

We adopted an extension of the fixed-effects panel regression approach of Ball and Shivakumar (2006) to analyze whether the proportion of bank debt and the upcoming event of debt-raising influence the accrual accounting behavior of German SMEs. We used total accruals as the dependent variable in our main model. First, our results indicate that German SMEs report non-conservatively *in general*. Second, total accruals are significantly positively correlated with the proportion of bank debt. The more dependent SMEs are on banks the more measures of non-conservative reporting are obviously used. A higher dependence on bank debt financing seems to reinforce the incentive to please investors. Third, total accruals are particularly higher in the period prior to raising new bank debt compared to other periods. We therefore concluded that the event of debt-raising provides a clear incentive to report non-conservatively to achieve better loan conditions in the following contract negotiations. Total accruals are significantly lower for companies with housebank relations, but there is no difference in accrual accounting prior to raising new debt observable. Accordingly, debt-raising significantly influences the accounting behavior of German SMEs, independent of whether SMEs have one housebank or multi-bank relationships. Fourth, we inferred, with reservation, that companies that report positive discretionary accruals tend to be rewarded by slightly lower costs of debt, regardless of their bank-relationship structure. Although firms with housebanks have lower debt costs in general, the relationship between opportunistic accrual accounting and lower costs of debt remains valid for both firms with housebank and multi-bank relationships. We carefully acknowledged that banks do not seem to detect earnings

manipulation in German SMEs; consequently, this may be effective and accompanied by a lower cost of debt.

We would have preferred to base our analyses on detailed information about the individual bank loan contracts of German SMEs. However, this data was not publicly available. Therefore, we based our examinations on publicly available accounting data, which might limit the expressiveness of our results. Our inferences rely on calculations that are based on several proxies (i.e., the debt interest rate, accruals, and the housebank indicator variable). Hence, our results might be biased by the inaccuracy of this calculation. For future research, it might be interesting to examine the influence of banks on managerial decision of SMEs in further detail. A concrete survey of SMEs concerning their accounting behavior might shed more light on the topic analyzed here. We still consider our contribution to be relevant, as we drew attention to potential inefficiencies in bank lending. Undetected earnings management might lead to a mispricing in debt contracts and/or to a misallocation of bank capital to debtors with a higher default risk than originally determined by banks. If this behavior is common practice, banks' portfolios might be more risky than first estimated. Of course, banks might also know about the potential distortion and might have already included this bias in their credit pricing.

3.3. Survey on the Financing and Accounting Behavior of German SMEs

This section primarily aims at providing additional empirical evidence for the research questions analyzed in Sections 3.1 and 3.2.[107] To further validate the above presented results and to gain further qualitative insights into the investigated topics, we conducted a vast survey of German SMEs in September 2013.

Our survey aimed to answer several research questions. First, we queried managers of SMEs on how they evaluate the impact of Basel II regulatory changes on their corporate debt financing. We aimed to draw conclusions on whether the regulatory changes led to tighter credit conditions and more comprehensive requirements for debtors seeking loans. Basel II changes might especially affect SMEs as they are commonly funded by low equity ratios and high bank debt proportions (Berger and Udell 1998; Behr and Güttler 2007). The high dependence on bank loans could explain why German SMEs tend to suffer from the substantial changes in banks' credit assessment in the context of Basel II.

However, *ex-post* research concerning the impact of Basel II on SME financing is rare. To the best of our knowledge there is no survey evidence regarding this question for German SMEs. One survey of the OECD (2012) reveals that SMEs in OECD countries are negatively affected by the reform. According to their results, 34 to 53 percent of the over 5,000 SMEs questioned face a higher cost of debt since

[107] The central hypotheses of this part of the dissertation are built on literature and hypotheses deduced in Sections 3.1.1 and 3.1.2. Please see statements in these sections for further details. Section 3.3 only repeats central statements and arguments to ease readability.

Basel II. Moreover, the results show that loans have to be backed by higher collateral since the amendment of the reform. Unfortunately, this survey does not include SMEs in Germany.

The second target of our survey is to analyze whether the raising of new bank debt has behavioral effects on the preparation of pre-event financial statements and the real activities choices of SMEs. As stated in Section 3.2, the borrowing of new debt is a crucial event in SMEs' corporate financing. In line with Haller et al. (2009), we assumed that banks mostly base their credit ratings on the financial ratio analysis of annual statements. The borrowing event might create an incentive for SMEs to present their financial statements in an optimal way in order to maintain access to fresh debt capital and to receive favorable debt capital costs. We examined whether German SMEs make use of their asymmetric informational advantage over banks by using opportunistic earnings manipulation prior to borrowing bank debt.

Because public disclosure of private SMEs in Germany is often limited to the legally required minimum, managerial decisions can hardly be understood by outsiders. Hence, it is particularly interesting to investigate what drives certain SME accounting decisions by looking at the incentives behind managers' accounting choices. Previous research concerning the accounting behavior of companies is mostly based on archival data analysis. This only allows for *inferences* about specific incentives. Our investigation permits more direct conclusions on whether debt capital raising induces opportunistic accounting behavior in German SMEs. To the best of our knowledge, we provided the first evidence regarding real activities management in the context of debt raising. In addition, we have contributed to the few studies on earnings management prior to debt borrowing in general (Dietrich et al. 2001; Liu et al. 2010). While these studies focus on investigations in countries with pronounced capital markets, we concentrated on a setting with marked private debt financing by few capital investors.[108]

3.3.1. Hypotheses Development

The hypothesis development section is split thematically. In Section 3.3.1.1, hypotheses concerning Basel II are deduced. Section 3.3.1.2 contains hypotheses in regard to earnings manipulation of German SMEs.

3.3.1.1. The Impact of Basel II on German SME Debt Financing

The regulatory changes of Basel II involve significant alterations for banks concerning the credit assessment of debtors.[109] First, Basel II requires a more sophisticated and formalized rating procedure for each debtor that is accompanied by a higher total rating costs for banks. Second, banks recently need to individually assess the credit risk of each single debtor instead of calculating average risk weights for whole assets classes. The average risk assessment of asset classes that was previously applied might have shown a preference for risky but high-yield debtors for banks. Under the assumption of a constant

[108] Please see Section 3.2.1 for further linked literature.
[109] See Section 3.1.1 for more extensive remarks on this argument.

credit portfolio, the regulatory changes since 2007 might have led to overall higher equity capital requirements for banks. Nippel (2004) discusses several scenarios under which the potentially higher equity capital reserve requirements of banks might lead to higher costs or restrict credit portfolios. He carefully states that this might be the case if banks have limited access to fresh refinancing capital. Such a situation might have occurred during the financial crisis of 2007 and 2008 (Illing 2013). Consequently, banks might try to refinance their potential higher costs of equity capital provision by imposing tighter credit terms on debtors. Third, hard-fact based ratings are only mandatory since Basel II. The formalization of the credit assessment might have led to a higher risk awareness of banks (German Central Bank 2002). Hence, changes of bank regulation might indirectly affect corporate bank lending. As SMEs tend to perform poorly in ratings, they might particularly suffer from the mentioned formalization and might be confronted with higher costs of debt even if their default risk did not change simultaneously. Taken these arguments into consideration, we assumed that Basel II led to a change of bank lending behavior and in particular to higher costs of debt capital for German SMEs. We queried managers of German SMEs on whether they observe rising debt capital costs since Basel II.[110]

Hypothesis (6a): According to the evaluation of SMEs, the costs of debt capital for SMEs ceteris paribus is higher after the Basel II reform than before.

We proposed that the formalization of the rating increased the effort associated with the request of a loan for SMEs. Previous to Basel II, banks were not required to premise their credit assessment on quantitative financial data. Both the newly implemented internal ratings based approach (IRB) and the standardized approach demand a broad analysis of quantitative financial data of individual debtors. Especially the collection, preparation and processing of relevant data to banks might thus be more complex (and costly) for SMEs since Basel II.

Hypothesis (6b): According to the evaluation of SMEs, the effort of obtaining credit for SMEs ceteris paribus is higher after the Basel II reform than before.

We further presumed a higher risk awareness of banks since Basel II due to more formalized, quantitative ratings (German Central Bank 2002). One possible reaction of banks might be to claim more collateral or to set stricter covenants than before, even if the underlying default risk of a company did not change contemporaneously.

Hypothesis (6c): According to the evaluation of SMEs, claimed collateral and covenants by banks ceteris paribus are stricter after the Basel II reform than before.

In addition, banks might have changed their risk portfolios in the course of Basel II in order to circumvent a higher provision of regulatory equity capital. Banks might hence prefer less risky investments

[110] We cannot persuasively conclude if managers in our survey are able to separate the effects of Basel II and the financial crisis on the costs of debt capital. In Section 3.1, we tested for several influences of the financial crisis on the costs of debt of German SMEs. We tried to control for these influences here as far as it is possible on behalf of survey data.

over risky ones. Such a shift in credit portfolios might especially affect the credit volume granted to small firms, as SMEs tend to be rated poorly. However, archival data analysis presented in Section 3.1 does not indicate a significant alteration of the total volume of bank credit granted to German SMEs by banks in the years after the Basel II amendment. In line with these results, we did not suppose that SMEs experience a decrease of the credit volume granted by banks. We directly asked managers of SMEs for their evaluation.

Still, taking the above deduced effects of the reform into consideration, we concluded that SMEs evaluated the impact of Basel II on their corporate financing negatively. In addition, we presumed that discontentment with Basel II is higher for companies that have a higher proportion of bank debt. Firms with a high bank debt proportion may be more affected by a potential worsening of credit conditions than those with a low bank debt proportion.

Hypothesis (7): German SMEs ceteris paribus evaluate Basel II more negatively the higher their proportion of bank debt financing is.

Unfortunately, the amendment of Basel II was overshadowed by the financial crisis of 2007 and 2008; therefore, we do not know whether managers in our survey are able to separately assess the impact of Basel II and the financial crisis on the cost of debt. In line with Section 3.1, we identified several potential influential factors of the crisis on the cost of debt of SMEs. First, refinancing interest rates changed significantly; they rose significantly during 2007 and 2008 at the beginning of the financial crisis and dropped harshly in 2009 due to the economic slump in Germany. Second, rising interest rates in 2007 and 2008 might indicate a supply-driven credit crunch. Third, the economic downturn might have affected the economic situation of SMEs and might thus have caused a deterioration of individual companies' ratings, which might have led to altered interest rates.[111] We focused on the impact of the regulatory change, but we need to remember that the financial crisis might affect the statements made by SMEs when we interpreted the results.

3.3.1.2. Earnings Manipulation of German SMEs

In accordance with statements made in Section 3.2.1, we assumed that the borrowing of new bank debt is a crucial corporate financing event for German SMEs.[112] Since the amendment of Basel II, banks are required to base their credit assessment on quantitative ratings that depend on the ratio analysis of financial figures of individual companies (Basel Committee on Banking Supervision 2003a; Haller et al. 2008; Haller et al. 2009). Basel II means that banks likely pay more attention to certain financial ratios and figures. Graham et al. (2005) identify earnings, revenues, and cash flows as the three most important performance measures that are reported to outsiders. In accordance with these findings, we suggested that banks prioritize cash flows and earnings as indicators of profitability.

[111] Please see Section 3.1 for further details. Results presented in Section 3.1.4 indicate that Basel II had a negative effect on the costs of debt of German SMEs on an aggregated level *in addition to* the influence of these factors.

[112] Please see Sections 2.3.3 and 3.2.1 for a more elaborate version of this argument and a review of related literature.

We proposed that SMEs are aware of the importance of financial figures in credit assessments. Taking account of the fact that higher earnings and cash flow likely result in better ratings (and thus better credit conditions), we postulated that it is a common objective of SMEs to prepare financial statements with favorable financial figures to please banks in order to maintain access to fresh debt capital and to receive optimal loan conditions. We further assumed that the objective of achieving optimum debt contracts adds an incentive for SMEs to apply measures of earnings manipulation prior to borrowing bank debt. This incentive likely rises with an increasing proportion of the bank debt of a company.

The aim of reporting higher earnings can both be achieved by real activities and accruals management. As accruals management is applied *ex-post* on existing business figures and based on legally permitted accounting discretion in local GAAP, it is easier for outsiders to detect than exercised discretion concerning real activities. It is likely that banks undo certain applied options of accruals management in general. For instance, banks might not integrate self-established intangible assets that can optionally be capitalized (§ 248 (2) HGB) into their credit evaluation, as intangibles might not represent items of stable value. Conversely, it is difficult to see through real activities management for external stakeholders. Therefore, real activities management might be more effective in opportunistically distorting earnings. The extensive survey of company executives of Graham et al. (2005) uncovers that managers prefer real earnings management over accruals management. In accordance with these considerations, we proposed that German SMEs use both accruals and real activities management prior to raising new debt despite potential resulting economic (follow-up) costs.

Hypothesis (8): German SMEs ceteris paribus use more measures of earnings management prior to raising bank debt than in other periods.

3.3.2. Research Design and Data

While a vast part of current research in the field of finance and accounting is based on large-sample archival data analysis, only 30 percent of all published empirical research articles rely on surveys (Van der Stede et al. 2005). The archival approach is considered beneficial for the objective analysis of quantitative, cross-sectional data. However, archival analysis also has certain weaknesses concerning the specification of variables and the ability to answer qualitative and company-individual questions. For instance, it is difficult to separate the effect of Basel II on the cost of debt of an individual company without detailed knowledge about individual bank debt contracts and the corresponding interest rates. This kind of information is not publicly available and difficult to tackle on behalf of aggregated archival data. Moreover, archival data-based analysis of earnings management is generally premised on assumptions about the underlying motivation of the accountant. Potential motives might be recognizable on an aggregated level, but they could be reduced to misspecifications or misinterpretations.

Interviews, however, offer an opportunity to specifically question the responsible employees of a company about their motivation behind certain accounting decisions and their attitude towards the perceived impact of regulation on debt financing of their company. Moreover, surveyed employees are able to weigh the importance of several simultaneously possible objectives in the context of the preparation of financial statements instead of focusing on one single explanation (Graham et al. 2005). Hence, we decided to adopt a survey approach for our analyses in order to get a deeper insight into company individual data and motivations.

The special purpose of our survey was to test several theses about the corporate debt financing and the accounting behavior of German SMEs. We tested for causal relationships between the regulatory changes of Basel II and the effects on bank debt financing. Moreover, we questioned whether a certain key debt-financing event (i.e., the event of raising new bank debt) has behavioral effects on SME accounting and influences the preparation of pre-event financial statements and real activities choices of SMEs.

Research papers in the field of finance and accounting that are based on surveys are often criticized for neglecting common theoretical principles of survey design. Therefore, we followed the recommendations of Van der Stede et al. (2005) concerning the presentation of the framework of the underlying survey in our study. Surveys are often criticized for their limited data reliability (Van der Stede et al. 2005), so we tried to objectify our statements by matching our survey responses with archival data of the respective companies.

We used a cross-sectional design for our survey. We interrogated entire organizations, represented by one single respondent per company. We would have preferred to question multiple employees per organization, but we only had one single mail address per company and could not influence the number of employees to whom the mail was forwarded. The population our survey addresses is the entirety of German SMEs. According to data of the Institute for Small Business Research (2014), there were in total 360,607 SMEs in all legal structures in Germany in 2011. Our sample is a subset of this population. We derived our data from the June 2013 version of the Bureau van Dijk DAFNE database. In total, there were 40,280 private companies that fulfilled the SME definition of the EU Commission for that year. Those companies were either corporations (AG or GmbH) or a mixed form of corporations and legal partnerships (GmbH & Co. KG). We can explain the limitation of these few legal forms by the fact that only corporations or companies with similar legal structures are obliged to publish their annual statements in Germany.[113]

Out of the mentioned 40,280 observations, we dropped duplicates, observations that belong to the

[113] See Section 2.3.1.

financial services industry, and observations that do not contain an email-address of the company.[114] After this sorting, our sample population comprised 32,361 observations. The email-addresses were publicly available (often i.e., the info@-address). However, the targeted population of our survey is employees in the field of accounting and finance, managing directors or shareholders. We asked the recipient of the info@ mail to forward the survey to the corresponding employee. We sent our survey to all 32,261 companies in September 2013; however, 4,117 mails could not be delivered. Thus, the final number of companies that received our email equaled 28,244. Overall, we still consider this subset of potential respondents – although it does not consist of randomly selected companies of all legal structures – as representative for the entire population (eight percent of all German SMEs). In order to reduce the response error (i.e., a potential error by respondents, for example, by a misunderstanding of certain questions) we conducted a pretest of our survey with 15 colleagues and four tax advisors. The survey contained 21 questions.[115]

We received complete answers from 532 companies. This corresponds to a response rate of 1.9 percent. We had to eliminate 28 observations due to implausibility, inconsistencies, and missing values in their answers.[116] Our final sample thus comprises 504 companies. Though the number of respondents seems to be low on first sight, it is still significantly higher than the mean sample size of 239 respondents of the 130 management accounting survey studies analyzed by Van der Stede et al. (2005). Nevertheless, we cannot exclude a potential sampling error actuated by our low response rate. We expected our response rate to be low, as we were only able to mail at info@ addresses and queried sensitive financial data. Consequently, we provided an incentive for respondents by offering a lottery and by sending one follow-up two weeks after the first mail to reduce the sampling error. Potential reasons for non-response might be unawareness of the questioned topics, low capacity, lack of authority, or a low motivation to participate in surveys (Van der Stede et al. 2005).

Regarding the non-response error (i.e., a potential error by non-respondents) we tried to relativize the survey results by matching relevant archival data analyses when possible (Armstrong and Overton 1977). To be precise, we compared and matched the answers of our survey with the publicly available accounting data of our respondents and that of the large sample of SMEs (excluding our respondents)

[114] This basic data set differs slightly from the one used in Sections 3.1 and 3.2. We applied the SME definition on the June 2013 version of the DAFNE data set here, whereas the calculations in Sections 3.1 and 3.2 rely on data from the September 2011 version. We renewed the dataset to assure that queried SMEs are solvent.

[115] The survey also comprises questions concerning the impact of the BilMoG on SME accounting. However, as this topic is not in the center of this dissertation, answers to these questions are not mentioned later on.

[116] We eliminated nine observations due to mostly missing values in their answers or systematic answers. Moreover, we asked SMEs to estimate their current equity and bank debt proportion (see Table 22). We compared their answers with the corresponding archival data available in the DAFNE database and the electronic federal gazette and eliminated 17 observations with significant deviations (e.g., the respondent of a certain company mentioned an equity ratio of 100 percent, but the archival data analysis of the same company revealed a significant proportion of debt during the last periods). These answers do not seem to be reliable.

provided by the DAFNE database for the years of 2004 to 2012.[117] The data is from firm-level financial statements based on local GAAP. Hence, we were able to compare the qualitative data from our survey with quantitative data from the database. We used Stata 12 for our calculations.

3.3.3. Empirical Results

The empirical result presentation is split into four parts. After a short sample description in Section 3.3.3.1, we present results concerning the importance of financial statements of SMEs in the context of bank debt lending. Section 3.3.3.3 shows results related to Basel II, and Section 3.3.3.4 reports results related to earnings manipulation of German SMEs.

3.3.3.1. Sample Structure

Table 22 summarizes characteristics of the 504 surveyed SMEs extracted from the DAFNE database and reported by the individual respondents. Our survey collected information concerning the job function of the individual respondents. Most respondents are part of the management (40 percent) of the respective company or employed in the field of accounting (22 percent) or cost accounting (16 percent). Hence, the survey population meets the expectations of our targeted population.[118] Forty percent of the questioned firms belong to the manufacturing industry, followed by almost 20 percent of the wholesale and retail trade industry, 9.5 percent of the construction, and 6 percent of the services industry. SMEs in our sample are mostly structured as GmbHs (79 percent) or as GmbH & Co. KG (15 percent), and 87 percent existed for more than ten years. We clustered SMEs regarding their firm size according to the definition of the EU Commission. Therefore, we used available archival data of the year 2011 for our respondents for total assets, sales and employees.[119] To mention one category, 36 percent of our survey participants are small, and 54 percent medium-sized companies clustered by the number of employees. We asked respondents for their rough assessment of the financing structure (current equity ratio and proportion of bank debt to total assets) of their company. Nearly 40 percent have a proportion of bank debt between one and 25 percent of concurrent total assets. Another cumulative 39 percent are bank-debt financed to even greater extent (26 to 100 percent). In addition, 62 percent of our respondents mention that their company raised new bank debt since 2007. According to archival data, over 27 percent of the sample companies have a relationship with one single bank. We used this rough proxy as an indicator for relationship lending.[120]

[117] The large data set encompasses all SMEs available in the DAFNE database in June 2013, excluding duplicates, companies with missing email addresses, companies that belong to financial or agricultural industries and our survey participants. The final sample thus comprises data of 31,830 SMEs. See Section 3.3.3.1.

[118] As managers are the greatest group of respondents, we henceforth speak of managers as representatives of all respondents.

[119] We used data of year 2011, as this is the latest period with comprehensive data available in the DAFNE database.

[120] Concerning relationship lending we cannot identify the respective amounts owed to one single credit institution if a company has relationships with more than one bank. Thus, relationship lending might still be common among SMEs with several bank relationships, but we are not able to extract those relationships.

Table 22 – Characteristics of Survey Participants

Characteristic	Percent	Characteristic	Percent
Industry in 2011		**Number of Banks in 2011**	
Manufacturing	39.68	0	1.19
Wholesale/Retail	19.64	1	27.58
Construction	9.52	2	33.13
Services	6.15	3	21.63
Others	25.00	>3	16.46
Total Assets in 2011		**Equity Ratio (according to respondent, n=465)**	
€ 2-10 million	54.37	0%	1.29
€ 10.01-43 million	27.98	1-25%	18.49
> € 43 million	3.57	26-50%	31.18
not available	14.09	51-75%	20.00
		76-100%	29.03
Sales in 2011			
€ 2-10 million	16.47	**Proportion of Bank Debt (according to respondent, n=440)**	
€ 10.01-50 million	22.62	0%	22.50
> € 50 million	3.77	1-25%	39.09
not available	57.14	26-50%	18.64
		51-75%	15.68
Employees in 2011		76-100%	4.09
10-49	35.71		
50-249	53.77	**Bank Debt sought since 2007 (according to respondent, n=496)**	
>250	1.59	Yes	61.49
not available	8.93	No	38.51
Age in 2013		**Function of Respondent (n=504)**	
<=5 years	2.98	Shareholder	6.94
6-10 years	9.92	Manager	39.88
11-20 years	29.56	Finance	2.98
>20 years	57.54	Accounting	22.42
		Cost Accounting	15.67
Legal Form in 2011		Commercial Manager	5.56
AG	5.36	Several Functions	3.57
GmbH	79.37	Other Function	2.98
GmbH & Co. KG	15.28		

Table 22 displays characteristics of our survey sample. Figures are extracted from the DAFNE database unless otherwise stated. Missing values are marked. Answers of survey participants are marked with the corresponding number of given answers.

In order to make statements about the representativeness of our respondents, we compared key financial indicators of our respondents with those of our initial DAFNE sample. We excluded duplicates and the survey respondents in the DAFNE sample to avoid a bias and used the latest available data for the comparison, i.e., data of the year 2011 (see Table 23).[121] This comparison shows that our survey respondents were on average slightly smaller companies, ones with a higher proportion of equity capital, lower liabilities, and a lower proportion of bank debt financing. They did have a higher proportion of fixed assets. Consequently, our survey respondents seem to be less risky than the average SME of our

[121] A direct comparison of the DAFNE dataset used in Sections 3.1 and 3.2 and the present one reveals that companies in the survey sample are on average ones with lower total assets, a higher proportion of fixed assets, an almost equal proportion of equity capital and bank debt. Consequently, survey participants seem to be less risky firms. The two DAFNE datasets used in Sections 3.1 and 3.2 and the one used here reveal similar descriptive values for German SMEs on average.

initial DAFNE sample. This benchmarking suggests that our survey respondents are not completely representative for the overall population of SMEs available in the DAFNE database. However, the deviations between the two samples are moderate. Consequently, we made general inferences about the basic population, but we bore in mind the following potential distortions.

As the entirety of German SMEs tends to be more highly financed by bank debt on average (KFW Development Bank 2012), we carefully assumed that the incentive for earnings management prior to raising bank debt might be similar or slightly more pronounced for the entirety of SMEs.[122]

Concerning the effect of Basel II on the entirety of German SMEs, we draw the succeeding conclusions regarding the direction of a potential distortion. First, a generally higher dependence on bank debt might be exploited by banks. Housebanks in particular might have a significant influence on corporate financing conditions and might be able to pass on tighter credit terms to the respective companies. Second, Basel II regulation offers relief for loans below € 1 million. Those loans have to be backed by lower amounts of regulatory equity capital.[123] Hence, banks might not have a higher cost of capital provision in this case and might not have a justification to pass on higher costs to retail debtors. As smaller companies might fall into this retail category, the entirety of German SMEs (i.e., slightly bigger firms with a higher proportion of bank debt) might be slightly more negatively affected by Basel II than our sample.

In addition, we cannot exclude the possibility that participants in our survey belong to companies that are specifically affected by the regulatory changes or do have a negative attitude towards their debt capital providers. Average statements might thus be overstated and need to be interpreted with caution.

3.3.3.2. The Importance of Financial Statements of German SMEs in Bank Debt Financing

Before we turn to results regarding our hypotheses, we previously discuss some general results concerning the relevance of financial statements in the debt financing of our survey respondents. Managers of SMEs state that the major functions of financial statements of SMEs are to inform banks, tax offices, management, and owners about the current economic situation of the company (see Table 24, Panel A).

First, it is not surprising that the financial statements of SMEs have to fulfill the function of informing internal stakeholders. It is common that small companies outsource the preparation of annual statements to external tax advisors (European Commission 2008; Rieg et al. 2012). Hence, annual statements are used as one source of information for managerial decision making and for accountability to owners (over 80 percent of sample companies consider these functions as very or rather important). In addition, 92.9 percent of SMEs consider annual statements as a (very) important foundation for the determination of taxes. As we did not separately ask for the assessment of commercial and tax statements, the function of annual statements of estimating tax income and liability is comprehensible, as it is prescribed by tax

[122] See remarks in Section 3.2.1.
[123] See Sections 2.2.2 and 3.1.1.

law to use annual statements for this purpose. Moreover, 80.4 percent of SMEs state that financial statements are a (very) important instrument to inform banks about the current economic situation of the firm. Consequently, banks and tax offices are the most important external addressees of financial statements of SMEs in our sample.[124] This result is in line with our expectations.

We analyzed these results conditional on certain company characteristics by applying simple mean comparison t-tests in order to reveal factors that influence the responses (see Table 24, Panel B).[125] First, the function to inform banks is significantly more important for companies with a high bank debt proportion (i.e., more than 25 percent of bank debt financing) compared to those with a bank debt proportion below that figure.[126] Second, the same is valid for companies that sought new bank debt since 2007.[127] The function of providing information for taxation is (slightly) significantly more pronounced for companies with a low proportion of bank debt. Third, SMEs with a housebank relationship do not attribute as much relevance to the informational function of annual statements for banks as companies without a housebank relationship. This might be reasoned by the fact that close lending relationships are rather based on intensive direct communication between companies and banks than on publicly disclosed information. Consequently, financial statements might be more important information sources in the credit assessment procedure of non-housebank relationships.[128]

Firm size does not significantly affect the importance of relevant functions. Fifth, SMEs that are affiliated to another company attribute significantly less relevance to the function of annual statements of informing banks. It is likely that affiliated firms do not separately negotiate bank debt conditions but leave this to the parent company. Hence, individual financial statements of subsidiaries are probably not of the utmost importance in this context.[129] Finally, if SMEs in our sample are managed by the owner, the function of informing banks about the current economic situation of the company is significantly more important.[130]

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[124] In addition, annual statements are important for the determination of payouts (for 63.2 percent). Accounting information is considered less important informing customers, suppliers, or potential investors about the economic situation of the firm.

[125] Table 24 reports t-test results for all potential functions of annual statements. However, as the focus of our paper lies on bank debt financing relationships (and partly on tax influences), we only explicitly mention results that are relevant in this context.

[126] We used the assessment of our respondents as a foundation for the evaluation of the proportion of bank debt of the respective company (see Table 22). However, in unreported sensitivity tests, we substituted this figure by the corresponding value (i.e., amounts owed to credit institutions in relationship to total assets in 2011) extracted from the DAFNE database. Relevant results remained unchanged.

[127] See Table 22 for details about how many companies did (not) seek new bank debt since 2007. Mean comparison t-tests reveal that companies that sought new bank debt have significantly more bank debt on average. Thus, last mentioned conditional results might also be driven by differences in the average amounts of bank debt between the subgroups.

[128] However, we cross-checked whether there are differences between the two subgroups concerning the average amount of bank debt. We found that SMEs with a housebank relationship have a significantly (on the one percent level) lower bank debt ratio. Hence, the conditional results mentioned earlier might also be driven by differences in the average amounts of bank debt between the subgroups.

[129] We manually sorted out firms that mention another company as their global parent company in the DAFNE data. However, we did not have detailed data concerning the individual stake the parent company actually has. Hence, our proxy for group affiliation (i.e., a dummy variable that is equal to one if the global parent is another company and zero otherwise) might be distorted. There might be SMEs with a dummy value of zero in our analyses that are indeed affiliated to another firm.

[130] We manually compared the names of the managers and the shareholders in the DAFNE dataset and created a dummy variable equal to one, if the company is managed by at least one owner, and zero otherwise.

Table 23 – Comparison of Characteristics of Survey Participants and the DAFNE SME Sample

	Survey Sample			DAFNE SME Population Without Survey Participants		
Variable	**Obs.**	**Mean**	**Median**	**Obs.**	**Mean**	**Median**
Total Assets	472	11,433	7,087	29,504	18,470	7,248
Fixed Assets/Total Assets	472	0.294	0.229	29,504	0.250	0.168
Book Equity/Total Assets	472	0.362	0.346	29,504	0.331	0.293
Liabilities/Total Assets	472	0.489	0.507	29,504	0.529	0.550
Amounts Owed to Credit Institutions/ Total Assets	272	0.230	0.187	15,434	0.251	0.210

Table 23 displays characteristics of survey participants and the sample of 31,830 SMEs. All values are extracted from the DAFNE database. Values belong to year 2011 as this is the latest year with comprehensive data for SME balance sheet positions.

Table 24 – Functions of Financial Statements

Survey responses to the question: How important are the following functions of financial statements in your company?

Panel A: Unconditional averages

	Function	Obs.	% very important	% rather important	% rather unimportant	% unimportant	Total average points
(1)	Information for banks	337	54.9	25.5	13.7	5.9	1.71
(2)	Foundation for taxation	337	64.7	28.2	5.3	1.8	1.44
(3)	Foundation for calculation of payouts	337	36.2	27.0	25.8	11.0	2.12
(4)	Information for owners	337	51.9	33.8	11.6	2.7	1.65
(5)	Information for management	337	55.2	27.9	15.1	1.8	1.64
(6)	Information for customers	337	1.2	15.4	46.6	36.8	3.19
(7)	Information for suppliers	337	2.6	30.0	38.9	28.5	2.93
(8)	Information for potential investors	337	8.6	14.8	20.5	56.1	3.24

(continued)

Panel B: Conditional averages

	Total average points	Obs.	a.Bank debt proportion			Obs.	b.New debt			Obs.	c.Housebank		
			High	Low			Yes	No			Yes	No	
(1)	1.71	292	1.32	1.89	***	333	1.38	2.25	***	333	1.81	1.67	*
(2)	1.44	292	1.54	1.42	*	333	1.47	1.39		333	1.49	1.43	
(3)	2.12	292	2.25	2.09	*	333	2.19	1.98	**	333	2.34	2.04	**
(4)	1.65	292	1.68	1.67		333	1.68	1.59		333	1.77	1.62	*
(5)	1.64	292	1.60	1.72		333	1.62	1.63		333	1.71	1.62	
(6)	3.19	292	3.21	3.19		333	3.18	3.19		333	3.30	3.15	**
(7)	2.93	292	2.84	3.01	**	333	2.88	3.00		333	3.05	2.89	*
(8)	3.24	292	3.13	3.29		333	3.18	3.33	*	333	3.13	3.29	*

	Total average points	Obs.	d.Company size (Total assets)			Obs.	e.Group affiliation			Obs.	f.Management ownership		
			Small	Medium-sized			Yes	No			Yes	No	
(1)	1.71	279	1.73	1.66		263	1.90	1.63	**	337	1.58	1.85	***
(2)	1.44	279	1.42	1.41		263	1.41	1.49		337	1.40	1.49	
(3)	2.12	279	2.14	1.92	**	263	1.98	2.26	**	337	2.18	2.04	*
(4)	1.65	279	1.69	1.61		263	1.60	1.71		337	1.76	1.52	***
(5)	1.64	279	1.61	1.68		263	1.69	1.63		337	1.62	1.65	
(6)	3.19	279	3.21	3.14		263	3.12	3.20		337	3.25	3.12	*
(7)	2.93	279	3.01	2.80	**	263	3.01	2.82	**	337	2.86	3.01	**
(8)	3.24	279	3.24	3.18		263	3.19	3.22		337	3.29	3.18	

Table 24, Panel A: Respondents were asked to indicate the importance of the corresponding function of annual statements of their company on a scale of 1 (very important) to 4 (unimportant). A four point scale is used to force the respondents to decide upon the importance of annual statements. Average points are calculated over all answers given for a certain function. Lower average points are equal to higher importance of the surveyed function. Panel B reports conditional averages of the answers given in Panel A, differentiated by company characteristics. We use the corresponding DAFNE data of year 2011 to split our results. Annual statement data for 2012 was not complete in the DAFNE database in September 2013 and might consequently be biased. The used characteristics lead to a reduced sample size. a.: Answers conditional on the bank debt proportion, according to survey respondents (see Table 22). A high proportion signifies more than 25 percent of bank debt in relationship to total assets, a low one a maximum of 25 percent; b.: Answers conditional on new bank debt raising, according to survey respondents. "Yes" ("No") indicates that SMEs did (not) seek new bank debt since 2007; c.: Answers conditional on a housebank relation. We identify housebank relations by a dummy that is equal to 1 if a company has relations with only one bank and 0 otherwise. We use DAFNE data as foundation. d.: Answers conditional on company size. Small and medium-sized firms are categorized by their total assets in 2011 according to the SMEs definition of the EU Commission. Total assets are extracted from the DAFNE database; e.: Answers conditional on group affiliation. We identify group affiliation by manually sorting whether a company has a parent company or not. See variable definition in Section 3.1. f.: Answers conditional on management ownership. We identify management ownership by manually sorting whether the manager and the owner names are equal for a company. ***, ** and * denote the significance of mean comparison two-tailed t-tests on the 1%, 5% and 10% level.

In contrast, the function of reporting to owners is significantly more important for SMEs that are managed by a separate manager. These results are in line with classical agency theory. In companies that are not managed by the owner, type I agency conflicts tend to be high. Annual statements are used as one instrument for the accountability of managers towards owners in order to reduce asymmetric information. As type I agency conflicts tend to be low in companies that are managed by the owner, the function of reporting to external stakeholders (i.e., banks here) to reduce type II agency conflicts might be more important (Ball and Shivakumar 2005; Ali et al. 2007).

To more openly identify the importance of certain external stakeholders and potential conflicts of interest, we explicitly asked managers for the *one* most important objective in the preparation of their financial statements (see Table 25) (Graham et al. 2005). The results show that 44.9 percent of surveyed managers answered that they strive for a disclosure of high profits in order to please bank debt investors; 30.5 percent prefer to disclose constant financial figures over several years; and only 12.0 percent say that their most important goal is to reduce tax obligations. Although financial statements are used in over 90 percent of questioned SMEs to inform tax offices as obliged by law, tax optimization does not appear to be a major objective in the course of the preparation and design of annual statements. Managers do not seem to sense a notable conflict of interests between tax saving and the goal to please debt investors. Those results deliver support for our thesis that banks are the most important external stakeholders of German SMEs.

We analyzed those results according to certain company characteristics (see Table 25). While companies with a high bank debt obligation more often aim to please banks by reporting high profits in comparison to the overall average, the counterpart (i.e., companies with a low bank debt obligation) more often aims to disclose constant profits over several years. Similar peculiarities can be observed if we split the sample based on whether SMEs raised new bank debt since 2007. Both the event of raising new bank debt and generally high bank dependence appear to influence the incentives of accountants. Our results indicate that SMEs tend to deviate from disclosing constant profits over years if bank debt financing is of major importance.

Companies with a housebank relationship, however, prefer to disclose constant profits over several years, whereas the complementary group with several bank relationships more often aims to please banks by reporting higher profits. These results are in line with earlier remarks. Housebanks might not pay much attention to publicly available accounting data if they have direct access to internal company information. The different importance of financial statement analysis in credit assessments might thus explain the various accounting objectives of the mentioned subgroups. SMEs seem to know about these differences in the credit assessment procedure. Consequently, it is conceivable that SMEs with several bank relationships might have the incentive to make use of their informational advantage over banks. They might have the incentive to use measures of earnings management in order to achieve better ratings and thereby better credit conditions.

We also analyzed the results based on company size. Smaller companies aim to please banks slightly more often than the overall average, whereas medium-sized companies prefer to disclose constant profits over several years.[131] Group affiliation remarkably influences the central objective of annual statement preparation. Independent companies have a higher incentive to disclose lower profits on average in order to save taxes. However, the objectives of reporting constant profits and of disclosing high profits to please banks are still by far the most pronounced goals. Almost one third of all affiliated companies mentioned that they pursued quite different objectives. These might likely be individual guidelines required by the parent company. SMEs that are managed by the owner answer considerably more often that they aim to disclose high profits to please banks. These results are in line with our statements above.

We further asked managers to declare which financial data is normally demanded by banks in the course of a credit assessment, and 97.1 percent (96.1 percent) responded that their company had to hand in the latest balance sheet (profit and loss statement). Moreover, almost two thirds of surveyed managers stated that banks demand the appendix to annual statements (65.3 percent) and figures concerning the investment and capital planning (62.6 percent) of the firm. Only 40.7 percent answered that they had to submit cash flow statements (see Table 26). Those results substantiate the importance of the balance sheet and the profit and loss account in credit risk assessment. In addition, the results explain why smaller firms do not prepare comprehensive external statements besides the two mentioned components. If neither banks nor tax offices demand additional information, there is no need for SMEs to disclose extensive insider information (e.g., Lehmann and Neuberger 2001; Ball and Shivakumar 2005).

Nevertheless, banks are required to base their credit assessment on standardized ratings that generally rely on financial ratio analysis since Basel II (Haller et al. 2008). It is likely that the formalization of the credit analysis entails that banks pay more attention to certain key financial figures and potential default risks (German Central Bank 2002). We explicitly asked managers to estimate the importance of certain key figures in bank lending (Graham et al. 2005). For 66.1 percent, annual profit is of upmost importance, for another 33.0 percent, it is rather important. If we ranked the financial key figures by adding answers of the category “very important” and “important” for the respective metric, annual profit (rank one) is followed by the debt to equity ratio (rank two), the cash flow (rank three), revenues (rank four) and the return on equity (rank five) (see Table 27).[132] The predominance of earnings as key metric is confirmed by Graham et al. (2005). We carefully concluded that earnings are the essential metric in credit assessments according to the evaluation of managers.[133]

[131] A mean comparison t-test did not show significant differences between the average amount of bank debt of SMEs.
[132] The ranks differ slightly if we used total average points as decision criterion (see Table 27).
[133] We also analyzed the results conditional on certain company characteristics. However, these conditional factors do not markedly influence the results.

Table 25 – Most Important Aim of Financial Statement Preparation

Survey response to the question: Please note the one most important aim of your financial statement preparation! (n=167)								
Aim	**Obs.**	**Percent overall**	**a.Bank debt proportion**		**b.New debt**		**c.Housebank**	
			%High	%Low	%Yes	%No	%Yes	%No
(1) Disclosure of a low profit to save taxes	20	12.0	12.50	10.71	13.91	8.00	11.11	12.40
(2) Disclosure of a constant profit over several years	51	30.5	23.61	38.10	26.09	42.00	42.22	25.62
(3) Disclosure of a high profit to allow high dividends	1	0.6	0.00	1.19	0.87	0.00	0.00	0.83
(4) Disclosure of a high profit to please banks	75	44.9	56.94	34.52	49.57	32.00	35.56	48.76
(5) Other aim	20	12.0	6.94	15.48	9.57	18.00	11.11	12.40
Total	167	100.0	100.00	100.00	100.00	100.00	100.00	100.00
Chi2			10.34	**	8.77	*	4.73	
Aim	**Obs.**	**Percent overall**	**d.Company size (Total assets)**		**e.Group affiliation**		**f.Management ownership**	
			%Small	%Medium-sized	%Yes	%No	%Yes	%No
(1) Disclosure of a low profit to save taxes	20	12.0	13.40	7.50	2.70	16.33	15.31	7.25
(2) Disclosure of a constant profit over several years	51	30.5	29.90	37.50	29.73	24.49	25.51	37.68
(3) Disclosure of a high profit to allow high dividends	1	0.6	0.00	2.50	2.70	0.00	0.00	1.45
(4) Disclosure of a high profit to please banks	75	44.9	48.45	35.00	37.84	50.00	52.04	34.78
(5) Other aim	20	12.0	8.25	17.50	27.03	9.18	7.14	18.84
Total	167	100.0	100.00	100.00	100.00	100.00	100.00	100.00
Chi2			7.15		13.82	***	12.89	**

Table 25: Respondents were asked to indicate one single most important aim of the preparation of financial statements in their company. Conditional results: We use the corresponding DAFNE data of year 2011 to split our results. Annual statement data for 2012 was not complete in the DAFNE database in September 2013 and might consequently be biased. a.: Answers conditional on the bank debt proportion, according to survey respondents (see Table 22). A high proportion signifies more than 25 percent of bank debt in relationship to total assets, a low one a maximum of 25 percent; b.: Answers conditional on new bank debt raising, according to survey respondents. "Yes" ("No") indicates that SMEs did (not) seek new bank debt since 2007; c.: Answers conditional on a housebank relation. We identify housebank relations by a dummy that is equal to 1 if a company has relations with only one bank and 0 otherwise. We use DAFNE data as foundation. d.: Answers conditional on company size. Small and medium-sized firms are categorized by their total assets in 2011 according to the SMEs definition of the EU Commission. Total assets are extracted from the DAFNE database; e.: Answers conditional on group affiliation. We identify group affiliation by manually sorting whether a company has a parent company or not. See variable definition in Section 3.1. f.: Answers conditional on management ownership. We identify management ownership by manually sorting whether the manager and the owner names are equal for a company. ***, ** and * denote the significance of the Pearson chi2 test on the 1%, 5% and 10% level.

Table 26 – Financial Data Demanded by Banks

Survey responses to the question: Which data did your bank demand in advance of granting a new credit? (n=305)				
	Data	**Obs.**	**% agreed**	**% did not agree**
(1)	Balance sheet	305	97.1	2.9
(2)	Profit and loss statement	305	96.1	3.9
(3)	Cash flow statement	305	40.7	59.3
(4)	Appendix	305	65.3	34.7
(5)	Interim financial statements	305	43.6	56.4
(6)	Financial ratios	305	37.1	62.9
(7)	Year-to-year comparison	305	50.5	49.5
(8)	Investment and capital planning	305	62.6	37.4

Table 26: Respondent were asked to indicate which data was demanded by banks in the course of a credit granting. This question was only posed to companies that sought new bank debt since 2007. Respondents could either agree or disagree to certain answer options.

Table 27 – Financial Ratios and Figures Demanded by Banks

Survey responses to the question: Please estimate, how important are the following financial key figures for your bank in the credit assessment procedure? (n=305)							
	Figure	**Obs.**	**% very important**	**% rather important**	**% rather unimportant**	**% unimportant**	**Total average points**
(1)	Profit	233	66.1	33.0	0.9	0.0	1.35
(2)	Revenues	233	30.0	51.9	17.2	0.9	1.89
(3)	Debt to equity ratio	233	58.8	36.5	4.7	0.0	1.46
(4)	Cash Flow	233	61.4	32.2	6.0	0.4	1.45
(5)	Return on equity	233	39.5	38.6	20.6	1.3	1.84

Table 27: Respondents were asked to indicate the importance of certain financial figures in the course of a credit granting. This question was only posed to companies that sought new bank debt since 2007. Respondents could weigh the importance on a scale from “very important” (1) to “unimportant” (4). A four point scale is used to force respondents to decide upon the importance of financial key figures. Average points are calculated over all answers given for a certain financial figure. Lower average points are equal to higher importance of the surveyed figure.

3.3.3.3. Empirical Results Concerning Basel II

One central focus of our survey lies on the analysis of potential changes of bank lending of German SMEs through the Basel II Capital Accords. We asked managers to indicate whether their company sought new bank debt since 2007 to identify relevant respondents who are able to reliably assess the impact of Basel II: 61.5 percent (n=305) of our respondents sought new bank debt since 2007 (see Table 22); 72.9 percent of those companies were successful in contract negotiations with banks; 24.8 percent were only partially successful; and 2.3 percent were not successful at all (see Table 28). The partially successful firms responded that credit costs (69.3 percent) and credit volume (49.3 percent) were the two major components that differed from their expectations (see Table 29). The foremost reasons given by banks to explain these deviations were a lack of equity capital (40.2 percent), a lack of other collateral (35.4 percent), and a high risk of the firm or the project the loan was intended for (see Table 30). Concerning the impact of Basel II on SME financing, we queried whether respondents that sought new bank debt came into contact with Basel II, whereby we tried to assure reliable responses regarding the effects of the reform. We found 53.9 percent (n=151) answered that they know about Basel II (see Table 31).

Table 28 – Success in Contract Negotiations

Survey responses to the question: How successful have you been in contract negotiations with your bank? (n=302)

	Success	Obs.	Percent
(1)	Successful	220	72.9
(2)	Partially successful	75	24.8
(3)	Not successful	7	2.3

Table 28: Respondents were asked this question under the condition that they have answered the question whether their company has sought new bank debt since 2007 with "yes" (see Table 22).

Table 29 – Reasons for Partial Success

Survey responses to the question: If you have been partially successful in contract negotiations with your bank, which aspects did differ from your expectations? (n=75)

	Aspects	Obs.	% agreed	% did not agree
(1)	Credit volume	75	49.3	50.7
(2)	Credit costs	75	69.3	30.7
(3)	Credit maturity	75	17.3	82.7

Table 29: Respondents were asked this question under the condition that they have answered the question whether their company has sought new bank debt since 2007 with "yes" (see Table 22). Answer conditional on the question presented in Table 28. Respondents were asked this question if they answered the above presented question with "partially successful".

Table 30 – Explanations Given by Banks for Partial Success or Non-Successfulness

Survey responses to the question: If you have been partially successful or not successful in contract negotiations with your bank, which reasons did your bank offer as explanation? (n=82)				
	Reason	**Obs.**	**% agreed**	**% did not agree**
(1)	Lack of equity capital	82	40.2	59.8
(2)	Lack of collateral	82	35.4	64.6
(3)	Low development potential of firm or project	82	9.8	90.2
(4)	Too high risk of firm or project	82	32.9	67.1
(5)	Past problems with loan repayment	82	0.0	100.0
(6)	No reason given	82	18.3	81.7

Table 30: Respondents were asked this question under the condition that they have answered the question whether their company has sought new bank debt since 2007 with "yes" (see Table 22). Answer conditional on the question presented in Table 28. Respondents were asked this question if they answered the above presented question with "partially successful" or "not successful".

Table 31 – Awareness of Basel II Regulatory Changes

Survey responses to the question: Did you come in contact with the Basel II Capital Accords for credit institutions? (n=280)			
	Answer	**Obs.**	**Percent**
(1)	Yes	151	53.9
(2)	No	129	46.1

Table 31: Respondents were asked this question under the condition that they have answered the question whether their company has sought new bank debt since 2007 with "yes" (see Table 22).

Table 32, Panel A reports the results of the assessment of queried SMEs regarding the impact of Basel II on corporate lending. It shows 80.9 percent of all companies that sought new bank debt since 2007 mention a (significant) increase of the effort needed to obtain a new loan. Basel II caused a formalization of the internal credit rating procedure for banks. It is likely that banks have claimed more detailed financial information from SMEs since 2007 in order to fulfil the requirements of regulation. Hence, the preparation of financial data in advance of a credit granting might now be more elaborate for SMEs. Results of our survey confirm this and consequently support hypothesis 6b.

In line with results presented in Section 3.1.3, 59.6 percent of all queried managers note that the volume of granted loans did not change in the course of Basel II. Only 22.0 percent recognize a negative effect on the amount of bank debt granted to their firms. There is no distinct indication that German SMEs were affected by restrictive lending practices concerning the volume of total credit granting due to Basel II (see Table 32, Panel A). To validate these statements, we analyze the development of the bank debt proportion of our sample companies over years on behalf of DAFNE data. We observe a significant rise of bank debt ratios ($Credit_{it}$) since 2007 (see Table 34, Panel A and B). This does not speak in favor of lending restrictions due to Basel II.[134]

In addition, we found support for hypothesis 6c, in that 66.7 percent of our sample companies answered that both the collateral demanded by banks and the strictness of covenants increased (significantly) since the amendment of Basel II (see Table 32, Panel A). Hard-fact based ratings might have led

[134] Please see statements further down in this section for a more detailed assessment of changes of SMEs' financial structure.

to a higher risk awareness of banks. Of course, higher collateral and covenant requirements might be explained by a systematic change of the underlying default risk of our sample companies due to the economic slump during the financial crisis. We therefore closely inspect a rating proxy ($Risk_{it}$) available in the DAFNE database.[135] However, the proxy is only available for the years 2004 to 2010 for most of our companies. The analysis does not reveal a long-lasting systematic worsening of the default risk of our sample companies. In contrast, a mean-comparison t-test of the average company risk discloses a significant improvement of the overall default risk since the amendment of Basel II in 2007 (see Table 34, Panel A and B). This result is in line with the large sample evidence presented in Section 3.1. Hence, higher collateral demands cannot be attributed to higher company risk (at least on an aggregated level). One possible explanation for this development might be that SMEs anticipated rising costs of debt at the forefront of Basel II and tried to improve their ratings. In addition, we emphasize that respondents in our survey are slightly less risky and less financed by bank debt than the large-sample average investigated in Section 3.1. Accordingly, the results might be even more pronounced if we were to transfer our sample evidence to the basic population.

Regarding hypothesis 6a, our results indicate an increase of the costs of bank debt for 47.5 percent of our respondents, but 36.2 percent did not experience a change. We consider this a slight affirmation of hypothesis 6a.

We investigated the results of our hypotheses conditional on the proportion of bank debt. The results reveal that companies with a high proportion of bank debt (i.e., more than 25 percent bank debt financing) disapprove the impact of Basel II to a greater degree. Compared to the complete sample, bank-dependent firms state more often that they experience higher demanded collateral and stricter covenants. They also have to deal with higher debt interest rates and have to spend a higher effort to obtain a loan since 2007. This result is in line with our expectations, as we assume that Basel II had a greater impact on the cost of debt of bank-debt dependent companies and their bank lending relationships in general. This confirms hypothesis 7.[136] In addition, an analysis of responses based on the success of the respective companies in contract negotiations shows that partially successful and non-successful firms rate the impact of Basel II more negatively, which is intuitively comprehensible (see Table 32, Panel B).[137]

[135] Please see Table 33 for variable description.

[136] We cross-checked these results using data extracted from the DAFNE database to calculate the proportion of bank debt. Results remain unchanged.

[137] In unreported results, we analyzed the results based on relationship lending, company size, company default risk, group affiliation, and management ownership. However, none of the potential influence factors showed significant differences.

Table 32 – Changes of Bank Lending in Course of Basel II

Survey responses to the question: How did the following aspects of bank lending change since the amendment of Basel II in 2007? (n=151)

Panel A: Unconditional answers

	Change	Obs.	% increased significantly	% increased	% no change	% decreased	% significantly decreased	Total average points
(1)	Effort to obtain a loan	141	43.3	37.6	17.0	2.1	0.0	1.78
(2)	Volume of granted loan	141	0.0	12.8	59.6	22.0	5.7	3.21
(3)	Demanded collateral	141	27.7	39.0	29.8	3.5	0.0	2.09
(4)	Strictness of covenants	141	17.7	49.0	30.5	2.1	0.7	2.19
(5)	Costs of a loan	141	10.6	36.9	36.2	14.2	2.1	2.60

Panel B: Conditional answers

	Total average points	Obs.	a.Bank debt proportion			Obs.	b.Success in contract negotiations		
			High	Low			Successful	Partially/not successful	
(1)	1.78	128	1.73	1.94	*	140	1.91	1.53	***
(2)	3.21	128	3.20	3.25		140	3.04	3.56	***
(3)	2.09	128	2.00	2.31	**	140	2.27	1.71	***
(4)	2.19	128	2.13	2.33	*	140	2.35	1.87	***
(5)	2.60	128	2.49	2.88	**	140	2.75	2.29	***

Table 32: Respondents were asked this question under the condition that they have answered the question whether their company has sought new bank debt since 2007 with "yes" (see Table 22). Moreover, this question was only posed if managers noted that they came in contact with Basel II (see Table 30). Panel A: Managers were asked to evaluate the changes in bank lending since Basel II. Possible answers range from "increased significantly" (1 point) to "decreased significantly" (5 points). A five point scale is used to allow respondents to indicate that no change has taken place. Total average points indicate mean values of the corresponding item. Panel B: Average results of the question in Panel A, conditional on company characteristics. The used characteristics lead to a reduced sample size. a. High (low) bank debt proportion, according to evaluation of survey respondents = more (less) than 25 percent of bank debt financing; b. the success in contract negotiations splits the answers of the question posed in Table 28 into two groups. ***, ** and * denote significance of mean comparison two-tailed t-tests on 1, 5 and 10 percent level.

Table 33 – Variable Description

Variable Name	Description	Calculation	Obs.	Mean	S.D.	Min	Max
$LnInterest_{it}$	Debt costs	Ln of (total interest expense/ (($total\ assets_t$ + $total\ assets_{t-1}$) /2)	709	0.116	0.066	0	0.286
$Risk_{it}$	Default risk	Based on DAFNE database rating where 1 is the best category and 4 the worst	709	2.044	0.717	1	4
$Reform_{it}$	Basel II reform dummy	Equals 0 for years 2003-2006, 1 for years 2007-2010	709	0.760	0.427	0	1
$Retail_{it}$	Dummy for retail credit	Equals 1 if amounts owed to credit $institutions_{it}$ is less than 1 million euros per bank	709	0.193	0.395	0	1
$Refret_{it}$	Dummy for interaction effect of the reform and retail variable	Equals 1 if the variable retail equals 1 after 2007	709	0.151	0.358	0	1
$Eqratio_{it}$	Equity ratio	Book value of equity $capital_{it}$/$total\ assets_{it}$	709	0.302	0.220	0	0.910
$Size_{it}$	Company size	Ln of $total\ assets_{it}$	709	8.916	0.999	5.521	11.634
GDP_{it}	Economic development	Price adjusted GDP_{it}, reference year 2005	709	0.661	3.416	-5.1	4.0
$Refin_{it}$	Interest development	Inter-bank refinancing interest rate	709	2.702	1.166	1.00	3.85
$Y2008_{it}$	Year 2008	Equals 1 if observation is in year 2008 in order to control for effects of the financial crisis	709	0.243	0.429	0	1
$Y2009_{it}$	Year 2009	Equals 1 if observation is in year 2009 in order to control for effects of the financial crisis	709	0.238	0.426	0	1
$Credit_{it}$	Proportion of amounts owed to credit institutions in relationship to total assets	Amounts owed to credit $institutions_{it}$/$total\ assets_{it}$	1986	0.228	0.176	0	0.847
$Invest_{it-1,t}$	Investment in PPE	(PPE_{it} – PPE_{it-1})/$total\ assets_{t-1}$	2954	0.204	11.560	-0.562	0.593
$Newcredit_{it-1,t}$	New bank debt	(ΔAmounts owed to credit $institutions_{it-1,t}$)/$total\ assets_{t-1}$	1498	0.018	0.134	-0.429	1.689
Acc_{it}	Accruals	($\Delta inventory_{it-1,t}$+$\Delta debtors_{it-1,t}$+Δother current $assets_{it-1,t}$-$\Delta creditors_{it-1,t}$-Δother current $liabilities_{it-1,t}$-$depreciation_{it}$), scaled by $total\ assets_{t-1}$	230	-0.027	0.150	-0.439	0.669
Cfo_{it}	Cash flow from operations	Earnings before extraordinary $items_{it}$ – $accruals_{it}$, scaled by $total\ assets_{t-1}$	230	0.102	0.162	-0.643	0.659
$Dcfo_{it}$	Dummy for negative cash flows in t	Equals 1 if Cfo_{it} is negative and 0 otherwise	230	0.170	0.376	0	1

(continued)							
$lCfo_{it-1}$	Lagged version of cash flow from operations	Corresponding Cfo in t-1	230	0.101	0.162	-0.824	0.659
$fCfo_{it+1}$	Lead version of cash flow from operations	Corresponding Cfo in t+1	230	0.119	0.172	-0.544	0.747
$Bank_{it}$	Proportion of bank debt	Amounts owed to credit institutions$_{it}$, scaled by total assets$_{it-1}$	230	0.227	0.180	0	1
New_{it+1}	New bank debt	Equals 1 if Δbank debt$_{it,t+1}$ scaled by total assets$_{it}$>5%	230	0.265	0.442	0	1
$Growth_{it-1,t}$	Company growth	Delta of sales$_{it-1,t,}$ scaled by total assets$_{it}$	230	0.023	1.469	-19.700	3.367

Table 33 displays descriptions of the variables used in descriptive analyses and regression models (11) and model (12). Observations are limited to the respective number of observations used in the models. Variables $Credit_{it}$ and $Bank_{it}$ are similar; however, the difference is accepted here to maintain comparability with models and results presented in Sections 3.1 and 3.2.

Table 34 – Descriptive Analysis of Matched DAFNE Data

Panel A	**$Risk_{it}$**			**$Eqratio_{it}$**			**$Credit_{it}$**			**$LnInterest_{it}$**			**$LnInterest_{it}$ (New Bank Debt)**		
	Obs.	**Mean**	**S.D.**	**Obs.**	**Mean**	**S.D.**	**Obs.**	**Mean**	**S.D.**	**Obs.**	**Mean**	**S.D.**	**Obs.**	**Mean**	**S.D.**
Before Reform	753	2.132	0.027	963	0.300	0.007	548	0.217	0.007	405	0.115	0.003	265	0.105	0.004
After Reform	1225	2.058	0.021	2565	0.337	0.005	1438	0.233	0.005	1911	0.120	0.001	1241	0.113	0.002
t-test mean(yes)-mean(no)=0	2.141	**		-4.312	***		-1.785	**		-1.392	*		-1.840	**	

Panel B	**$Risk_{it}$ Category**					**$Credit_{it}$**			
Year	**Obs.**	**% in 1**	**% in 2**	**% in 3**	**% in 4**	**Total average points**	**Obs.**	**Mean**	**S.D.**
2004	129	12.4	59.7	24.0	3.9	2.19	112	0.225	0.175
2005	273	18.0	52.0	26.0	4.0	2.16	194	0.213	0.168
2006	351	18.2	57.1	20.5	3.1	2.09	242	0.216	0.173
2007	366	18.3	57.1	21.9	2.7	2.09	246	0.215	0.164
2008	380	22.4	51.1	23.7	2.9	2.07	262	0.232	0.176
2009	372	25.8	50.5	19.4	4.3	2.02	267	0.239	0.184
2010	107	21.5	57.0	18.7	2.8	2.03	280	0.235	0.185
2011							272	0.230	0.178
2012							111	0.257	0.170

Panel C	**$Invest_{it-1,t}$**			**$Newcredit_{it-1,t}$**		
Year	**Obs.**	**Mean**	**S.D.**	**Obs.**	**Mean**	**S.D.**
2005	166	0.018	0.082	99	0.008	0.090
2006	325	0.017	0.104	165	0.030	0.188
2007	424	0.019	0.075	199	0.035	0.142
2008	448	0.025	0.094	222	0.023	0.128
2009	466	0.018	0.107	229	-0.004	0.104
2010	471	0.022	0.122	234	0.013	0.124
2011	462	0.019	0.091	249	0.015	0.141
2012	180	0.013	0.095	101	0.031	0.116

Table 34 displays descriptive analysis regarding the impact of Basel II and the financial crisis on survey participants. For variable descriptions, please see Table 33. Panel A: The last column displays results of a mean comparison t-test of $LnInterest_{it}$. The sample is limited to companies that raise new bank debt according to DAFNE data (positive delta of Credit of t-1 and t). Panel B: The risk proxy is only available for years 2004 to 2010. ***, ** and * denote significance of mean comparison two-tailed t-tests on 1, 5 and 10 percent level.

We elaborated on the potential effect of Basel II on the cost of debt of SMEs in further detail by using the matching archival data of queried SMEs extracted from the DAFNE database to perform multivariate analyses. First, we ran mean comparison t-tests to inspect the impact of Basel II on debt interest rates of German SMEs in our sample (see Table 34, Panel A). Results indicate a (slightly) significant rise of debt interest rates since 2007. This rise was more significant when we limited observations to companies that raised new bank debt, which is in line with sensitivity analyses in Section 3.1.3.3.[138] Second, we apply the fixed-effects panel approach described in Section 3.1.2 (see Table 35).[139] We re-estimated model (1):[140]

$$LnInterest_{it} = \beta_0 + \beta_1 Risk_{it} + \beta_2 Reform_{it} + \beta_3 Retail_{it} + \beta_4 Refret_{it} + \beta_5 Eqratio_{it} + \beta_6 Size_{it} + \beta_7 GDP_{it} + \beta_8 Refin_{it} + \beta_9 Y2008_{it} + \beta_{10} Y2009_{it} + \varepsilon_{it} \quad (11)$$

We investigated whether the reform affected debt interest rates of the total sample of queried SMEs. However, we did not observe a significant influence of the reform variable (or the retail category) on the cost of debt proxy in our model.[141] In a further step, we limited the sample to observations of companies whose managers did explicitly mention that they have had higher costs of debt since Basel II (see Table 35). We still did not notice a significant rise of the cost of debt of these companies. The same was valid when we limited observations to those SMEs that mentioned that Basel II had an overall negative effect on their company.[142] Moreover, we only analyzed companies whose managers specified that they had a high proportion of bank debt (i.e., more than 25 percent of bank debt in relationship to total assets). The reform variable remains insignificant in value. Hence, the first multivariate results here are not in line with above-mentioned results of our descriptive analysis.

There may be several reasons for this. First, we cannot ascertain whether managers in our sample correctly evaluated the effect of regulation on their bank debt conditions. They might evaluate Basel II too negatively. Second, we did not ask managers to specify the scale of altered costs of debt in our questionnaire. The answers of SME managers might still be valid. Yet, the rise of bank debt interest rates might not be pronounced enough to be measureable by means of archival data without having knowledge about detailed debt contracts. Third, managers were only asked to give their assessment about the *current* proportion of bank debt of their company (i.e., in 2013). That might bias our conditional panel analysis.[143] A further reason might be the altered period of analysis. Whereas the results of multivariate analyses in Section 3.1 are based on data from 2003 to 2010, the sample used in this chapter is premised on data from 2004 to 2012.

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138 We identify debt-raising firms by a positive change of the amounts owed to credit institutions from t-1 to t.

139 Please see Section 3.1.2 for further details concerning the model, variable descriptions (see also Table 33), limitations, and interpretations of control variables. Variables are defined as in Section 3.1.2.

140 Please see Table 36 for pairwise correlations and variance inflation factors for the used variables.

141 Control variables behave as follows: riskier companies have higher debt interest rates. A higher equity ratio is accompanied by a lower costs of debt. Interest rates are higher in 2008 and 2009. For further interpretations, please see Section 3.1.3.

142 In addition, we tried several combinations of these sample size limitations. We did not find significant influence of the Basel II reform variable on the cost of debt.

143 It is likely that many companies changed their capital structure and their proportion of bank debt over time.

Table 35 – Regression Results of Model (11) Alternatives

Variable	Model 11									
	Overall Sample		Basel II Costly		Basel II Negative		High Bank Debt Questionnaire		High Bank Debt DAFNE	
Cons	0.170	***	0.131		0.309	**	0.147	*	0.264	***
	[0.056]		[0.125]		[0.139]		[0.083]		[0.068]	
$Risk_{it}$	0.003		0.001		-0.006		0.002		0.002	
	[0.002]		[0.004]		[0.005]		[0.002]		[0.003]	
$Reform_{it}$	0.005		0.002		0.004		0.003		0.01	**
	[0.003]		[0.012]		[0.014]		[0.004]		[0.004]	
$Retail_{it}$	0.006		-0.001		-0.006		0.004		-0.001	
	[0.004]		[0.008]		[0.008]		[0.005]		[0.009]	
$Refret_{it}$	-0.002		-0.002		-0.001		-0.001		0.003	
	[0.004]		[0.009]		[0.010]		[0.004]		[0.005]	
$Eqratio_{it}$	-0.071	***	-0.087	**	-0.069		-0.086	***	-0.081	***
	[0.017]		[0.040]		[0.056]		[0.022]		[0.026]	
$Size_{it}$	-0.005		-0.003		-0.016		-0.001		-0.014	*
	[0.006]		[0.013]		[0.015]		[0.009]		[0.008]	
GDP_{it}	0.003	***	0.001		0.009	**	0.003	**	0.003	*
	[0.001]		[0.002]		[0.004]		[0.001]		[0.002]	
$Refin_{it}$	-0.002		-0.003		-0.008		-0.001		-0.007	***
	[0.002]		[0.006]		[0.008]		[0.002]		[0.003]	
$Y2008_{it}$	0.010	***	0.011		0.028	***	0.01	***	0.01	**
	[0.003]		[0.007]		[0.009]		[0.003]		[0.004]	
$Y2009_{it}$	0.022	**	0.006		0.060	**	0.021	**	0.014	
	[0.009]		[0.013]		[0.029]		[0.009]		[0.013]	
Obs. (groups)	1247	(337)	188	(52)	136	(36)	894	(232)	709	(256)
F-value	3.35		2.05		2.58		3.11		2.38	
p-value	0		0.05		0.02		0		0.01	
R^2 (within)	0.07		0.07		0.16		0.10		0.09	
R^2 (between)	0.22		0.11		0.14		0.23		0.17	
R^2 (overall)	0.20		0.10		0.15		0.22		0.17	

Table 35 displays regression results of model (11): $LnInterest_{it} = \beta_0 + \beta_1 Risk_{it} + \beta_2 Reform_{it} + \beta_3 Retail_{it} + \beta_4 Refret_{it} + \beta_5 Eqratio_{it} + \beta_6 Size_{it} + \beta_7 GDP_{it} + \beta_8 Refin_{it} + \beta_9 Y2008_{it} + \beta_{10} Y2009_{it} + \varepsilon_{it}$. The first column reports results for the complete sample. The sample in the second column is limited to companies that answered that their costs of debt are higher since Basel II (see Table 32). The sample in the third column is limited to companies that evaluate the impact of Basel II negatively (see Table 37). The sample in the fourth column is limited to companies that report a high bank debt proportion (see Table 22). The sample in the fifth column is limited to companies that have a high bank debt proportion according to DAFNE data. Only companies with more than 25 percent bank debt ($Credit_{it}$>0.25, see Table 33) are included. The values in squared parentheses are standard errors. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$ For variable description, please see Table 33.

Table 36 – Pairwise Correlations and Variance Inflation Factors of Variables Used in Model (11)

		1	2	3	4	5	6	7	8	9	10	11	VIF
1	$LnInterest_{it}$	1.000											
2	$Risk_{it}$	0.430	1.000										1.50
3	$Reform_{it}$	0.026	-0.050	1.000									2.02
4	$Retail_{it}$	0.157	0.018	0.063	1.000								4.75
5	$Refret_{it}$	0.131	-0.015	0.368	0.796	1.000							4.76
6	$Eqratio_{it}$	-0.438	-0.300	0.067	-0.025	-0.002	1.000						1.49
7	$Size_{it}$	-0.052	-0.189	0.086	-0.089	-0.040	0.155	1.000					1.14
8	GDP_{it}	0.021	0.027	-0.116	0.020	-0.032	-0.015	0.000	1.000				22.71
9	$Refin_{it}$	-0.017	0.009	-0.111	0.038	-0.006	-0.046	-0.059	0.250	1.000			2.93
10	$Y2008_{it}$	-0.001	-0.012	0.250	0.034	0.112	0.001	0.002	-0.045	0.567	1.000		3.71
11	$Y2009_{it}$	-0.016	-0.040	0.250	0.051	0.131	0.017	0.010	-0.876	-0.281	-0.125	1.000	28.38

Table 36 displays pairwise correlations between variables used in model (11). For variable descriptions, please see Table 33. High variance inflation factors are accepted because of the importance of the variables GDP_{it} and $Y2009_{it}$. We re-ran the model without variable $Y2009_{it}$. The results remain unchanged, but deliver lower VIFs.

Table 37 – Impact of Basel II

Survey responses to the question: Please evaluate the overall impact of Basel II on your company! (n=151)

Panel A: Unconditional answers

	Impact	Obs.	% very negative	% negative	% no change	% positive	% very positive	Total average points
(1)	Overall impact	151	6.0	31.1	46.4	16.6	0.0	2.74

Panel B: Conditional answers

	Total average points	Obs.	a.Bank debt proportion			Obs.	b.Success in contract negotiations		
			High	Low			Successful	Partially/not successful	
(1)	2.74	136	2.67	2.87	*	150	3.01	2.16	***

Table 37: Respondents were asked this question under the condition that they have answered the question whether their company has sought new bank debt since 2007 with "yes" (see Table 22). Moreover, this question was only posed if managers noted that they came in contact with Basel II (see Table 31). Panel A: Managers were asked to evaluate the overall impact of Basel II on their companies. Possible answers range from “very negative” (1 point) to “very positive” (5 points). A five point scale is used to also allow respondents to indicate no change of Basel II. Total average points indicate mean values of the corresponding item. Panel B: Average results of the question in Panel A conditional on company characteristics. High (low) bank debt proportion = more (less) than 25 percent of bank debt financing; the success in contract negotiations splits the answers of the question posed in Table 28 into two groups. ***, ** and * denote significance of mean comparison two-tailed t-tests on 1, 5 and 10 percent level.

Our archival data set allows for a more objective computation of the proportion of bank debt and is thus probably a more exact tool for conditional analyses. When we used an archival data-based variable instead of questionnaire answers to compute the bank debt proportion of SMEs and limited our sample to observations with a high proportion of bank debt, we *did* observe a significant, robust influence of the reform variable.[144] Costs of debt are remarkably higher for companies with a high bank debt proportion since Basel II than before (see Table 34). As large-sample archival data analysis presented in Section 3.1.3 also shows robust results in this context, we still cautiously posit that Basel II negatively affected the costs of debt capital of highly bank-dependent SMEs. We consider this as slight support for hypothesis 6a. Moreover, as the results are only robust for highly bank-dependent firms we consider this as an indicator of an affirmation of hypothesis 7, with reservations.

In general, we cannot fully conclude whether managers who participated in our survey are able to separate the effect of Basel II from the potential effects of the financial crisis on corporate lending. We controlled for the development of refinancing interest rates in our multivariate model to mark out the influence of macroeconomic changes on the cost of debt. The cost of debt is higher for sample SMEs *in addition to* the development of refinancing interest rates. Furthermore, we controlled for changes in bank debt proportions, new debt raising, and investments in property, plant, and equipment of sample SMEs over time in separate descriptive analyses. First, we found a significant rise of bank debt proportions over time (see Table 34, Panel A). Rising bank debt ratios might explain higher interest rates in our multivariate analysis. We therefore included the variable $Credit_{it}$ in the last mentioned model version, but we did not find alterations of our main result. For bank debt dependent SMEs, the reform variable remains positive and significant in value.[145] Meanwhile, we observed a rise of equity ratios of survey SMEs (see Table 34, Panel A). Taken into consideration, our analysis indicates a significant change in capital structure that might explain the mentioned improvement of default risks.[146] Nevertheless, this change is a gradual alteration over many years and − as we cannot control for further internal company effects – this finding might not be explicitly attributable to the Basel II reform and/or the financial crisis. Nonetheless, neither a change of company risk (validated by our risk proxy), capital structure (validated by changes of the bank debt and equity proportion), nor macroeconomic interest rate changes seem to justify higher costs of debt of (highly bank-dependent) German SMEs in our sample since 2007. We supposed that banks passed on their own higher costs to debtors since Basel II by imposing higher credit margins on SME loans. We cannot determine whether the higher margins are reasoned by higher risk premiums demanded by banks facing the crisis. Furthermore, we were not able to

[144] We gradually limited our sample by increasing the proportion of bank debt to test for sensitivity of our statements. The influence of the reform variable stays significant above a value of 18 percent of amounts owed to credit institutions divided by total assets. We tried to work out differences between the two samples (i.e., a limitation based on questionnaire answers and one based on archival data concerning the proportion of bank debt). We found that SMEs are on average smaller and have lower bank debt ratios if we used the questionnaire answers concerning the high bank debt proportion instead of the archival data definition. Stronger effects of Basel II in the latter sample are consequently comprehensible.

[145] For variable descriptions, please see Table 33.

[146] Please see similar results in Section 3.1.

evaluate whether the interest margins in our sample are commensurate with the respective involved company default risk. It might be that margins were not risk adequate before Basel II, but rather too low, due to a lack of an objective and formalized rating procedure. The more formalized rating might have revealed the requirement to increase margins to a higher, risk adequate level. No matter what may be the fundamental reason behind banks' behavior, German SMEs remain affected by higher costs of debt since 2007.

In addition, we identified a decrease of new debt raising in 2009 (i.e., the year with the harshest impact of the financial crisis on the real economy) and a slight decrease of investments in property, plant, and equipment in 2009 (see Table 34, Panel C). However, we did not find a change of investment or debt raising behavior for 2007 and 2008. As we supposed that a credit crunch most likely might have taken place in 2007 and 2008, the decrease in 2009 does not directly affect our analysis.[147] Unfortunately, we were not able to perform additional multivariate tests as mentioned in Section 3.1.2 due to the few observations in our survey sample. We cannot finally assess the impact of the financial crisis on German SMEs' corporate debt lending. However, we wanted to emphasize that only 23.1 percent of our surveyed companies mention negative effects of Basel II on the amount of debt granted by credit institutions to SMEs since 2007 (see Table 32, Panel A). Consequently, we carefully assumed that SMEs did not suffer from negative effects of Basel II on the amount of bank debt granted to their companies.

In a final survey question, we asked managers to evaluate the *overall* impact of Basel II on their company. The results show that 37.1 percent experienced a (very) negative impact, 46.4 percent did not sense a change and 16.6 percent evaluated Basel II positively (see Table 37, Panel A). If we analyzed our sample based on the bank debt proportion, significantly more companies value Basel II negatively (41.7 percent of companies with a high bank debt proportion versus 28.9 percent of non-bank-debt-dependent companies).[148] This is additional support for hypothesis 7. The same is true for partially successful or non-successful companies in contract negotiations (see Table 37, Panel B). Taking these results into consideration, we concluded that a large proportion of German SMEs tends to disapprove the reform of Basel II.

Overall, survey and multivariate analyses show that SMEs experience tighter credit terms (collateral, covenants, and partially credit costs), and a formalization of the lending process that is accompanied by a higher effort and higher requirements to obtain a credit since 2007. At least the higher effort cannot be explained by the influences of the financial crisis. We found evidence that bank lending of German SMEs was negatively affected by Basel II (and the financial crisis). Those results are in line with the comprehensive survey of the OECD (2012) in other countries mentioned in Sections 3.1.1 and 3.3.1.1.

[147] Please see similar statements in Section 3.1. A reduction of new debt raising and investments might be a response of SMEs to a drop of incoming orders in 2009.

[148] In unreported results, we also analyzed the influence of relationship lending, company size, dependence on a parent company, and management ownership. None of these factors shows significant influence.

3.3.3.4. Empirical Results Concerning Earnings Manipulation of German SMEs

A further focus of our survey is the analysis of the accounting behavior of SMEs prior to raising bank debt. We asked managers whether they would opportunistically use their legally permitted accounting discretion to boost earnings in order to achieve a certain earnings target at the end of the year if they planned to raise new bank debt in the subsequent period. We focused on real activities management in a first step (see Table 38, Panel A).[149] Only 33.5 percent of our surveyed managers would provide incentives to customers, e.g., discounts, to accelerate revenues. Furthermore, only 26.5 percent stated that they would sell assets to uncover hidden reserves, and 22.8 percent testified that they would try to recognize certain revenues earlier if they had the option to choose between a (legally permitted) recognition in the current or subsequent year. We suppose that these actions are accompanied by high economic costs that exceed the potential savings of lower bank interest rates or are viewed as critical by managers. In contrast, 79.2 percent responded that they would reduce discretionary spending, e.g., expenses for advertisement or maintenance, in the current period. Moreover, 89.0 percent admitted that they would postpone a cost-intensive project to the subsequent period. Accordingly, both actions seem very popular means to reduce current expenses. Consequently, managers use selected measures of real activities management in order to increase current cash flows. However, they seem to weigh the consequences and economic costs of certain options. Nevertheless, this supports hypothesis 8. This result is in line with those of Graham et al. (2005).

We also analyzed these results based on certain company characteristics (see Table 38, Panel B). Interestingly, companies with a high bank debt proportion used significantly more "unpopular" measures of real activities management. Remarkably more firms mentioned that they would sell assets to uncover hidden reserves and recognize revenues earlier (if legally permitted) in order to report higher earnings in the current period. The high dependence on external financing seems to intensify the incentive to take more costly or critical actions to report higher earnings. In addition, management ownership appears to significantly influence real earnings management activities. Companies that are managed by the owner more often state that they would sell assets to uncover hidden reserves and that they would recognize revenues early. These results might indicate that shareholding managers dare to accept higher costs and risks in order to report higher earnings. However, these results might also imply that non-shareholding managers answered to our question more prudently.[150]

Focusing on accruals management, 75.8 percent of surveyed managers agree that they would use discretion in the recognition and valuation of assets, e.g., in the context of the valuation of provisions,

[149] Unfortunately, we were not able to control for real earnings management in archival data. The popular measures of real activities manipulation by Roychowdhury (2006) cannot be applied due to missing comparable balance sheet positions (e.g., expenses for R&D) under German GAAP.

[150] Furthermore, we investigated the influence of new debt raising, company size and group affiliation (see Table 38, Panel B). All characteristics show significant influence on some measures of real activities management of SMEs, however, convey an unclear image overall.

in the period prior to raising bank debt (see Table 38, Panel A). Conditional analysis reveals that companies with multi-bank relationships answered more often that they use accrual accounting discretion in this context. This is in line with results in Sections 3.2 and 3.3.3.2. The management of accruals is applied more often in non-housebank relationships, as it is more likely to be effective in looser bank relationships. SMEs that are managed by the owner report that they use accrual accounting discretion significantly more often (see Table 38, Panel B).

We inspected the accrual accounting behavior of survey participants to further detail. Therefore, we applied the multivariate fixed-effects panel regression approach mentioned in Section 3.2.2. We re-ran model (6) on behalf of matched archival data (see Table 39):[151]

$$Acc_{it} = \beta_0 + \beta_1 DCfo_{it} + \beta_2 Cfo_{it} + \beta_3 DCfo_{it} * Cfo_{it} + \beta_4 lCfo_{it-1} + \beta_5 fCfo_{it+1} + \beta_6 Bank_{it} + \beta_7 New_{it+1} + \beta_8 Risk_{it} + \beta_9 GDP_{it} + \beta_{10} Growth_{it-1,t} + \varepsilon_{it} \quad (12)$$

In line with results in Section 3.2.3, German SMEs tend to report non-conservatively in general. The interaction term of $Dcfo_{it}$ and Cfo_{it} is negative and significant. However, we did not find a significant influence of the proportion of bank debt or the event of borrowing new bank debt in the subsequent period on total accruals, so we are not able to confirm the statements made above on behalf of archival data for our complete survey sample. However, if we limit observations to companies that explicitly mentioned using their accrual accounting discretion prior to borrowing new bank debt, we observe a significant positive correlation between the proportion of bank debt and total accruals. Bank dependent companies report higher total accruals. Moreover, total accruals are significantly higher in the period prior to raising new bank debt. This is slight support for hypothesis 8.[152]

Taking into consideration, we found evidence that managers are willing to apply certain accounting and real activities discretion in order to achieve better credit ratings. As these results are in line with large sample evidence presented in Section 3.2, we determine that the event of bank lending influences the accounting decisions of German SMEs, at least to some extent. These decisions seem to result in a distorted, non-conservative presentation of annual statements, which is likely directed at banks.[153]

[151] We performed several model alternatives: We limited the sample to highly bank dependent companies using both the answers of survey participants and archival data. Moreover, we ran a POLS regression alternative with an additional control for relationship lending. None of these alternatives shows a significant influence of the bank debt proportion or the event of debt raising on total accruals. Relationship lending does not have a significant effect. For further explanations of the model, limitations and interpretations of control variables, please see Section 3.2. See Table 33 for variable descriptions, and Table 40 for pairwise correlations. All variables are defined as in Section 3.2.

[152] Please note that the interaction term of $Dcfo_{it}$ and Cfo_{it} is not significant in this model version. SMEs in this sample do not report non-conservatively in general.

[153] In unreported calculations, we tested the influence of real activities and accruals management on the costs of debt of sample SMEs. We used model (10) as foundation. Instead of calculating discretionary accruals, we created two separate dummy variables equal to 1 if a company either agreed that it applied at least one of the queried real activities or the accrual manipulation prior to raising new bank debt (see Table 38). Neither the dummy variable for real activities management nor the one for accrual management show significant influence on the costs of debt of the subsequent period.

Table 38 – Earnings Manipulation Prior to Raising New Bank Debt

Survey responses to the question: Near the end of the year, it looks like your company might come below the desired earnings target. Within what is permitted by GAAP, which of the following choices might your company make if you plan to raise new bank debt in the subsequent year?

Panel A: Unconditional averages

	Choice	Obs.	% strongly agree	% agree	% disagree	% strongly disagree	Total average points
(1)	Provide incentives to customers to boost sales	355	13.5	20.0	33.8	32.7	2.86
(2)	Decrease discretionary spending (e.g. advertisement, maintenance)	355	27.6	51.6	14.6	6.2	1.99
(3)	Postpone a project to the subsequent year	355	43.9	45.1	9.0	2.0	1.69
(4)	Sell assets in the current period to uncover hidden reserves	355	5.6	20.9	33.2	40.3	3.08
(5)	Earlier revenue recognition	355	5.3	17.5	32.4	44.8	3.17
(6)	Use discretion in accrual accounting	355	29.3	46.5	15.2	9.0	2.04

(continued)

Panel B: Conditional averages

	Average points	Obs.	a.Bank debt proportion			Obs.	b.New bank debt			Obs.	c.Housebank		
			High	Low			Yes	No			Yes	No	
(1)	2.86	309	2.91	2.82		352	2.91	2.77		350	2.91	2.83	
(2)	1.99	309	2.02	1.95		352	2.02	1.96		350	2.10	1.96	*
(3)	1.69	309	1.72	1.65		352	1.72	1.65		350	1.75	1.67	
(4)	3.08	309	3.02	3.16	*	352	3.05	3.13		350	3.05	3.10	
(5)	3.17	309	3.04	3.22	**	352	3.17	3.17		350	3.26	3.14	
(6)	2.04	309	2.03	2.02		352	2.09	1.95		350	2.22	1.99	**
	Average points	**Obs.**	**d.Company size**			**Obs.**	**e.Group affiliation**			**Obs.**	**f.Management ownership**		
			Small	Medium-sized			Yes	No			Yes	No	
(1)	2.86	298	2.81	2.80		277	2.82	2.86		355	2.91	2.80	
(2)	1.99	298	2.02	1.93		277	1.87	2.05	**	355	2.06	1.92	**
(3)	1.69	298	1.73	1.68		277	1.71	1.66		355	1.72	1.65	
(4)	3.08	298	3.02	3.31	***	277	3.10	3.03		355	2.99	3.18	**
(5)	3.17	298	3.12	3.26		277	3.28	3.10	*	355	3.07	3.28	**
(6)	2.04	298	2.06	2.03		277	2.01	2.04		355	1.99	2.10	*

Table 38, Panel A: Respondents were asked to indicate whether they would use measures of earnings manipulation prior to raising new bank debt on a scale of 1 (strongly agree) to 4 (strongly disagree). The four point scale is used to force respondents to decide upon their agreement to adopted earnings management measures. Average points are calculated over all answers given for a certain function. Lower average points are equal to higher agreement to certain earnings management options. Panel B reports conditional averages of the answers given in Panel A, differentiated by company characteristics. We use the corresponding DAFNE data of year 2011 to split our results. Annual statement data for 2012 was not complete in the DAFNE database in September 2013 and might consequently be biased. This conditional analysis partially leads to a reduced number of observations. a.: Answers conditional on the bank debt proportion, according to survey respondents (see Table 22). A high proportion signifies more than 25 percent of bank debt in relationship to total assets, a low one a maximum of 25 percent; b.: Answers conditional on new bank debt raising, according to survey respondents. "Yes" ("No") indicates that SMEs did (not) seek new bank debt since 2007; c.: Answers conditional on a housebank relation. We identify housebank relations by a dummy that is equal to 1 if a company has relations with only one bank and 0 otherwise. We use DAFNE data as foundation. d.: Answers conditional on company size. Small and medium-sized firms are categorized by their total assets in 2011 according to the SMEs definition of the EU Commission. Total assets are extracted from the DAFNE database; e.: Answers conditional on group affiliation. We identify group affiliation by manually sorting whether a company has a parent company or not. See variable definition in Section 3.1. f.: Answers conditional on management ownership. We identify management ownership by manually sorting whether the manager and the owner names are equal for a company. ***, ** and * denote the significance of mean comparison two-tailed t-tests on the 1%, 5% and 10% level.

Table 39 – Accrual Management

Variable	Model 12			
	Overall Sample		High Accrual Management	
Cons	0.150	***	0.136	***
	[0.042]		[0.042]	
$Dcfo_{it}$	-0.025		-0.054	*
	[0.032]		[0.030]	
Cfo_{it}	-0.748	***	-0.904	***
	[0.097]		[0.078]	
$Dcfo_{it}$*Cfo_{it}	-0.243	*	-0.146	
	[0.131]		[0.100]	
$lCfo_{it-1}$	0.088	**	0.113	**
	[0.044]		[0.048]	
$fCfo_{it+1}$	0.142	**	0.103	**
	[0.065]		[0.046]	
$Bank_{it+1}$	0.025		0.175	**
	[0.090]		[0.084]	
New_{it+1}	0.009		0.039	***
	[0.017]		[0.014]	
$Risk_{it}$	-0.065	***	-0.067	***
	[0.016]		[0.022]	
GDP_{it}	0.003	*	0.005	**
	[0.002]		[0.002]	
$Growth_{it-1,t}$	0.006		0.039	***
	[0.005]		[0.011]	
Obs. (groups)	230	(111)	128	(65)
F-value	56.56		86.9	
p-value	0		0	
R^2(overall)	0.84		0.93	
R^2(within)	0.67		0.57	
R^2(between)	0.71		0.74	

Table 39 reports fixed-effects regression results of model (12): $Acc_{it} = \beta_0 + \beta_1 DCfo_{it} + \beta_2 Cfo_{it} + \beta_3 DCfo_{it} * Cfo_{it} + \beta_4 lCfo_{it-1} + \beta_5 fCfo_{it+1} + \beta_6 Bank_{it} + \beta_7 New_{it+1} + \beta_8 Risk_{it} + \beta_9 GDP_{it} + \beta_{10} Growth_{it-1,t} + \varepsilon_{it}$. The sample in the second column is limited to companies that mentioned to use their discretion in accrual accounting (see Table 38). The values in squared parentheses are standard errors. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. The dependent variable is total accruals and limited to an absolute value of 1. For variable description, please see Table 33.

Table 40 – Pairwise Correlations and Variance Inflation Factors for Model (12)

		1	2	3	4	5	6	7	8	9	10	11	VIF
1	Acc_{it}	1.000											
2	$Dcfo_{it}$	0.566	1.000										2.05
3	Cfo_{it}	-0.733	-0.648	1.000									2.70
4	$Dcfo_{it}$* Cfo_{it}	-0.626	-0.603	0.706	1.000								2.52
5	$lCfo_{it-1}$	0.056	-0.086	0.210	0.090	1.000							1.15
6	$fCfo_{it+1}$	0.041	-0.091	0.210	0.046	0.252	1.000						1.16
7	$Bank_{it+1}$	0.068	0.079	-0.153	-0.038	-0.022	0.040	1.000					1.12
8	New_{it+1}	0.039	0.024	0.070	-0.005	0.057	-0.050	0.028	1.000				1.07
9	$Risk_{it}$	0.070	0.255	-0.352	-0.203	-0.276	-0.152	-0.006	-0.047	1.000			1.30
10	GDP_{it}	0.160	0.068	-0.071	-0.057	-0.033	0.070	-0.003	0.014	0.027	1.000		1.08
11	$Growth_{it-1,t}$	0.098	0.045	-0.017	-0.049	-0.204	-0.067	0.178	0.048	0.078	0.068	1.000	1.05

Table 40 displays pairwise correlations and variance inflation factors for variables used in model (12). For variable descriptions, please see Table 33. Variables $Dcfo_{it}$, Cfo_{it}, and the corresponding interaction term are highly correlated. This correlation is accepted as these variables build the foundation for the rest of the model, recommended by Ball and Shivakumar (2006).

3.3.4. Summary and Conclusion

We surveyed a large sample of German SMEs to get additional insight into several research questions regarding their corporate financing and their accounting behavior in the context of bank debt lending. We emailed 28,244 SMEs in Germany regardless of their business activity (except financial institutions) and their financing concept. Our final sample after the exclusion of unreliable data contained complete answers of 504 SMEs (1.9 percent response rate). A large part of survey respondents (40 percent) belonged to the management of the respective sample companies. We followed the recommendations of Van der Stede et al. (2005) to make our survey processing transparent.

Initial evidence shows that banks are the most important external addressees of financial statements of German SMEs and that SMEs strive to optimize financial reports to achieve decent credit ratings from banks. Tax optimization plays a rather minor role.

Second, we surveyed SMEs concerning their experience with changes of bank lending conditions in the context of Basel II. Research concerning the *ex-post* effect of the regulatory change of Basel II mostly focuses on banks and their capital requirements (e.g., Altman and Sabato 2005). However, there is evidence that small companies in particular tend to have lower credit ratings and are affected negatively by the reform (OECD 2012). This study does not include SMEs in Germany. As archival data analysis has limited ability to examine qualitative factors, we consider it relevant to directly survey the affected companies with regard to the impact of Basel II. We found that 80.9 percent of our respondents complained about the higher effort needed to obtain a new bank loan since 2007. Moreover, 66.7 percent answered that both the collateral demanded by banks and the strictness of covenants increased (significantly) since Basel II. In addition, 47.5 percent of surveyed managers experience higher costs of bank

debt since the amendment of the reform. Only the total volume of loans granted to SMEs did not change for most of survey participants.

Unfortunately, the amendment of Basel II was overshadowed by the financial crisis. We controlled for several potential influences that might distort the statements in our matched archival data. We found a significant improvement in the overall default risk of sample companies and slight capital structure changes. SMEs' equity ratio and their bank debt proportion rose steadily over the sample period. Hence, other debt financing lost significance. However, we cannot conclude whether these changes are attributable to Basel II. However, our Basel II proxy shows significantly higher costs of debt besides controlling for the higher bank debt proportion (but, only for companies that are highly dependent on bank debt). The results do not allow the drawing of a conclusion on whether the higher cost of debt are due to Basel II or to higher margins that were added by banks as risk premiums in the face of the crisis. In addition, we were not able to assess whether the interest margins in our sample are commensurate with the respective company default risk involved. It might be that margins were not risk adequate before Basel II, but were too low, due to a lack of an objective and formalized rating procedure. A more formalized rating might have disclosed the requirement to increase margins to a higher, risk adequate level. No matter what may be the fundamental reason behind banks' behavior, German SMEs have remained affected by tighter credit standards since 2007.

In addition, we observed a slight decrease of investments in PPE and of new bank debt borrowing in 2009. We are not able to identify whether these changes are attributable to supply or demand side restrictions. However, a credit crunch most likely took place in 2007 and 2008. As our results do not indicate a significant change in those years, our further analyses remain unaffected by the mentioned changes in 2009.

Although we cannot finally conclude that managers in our sample are able to separate the effect of Basel II, we still found evidence (at least the higher effort to obtain a loan since the reform) that cannot be completely adjudged to the financial crisis. We did not find convincing arguments that would explain the increasing cost of debt with regard to the crisis. Overall, we found evidence that bank lending of German SMEs was negatively affected by Basel II (and the financial crisis). Our survey results are in line with results of the OECD (2012) survey in other countries.

Moreover, we surveyed SMEs concerning their accounting behavior in the context of bank debt raising. A vast strand of previous literature deals with earnings management in numerous facets. However, research that analyzes earnings management prior to debt raising is limited (e.g., Dietrich et al. 2001; Liu et al. 2010). These papers focus on markets with a high relevance of public financing. We added to former literature by directly questioning managers of SMEs as to whether they intentionally use certain accounting choices. This enables statements about real activities management, which is difficult to analyze with archival data. Results of our survey indicate that managers use both real activities and accrual

management prior to raising bank debt in order to achieve optimal credit ratings. About 80 percent of questioned managers replied that they would decrease discretionary spending, e.g., expenses for advertising, and postpone projects to the subsequent period. In addition, over 75 percent of our respondents would use discretion in accrual accounting. Those results can partially be verified with matching archival data. We thus determined that (new) bank debt lending affects managerial decisions of German SMEs that result in a distorted, non-conservative presentation of annual statements.

Nonetheless, we cannot reliably verify whether the statements of our survey participants are representative for all German SMEs. Although our response rate only amounts to 1.9 percent, the 504 complete survey answers clearly exceed the average number of participants in accounting surveys (Van der Stede et al. 2005). Thus, we carefully regard our survey results as dependable.

4. General Summary and Conclusion

Subject of this dissertation is the analysis of the influence of bank debt lending on certain managerial decisions of debtors. The central aim of this thesis is to provide empirical evidence that important managerial decisions of companies are not merely made by equity owners and managers but are also influenced by debt investors. The dissertation investigates selected aspects in this context, with a focus on the influence of banks on accounting decisions and the corporate financing of companies. With regard to corporate financing, the emphasis is on influences of banks on debt capital costs and the volume of credit granting as one essential financing component. With regard to accounting decisions, the dissertation investigates whether an important corporate financing event, i.e., the event of obtaining new bank debt, creates an incentive for borrowers to alter their external annual statements. In order to allow differentiated statements about affected managerial decisions of firms, the examination of this thesis concentrates on bank debt borrowers (and not creditors). More precisely, objects of research are German SMEs. German SMEs provide an optimal foundation for this analysis, as they rely on an internationally outstanding financing concept with markedly low equity ratios. Traditionally, German SMEs are highly financed by bank debt, which implies that banks are the most important external stakeholders of SMEs besides state treasury. In addition, many SMEs have relationships with only one housebank or a few banks. The high financial dependence on few bank debt investors is likely accompanied by a high influence of these investors on corporations.

The dissertation contains three separate empirical studies that analyze several research questions in the mentioned context. However, the third empirical study (Section 3.3) mainly investigates the research questions of the two previous studies from a different angle. Section 3.3 encompasses results of a vast survey of German SMEs, which was mainly conducted to verify/falsify the archival-data results presented in Sections 3.1 and 3.2 and to allow additional qualitative statements in this context. Hence, the summarized results in the following are presented by topic rather than by chapter below.

The first central topic of this dissertation is the empirical investigation of the *ex-post* effects of the Basel II Capital Accords and the financial crisis on corporate financing of German SMEs. Basel II includes various regulatory alterations for banks and comprises a formalization of the credit assessment of debtors. These changes might have led to higher costs and a higher risk awareness of banks. The dissertation analyzed whether SMEs were negatively affected by Basel II, as banks might have tried to refinance these additional costs by imposing tighter credit terms on debtors. SMEs in particular might face higher costs, as they tend to have comparably high proportions of bank debt and lower ratings than bigger companies.

The fixed-effects and POLS regression analysis presented in Section 3.1 is based on archival accounting data extracted from the DAFNE database for a large sample of German SMEs for the years of 2003 to 2010. The results presented in Section 3.1 indicate a significant rise in the cost of debt of German SMEs since 2007. The results are robust in several sensitivity tests.

In the comprehensive survey of SMEs (Section 3.3), managers were asked to evaluate the impact of Basel II in several ways. A large proportion of managers of surveyed SMEs complained about higher requirements (e.g., stricter covenants and/or more collateral) and a higher effort needed to obtain a bank loan since 2007. Almost half of the survey participants experience higher costs of bank debt since the amendment of Basel II. Only the total volume of granted loans was unchanged for SMEs.

Basel II was immediately followed by the financial crisis of 2007 and 2008, which makes it difficult to separate the effects of the reform from those of the crisis. The model presented in Section 3.1 controls for several influences of the financial crisis (e.g., the development of refinancing interest rates, company risk, and GDP). However, the cost of debt is higher since Basel II *in addition to* these controls. Descriptive analyses reveal that SMEs steadily changed their capital structure over time by improving their equity ratios. This led to an observable improvement of the average company risk. However, there is no way to figure out whether SMEs improved their capital structure due to Basel II or because of other reasons on behalf of the archival data. In view of the financial crisis of 2007 and 2008, there is no indication of a credit crunch during these years. No obvious change of investment behavior of SMEs for the years of 2007 and 2008 is observable, but there is a slight decline in investments in 2009. However, as a credit crunch most likely took place in 2007 and 2008, the decrease in 2009 does not directly affect the analysis. A slight change of investment financing is noticeable, but the results do not clearly speak in favor of a credit crunch that might explain higher costs of debt or restricted credit amounts. None of these points might explain the mentioned tightened credit terms since 2007.

On behalf of the survey results presented in Section 3.3, it cannot be concluded whether survey participants were able to distinguish between the effects of the two mentioned occurrences on corporate debt lending. Additional analyses of matched archival data extracted from the DAFNE database for years 2004 to 2012 also show a marked rise in the bank debt costs of highly bank dependent SMEs since

Basel II. An examination of structural changes of survey participants reveals that the average company default risk improved significantly over the sample period. Moreover, a constant rise of SMEs' average equity ratio and their bank debt proportion is observable. However, the cost of debt increased significantly *in addition to* controlling for company risk, the bank debt proportion, changing refinancing interest rates, and the development of GDP in the matched archival data sample for highly bank-dependent firms. Evidence from the matching archival data comes to a similar conclusion.

Basel II affected the bank lending of German SMEs in several ways. The results of Section 3.3 mostly confirm the results presented in Section 3.1. The final results of both Sections 3.1 and 3.3 do not provide a persuasive conclusion as to whether the higher costs of debt of SMEs are assignable to Basel II or to higher margins that were added by banks in terms of a higher risk premium that banks might claim in the face of the crisis. However, there are no convincing arguments that would explain a rise of the cost of debt with regard to the crisis. Yet, SMEs still face a higher cost of debt since 2007, which indicates a change of bank lending behavior in Germany. In addition, survey results disclose that German SMEs have to deal with further negative constraints besides a higher cost of debt. For instance, higher collateral or stricter covenants might be justified as covering the credit risk of banks. However, banks might also use the regulatory changes of Basel II as an excuse to increase their gains and to widen their influence on debtors.

Until now, this is the first *ex-post* evidence with respect to this research question for German companies. The presented results are in line with the evidence of a comprehensive survey conducted by the OECD (2012) on various countries, not including Germany. It is important to point out the negative effects of Basel II on the real economy in terms of the ongoing tightening of bank regulations. Basel 2.5 and Basel III go beyond Basel II and further exacerbate certain (capital) requirements for banks. The planned intensification of regulation might lead to additional negative effects on the real economy. The Bank for International Settlement (2010) has already predicted a negative impact of Basel III on the real economy of about 10 basis points per additional percent of required equity capital. Estimations of the Institute of International Finance (2011) go further, with an expected decrease of GDP of 3.2 percent in total for the U.S., the Euro zone, Japan, the UK and Switzerland for the next five years. The results presented here deliver first *ex-post* evidence for Germany that can be used as foundation for further, more comprehensive analyses. However, the purpose of this dissertation was not to provide recommendations for regulatory action.

The second central aim of this dissertation was to identify whether bank debt lending drives accounting choices of German SMEs. As loan interest rates account for a significant proportion of SMEs' cost of capital, the incentive to obtain optimal loan conditions is high. Under the assumption that banks base their credit assessment on ratings that rely on financial statement analysis and that SMEs know about the importance of financial figures in credit assessments, German SMEs might have a great incentive to direct their annual statements at this stakeholder group. SMEs might strive to exploit their asymmetric

information advantage over banks by manipulating earnings in the period prior to borrowing new bank debt with the intention to achieve decent credit terms. Both the fixed-effects panel regression analysis in Section 3.2 and the survey presented in Section 3.3 aim to investigate this research question. The analysis in Section 3.2 is based on the same archival data set of German SMEs used in Section 3.1.

The survey results presented in Section 3.3 reveal that the most important functions of financial statements of SMEs are to inform banks, tax offices, and internal stakeholders. However, for almost half of survey participants, the most important aim of the preparation of annual statements is to please bank debt investors.

Initial results of the archival data analysis in Section 3.2 reveal that German SMEs report non-conservatively *in general*. Second, a higher dependence on bank debt financing seems to reinforce the incentive to report non-conservatively. Accordingly, a high dependence on bank debt influences the accounting choices of sample companies. Third, SMEs in our sample reported in a non-conservative way prior to obtaining new bank debt. Consequently, the event of debt-raising provides a clear incentive to report non-conservatively in order to achieve decent loan conditions in the subsequent contract negotiations. This analysis explicitly differentiates between companies with housebank and multi-bank relationships. Companies with multi-bank relationships report in a more non-conservative way in general, but there is no difference in the accrual accounting observed between the two mentioned company groups prior to borrowing new bank debt. The event of raising new bank debt significantly influences the accounting behavior of all German SMEs in the present sample.

This result is in line with survey results presented in Section 3.3. Most SMEs admit to taking advantage of their accrual accounting discretion prior to raising new bank debt. A matching of archival data to the survey results confirms the non-conservative accounting behavior of highly bank-dependent SMEs. Furthermore, a large majority of managers admitted manipulating certain real activities in the period prior to acquiring new bank debt to achieve a certain earnings goal. Most managers would decrease their discretionary spending (e.g., for advertisement) or postpone a cost-intensive project to the subsequent period to avoid expenses.

Finally, the archival data-based study in Section 3.2 inspects whether this accounting behavior is detected by banks and whether it influences the cost of debt for German SMEs. Results indicate with reservation that companies that report especially non-conservatively are rewarded in terms of a slightly lower cost of debt in the subsequent period. This is valid for firms with housebank relationships and multi-bank relationships. However, companies with housebank relationships have a lower cost of debt in general. These results allow the prudent deduction that banks do not see through the opportunistic accounting behavior of German SMEs, which consequently may be effective. SMEs might be able to achieve a lower cost of debt when they use means of earnings management.

Such a result might be indicative of potential inefficiencies in bank debt lending. Of course, banks might already have included a premium in their credit pricing that covers for their information disadvantage. However, if this is not the case, the mentioned manipulation might lead to a mispricing of loan portfolios of banks and/or to a miscalculation of the portfolio risk of banks due to distorted credit ratings of the manipulating companies. There is no way to identify whether banks demand a premium for their information risk on behalf on this data set. Nevertheless, results of the present study indicate that earnings manipulation is not detected by banks in this setting. Earnings manipulation appears to be advantageous for SMEs. In general, banks should be able to detect manipulative accruals management. However, it is questionable whether a detection of opportunistic accruals management would limit the incentive of SMEs to manage their earnings. More likely, a reduced effectiveness of accruals management might lead to more pronounced forms of real activities manipulation that are more difficult to detect for external stakeholders. Again, banks might suffer from their information disadvantage and potentially misprice corporate loans. For SMEs, real activities manipulation is likely accompanied by higher economic costs. Companies will only apply these measures if their benefit exceeds their costs; therefore, it remains doubtful whether earnings manipulation is economically advantageous or disadvantageous. Nevertheless, this dissertation does not aim to provide recommendations for action, but to uncover whether bank debt lending significantly affects managerial decisions of German SMEs.

The central aim of this thesis was to provide empirical evidence that important managerial decisions of German SMEs are not merely made by equity owners and managers but are also influenced by debt holders. The initial archival data and survey results showed that SME bank debt lending was affected indirectly by the regulatory changes of Basel II and the financial crisis. Results indicate that banks potentially passed on their own higher costs to debtors in terms of tighter credit conditions. The cost of debt of German SMEs is significantly higher since Basel II, even after controlling for several other reasons. Moreover, results indicate a significant change of the capital structure of SMEs over time that might be attributable to Basel II. These changes might have additional effects on further corporate financing and/or investment decisions. The second empirical study and survey results reveal that bank debt lending influences accounting choices of German SMEs, especially in the period prior to borrowing new bank debt. SMEs use both measures of accrual and real activities management in order to achieve decent credit terms. In particular, real activities manipulation might be accompanied by effort and notable economic costs for SME. In addition, distorted financial statements might have further effects on other corporate contracts. Taking these results into consideration, this dissertation demonstrated in several ways that banks influence certain managerial decisions of German SMEs.

References

Achleitner A, Kaserer C, Günther N, Volk S (2011) Die Kapitalmarktfähigkeit von Familienunternehmen - Unternehmensfinanzierung über Schuldschein, Anleihe und Börsengang. http://www.pwc.de/de_DE/de/mittelstand/assets/sfu_studie_kapitalmarkt_e4_zA.PDF. (23 October 2012)

Ahmed A, Billings B, Morton R, Stanford-Harris M (2002) The Role of Accounting Conservatism in Mitigating Bondholder-Shareholder Conflicts over Dividend Policy and in Reducing Debt Costs. The Accounting Review 77, pp. 867-890

Ali A, Chen T, Radhakrishnan S (2007) Corporate disclosures by family firms. Journal of Accounting and Economics 44, pp. 238-286

Allen L, DeLong G, Saunders A (2004) Issues in the credit risk modeling of retail markets. Journal of Banking and Finance 28, pp. 727–752

Altman E (1968) Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. Journal of Finance 23, pp. 589–609

Altman E, Sabato G (2005) Effects of the New Basel Capital Accord on Bank Capital Requirements for SMEs. Journal of Financial Services Research 28, pp. 15–42

Altman E, Sabato G (2007) Modeling Credit Risk for SMEs: Evidence from the U.S. Market. Abacus 43, pp. 332–357

Armstrong J, Overton T (1977) Estimating Nonresponse Bias in Mail Surveys. Journal of Marketing Research 14, pp. 396-402

Audretsch D, Elston J (1997) Financing the German Mittelstand. Small Business Economics 9, pp. 97-110

Ayyagari M, Beck T, Demirguc-Kunt A (2007) Small and Medium Enterprises Across the Globe. Small Business Economics 29, pp. 415-434

Baas T, Schrooten M (2006) Relationship Banking and SMEs: A Theoretical Analysis. Small Business Economics 27, pp. 127-137

Ball R, Kothari S, Robin A (2000) The effect of international institutional factors on properties of accounting earnings. Journal of Accounting and Economics 29, pp. 1-51

Ball R, Shivakumar L (2005) Earnings Quality in UK Private Companies: Comparative Loss Recognition Timeliness. Journal of Accounting and Economics 39, pp. 83-128

Ball R, Shivakumar L (2006) The Role of Accruals in Asymmetrically Timely Gain and Loss Recognition. Journal of Accounting Research 44, pp. 207-242

Ball R, Shivakumar L (2008) Earnings quality at initial public offerings. Journal of Accounting and Economics 45, pp. 324-349

Ball R, Robin A, Sadka G (2008) Is financial reporting shaped by equity markets or by debt markets? An international study of timeliness and conservatism. Review of Accounting Studies 13, pp. 168-205

Ball R (2013) Accounting Informs Investors and Earnings Management is Rife: Two Questionable Beliefs. Accounting Horizons, forthcoming

Bank for International Settlement (2010) Assessing the Macroeconomic Impact of the Transition to Stronger Capital and Liquidity Requirements. Final Report. http://www.bis.org/publ/othp12.pdf. (2 February 2014)

Basel Committee on Banking Supervision (1988) International convergence of capital measurement and capital standards. http://www.bis.org/publ/bcbs04a.pdf. (26 November 2011)

Basel Committee on Banking Supervision (2003a) Basel II: The New Basel Capital Accord – Third Consultative Paper. http://www.bis.org/bcbs/bcbscp3.htm. (26 November 2011)

Basel Committee on Banking Supervision (2003b) Quantitative Impact Study 3 – Overview of Global Results. http://www.bis.org/bcbs/qis/qis3results.pdf. (14 May 2014)

Basel Committee on Banking Supervision (2004) International Convergence of Capital Measurement and Capital Standards. http://www.bis.org/publ/bcbs107.pdf. (26 April 2012)

Basel Committee on Banking Supervision (2010a) Basel III: A global regulatory framework for more resilient banks and banking systems. http://www.bis.org/publ/bcbs189.htm. (26 November 2011)

Basel Committee on Banking Supervision (2010b) An assessment of the long-term economic impact of stronger capital and liquidity requirements. http://www.bis.org/publ/bcbs173.htm. (26 November 2011)

Basel Committee on Banking Supervision (2010c) Results of the comprehensive quantitative impact study. http://www.bis.org/publ/bcbs186.pdf. (26 November 2011)

Basu S (1997) The conservatism principle and the asymmetric timeliness of earnings. Journal of Accounting and Economics 24, pp. 3-37

Beatty A, Harris D (1998) The Effects of Taxes, Agency Costs and Information Asymmetry on Earnings Management: A Comparison of Public and Private Firms. Review of Accounting Studies 3, pp. 299-326

Beatty A, Weber J, Yu J (2008) Conservatism and Debt. Journal of Accounting and Economics 45, pp. 154-174

Beaver W, Ryan S (2005) Conditional and Unconditional Conservatism: Concepts and Modeling. Review of Accounting Studies 10, pp.269-309

Behr P, Güttler A (2007) Credit Risk Assessment and Relationship Lending: An Empirical Analysis of German Small and Medium-Sized Enterprises. Journal of Small Business Management 45, pp. 194-213

Berger A, Udell G (1995) Relationship Lending and Lines of Credit in Small Firm Finance. Journal of Business 68, pp. 351-381

Berger A, Udell G (1998) The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. Journal of Banking and Finance 22, pp. 613-673

Berlin M, Mester L (1998) On the Profitability and Cost of Relationship Lending. Journal of Banking and Finance 22, pp. 873–897

Bernanke B, Gertler M, Gilchrist S (1996) The Financial Accelerator and The Flight to Quality. The Review of Economics and Statistics 78, pp. 1-15

Bharath S, Sunder J, Sunder S (2008) Accounting Quality and Debt Contracting. The Accounting Review 83, pp. 1-28

Bigus J, Schachner L, Stein I (2009) Relationship Lending and Conservative Accounting? Empirical Evidence from Private Firms. Working paper. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1474743.

Bigus J, Hakenes H (2014) Does relationship lending require opaque (and conservative) financial reporting? Working paper. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2414587.

Binsbergen J, Graham J, Yang J (2010) The Cost of Debt. Journal of Finance 65, pp. 2089–2136

Bank for International Settlement (2010) Results of the comprehensive quantitative impact study 5. http://www.bis.org/publ/bcbs186.pdf. (27 April 2012)

Blum J (2008) Why 'Basel II' may need a leverage ratio restriction. Journal of Banking and Finance 32, pp. 1699–1707

Böcking H, Dutzi A (2010) Verbesserung der Qualität der deutschen Rechnungslegung durch das Bilanzrechtsmodernisierungsgesetz (BilMoG)? In: Besteuerung, Rechnungslegung und Prüfung des Unternehmens, Baumhoff H, Dücker R, Köhler S (Ed.), Gabler Verlag, Wiesbaden

Boot A, Thakor A (2000) Can Relationship Banking Survive Competition? Journal of Finance 55, pp. 679–713

Börner C, Grichnik D, Reize F (2010) Finanzierungsentscheidungen mittelständischer Unternehmer – Einflussfaktoren der Fremdfinanzierung deutscher KMU. Zeitschrift für betriebswirtschaftliche Forschung 62, pp. 227-250

Brüderl J (2010) Kausalanalyse mit Paneldaten. In: Handbuch der sozialwissenschaftlichen Datenanalyse, Wolf C, Best H (Ed.),Verlag der Sozialwissenschaften, Wiesbaden

Brunner A, Pieter J, Weber M (2000) Information production in credit relationship: On the role of internal ratings in commercial banking. CFS Working Paper No. 2000/10

Burgstahler D, Dichev I (1997) Earnings management to avoid earnings decreases and losses. Journal of Accounting and Economics 24, pp. 99-126

Burgstahler D, Hail L, Leuz C (2006) The Importance of Reporting Incentives: Earnings Management in European Private and Public Firms. The Accounting Review 81, pp. 983-1016

Bushman R, Piotroski J (2006) Financial reporting incentives for conservative accounting: The influence of legal and political institutions. Journal of Accounting and Economics 42, pp. 107-148

Campello M, Graham J, Harvey C (2010) The real effects of financial constraints: Evidence from a financial crisis. Journal of Financial Economics 97, pp. 470-487

Choi W (2007) Bank Relationships and the Value Relevance of the Income Statement: Evidence from Income-Statement Conservatism. Journal of Business Finance & Accounting 34, pp. 1-22

Cohen-Cole E, Duygan-Bump B, Fillat J, Montoriol-Garriga J (2008) Looking behind the aggregates: A Reply to "Facts and Myths about the Financial Crisis of 2008". QAU Working Paper No. QAU08-5, Federal Reserve Bank of Boston

Cohen D, Zarowin P (2010) Accrual-based and real earnings management activities around seasoned equity offerings. Journal of Accounting and Economics 50, pp. 2-19

Coppens L, Peek E (2005) An analysis of earnings management by European private firms. Journal of International Accounting, Auditing and Taxation 14, pp. 1-17

Cosimano T, Hakura D (2011) Bank Behavior in Response to Basel III: A Cross-Country Analysis. IMF Working Paper No. 11/119

Creditreform Rating AG (2011a) Ratingsystematik der Creditreform Rating AG für ein Unternehmensrating. http://www.creditreform-rating.de/Ressourcen/PDF/Unternehmensrating/Ratingsystematik.pdf. (1 October 2013)

Creditreform Rating AG (2011b) Creditreform Unternehmensrating. Erschließen Sie sich neue Finanzierungsquellen! http://www.creditreform.de/Ressourcen/PDF/Downloads/Forderungsmanagement/Liquiditaetsmanagement/Broschuere_Unternehmensrating.pdf. (27 November 2011)

Dechow P, Dichev I (2002) The Quality of Accruals and Earnings: The Role of Accrual Estimation Errors. The Accounting Review 77, pp. 35-59

Dechow P, Sloan R, Sweeney A (1995) Detecting Earnings Management. The Accounting Review 70, pp. 193-225

Dechow P, Sloan R, Sweeney A (1996) Causes and Consequences of Earnings Manipulation: An Analysis of Firms Subject to Enforcement Actions by the SEC. Contemporary Accounting Research 13, pp. 1-36

Dechow P, Skinner D (2000) Earnings Management: Reconciling the Views of Accounting Academics, Practitioners, and Regulators. Accounting Horizons 14, pp. 235-250

Dechow P, Ge W, Schrand C (2010) Understanding earnings quality: A review of the proxies, their determinants and their consequences. Journal of Accounting and Economics 50, pp. 344-401

Dechow P, Ge W, Larson C, Sloan R (2011) Predicting Material Accounting Misstatements. Contemporary Accounting Research 28, pp. 17-82

Dechow P, Hutton A, Kim J, Sloan R (2012) Detecting Earnings Management: A New Approach. Journal of Accounting Research 50, pp. 275-334

Degeorge F, Patel J, Zeckhauser R (1999) Earnings Management to Exceed Thresholds. Journal of Business 72, pp. 1-33

Degryse H, Van Cayseele P (2000) Relationship Lending within a Bank-Based System: Evidence from European Small Business Data. Journal of Financial Intermediation 9, pp. 90-109

Deutscher Bundestag (2008) Entwurf eines Gesetzes zur Modernisierung des Bilanzrechts (Bilanzrechtsmodernisierungsgesetz - BilMoG). BT-Drucksache 16/10067 (30 July 2008)

Diamond D (1991) Monitoring and reputation: The choice between bank loans and directly placed debt. Journal of Political Economy 99, pp. 689-721

Dichev I, Skinner D (2002) Large-Sample Evidence on the Debt Covenant Hypothesis. Journal of Accounting Research 40, pp. 1091-1123

Dietrich J, Harris M, Muller K (2001) The reliability of investment property fair value estimates. Journal of Accounting and Economics 30, pp. 125-158

Dietrich J, Muller K, Riedl E (2007) Asymmetric timeliness tests of accounting conservatism. Review of Accounting Studies 12, pp. 95-124

Dietsch M, Petey J (2004) Should SME exposures be treated as retail or corporate exposures? A comparative analysis of default probabilities and asset correlations in French and German SMEs. Journal of Banking and Finance 28, pp. 773–788

Dittman I, Maug E, Schneider C (2009) Bankers on the Boards of German Firms: What they do, what they are worth, and why they are (still) there. European Corporate Governance Institute, Finance Working Paper No. 196/2008

Duchin R, Ozbas O, Sensoy B (2010) Costly external finance, corporate investment, and the subprime mortgage credit crisis. Journal of Financial Economics 97, pp. 418-435

Easley D, O'Hara M (2005) Information and the Cost of Capital. Journal of Finance 59, pp. 1553-1583

Eierle B, Haller A, Beiersdorf K (2007) Entwurf eines internationalen Standards zur Bilanzierung von Small und Medium-sized Entities (ED-IFRS for SMEs). http://www.drsc.de/docs/sme_befragung_final_280907.pdf. (18 November 2013)

Elsas R, Krahnen J (1998) Is relationship lending special? Evidence from credit-file data in Germany. Journal of Banking and Finance 22, pp. 1283-1316

Elston J (2003) Bank influence, firm performance and survival: empirical evidence from Germany 1970-1986. Journal of Corporate Ownership and Control 1, pp. 65–71

European Banking Federation (2011a) International Comparison of Banking Sectors. http://www.ebf-fbe.eu/uploads/documents/publications/Stats/facts&figuresshort%20%283%29.pdf. (5 March 2013)

European Banking Federation (2011b) EU Banking Sector: The world's largest banking system in the world's largest economic space. http://www.ebf-fbe.eu/uploads/Facts%20%26%20Figures%202011.pdf. (5 March 2013)

European Commission (2008) Final Report of the Expert Group Accounting Systems for Small Enterprises – Recommendations and Good Practice. http://ec.europa.eu/enterprise/policies/sme/documents/accounting/index_en.htm. (23 September 2013)

European Commission (2011) Small and medium-sized enterprises SME Definition. http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index_en.htm. (25 October 2012)

European Commission (2012) EU SMEs in 2012: at the crossroads. Annual report on small and medium-sized enterprises in the EU, 2011/12. http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/files/supporting-documents/2012/annual-report_en.pdf. (19 September 2013)

Eurostat (2013) Key figures on the enlargement countries 2013 edition. Eurostat pocketbooks. http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-GO-13-001/EN/KS-GO-13-001-EN.PDF. (29 May 2013)

Ewert R, Wagenhofer A (2007) Externe Unternehmensrechnung. 2.Auflage. Springer Verlag Berlin Heidelberg New York

Ewert R, Wagenhofer A (2012) Earnings Management, Conservatism, and Earnings Quality. Foundations and Trends in Accounting 6, pp. 65-186

Fazzari S, Hubbard R, Petersen B (1988) Financing Constraints and Corporate Investment. Brookings Papers of Economic Activity 1, pp. 141-206

Federal Association of German Banks (2010) Basel II und Rating in Deutschland: Wie beeinflusst ein Rating die Kreditentscheidung? http://www.bankenverband.de/presse/reden/basel-ii-und-rating-in-deutschland-wie-beeinflusst-ein-rating-die-kreditentscheidung. (26 November 2011)

Federal Institute for the Supervision of Financial Services (2013) Jahresbericht 2012. http://www.bafin.de/SharedDocs/Downloads/DE/Jahresbericht/dl_jb_2012.pdf;jsessionid=04224652704A01DE4924FE22435A1943.1_cid290?__blob=publicationFile&v=5. (15 May 2014)

Federal Institute for the Supervision of Financial Services (2014) Rundschreiben 10/2012 – Mindestanforderungen an das Risikomanagement – MaRisk. http://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Rundschreiben/rs_1210_marisk_ba.html. (29 May 2014)

Federal Ministry of Economics and Technology (2012) Policy for small and medium-sized businesses. http://www.bmwi.de/English/Navigation/Economic-policy/small-business-policy.html. (25 October 2012)

Federal Ministry of Justice (2011) § 241a Handelsgesetzbuch. http://www.gesetze-im-internet.de/hgb/__241a.html. (13 November 2012)

Federal Ministry of Economics and Technology (2013) German Mittelstand: Engine of the German economy. Facts and figures about small and medium-sized German firms. http://www.bmwi.de/EN/Service/publications,did=506310.html. (19 September 2013)

Federal Statistical Office (2008) Klassifikation der Wirtschaftszweige. Mit Erläuterungen. https://www.destatis.de/DE/Methoden/Klassifikationen/GueterWirtschaftklassifikationen/klassifikationwz2008_erl.pdf?__blob=publicationFile. (14 November 2012)

Federal Statistical Office (2010) Zugang kleiner und mittlerer Unternehmen zu Finanzmitteln. https://www.destatis.de/DE/Publikationen/Thematisch/UnternehmenHandwerk/KleineUndMittlereUnternehmen/KMUFinanzmittel5482101109004.pdf;jsessionid=40207143C9EAD23632D1571AA6DAF462.cae4?__blob=publicationFile. (13 November 2012)

Financial Times (2012) A model that everybody wants. http://www.ft.com/cms/s/0/cdd959be-dfbe-11e1-b81c-00144feab49a.html. (19 September 2013)

Francis J, LaFond R, Olsson P, Schipper K (2004) Costs of Equity and Earnings Attributes. The Accounting Review 79, pp. 967-1010

Francis J, LaFond R, Olsson P, Schipper K (2005) The market pricing of accruals quality. Journal of Accounting and Economics 39, pp. 295-327

Fülbier R, Gassen J (2010) IFRS for European Small and Medium-Sized Entities? A Theoretical and Empirical Analysis. http://www.de.dgrv.mobi/webde.nsf/7d5e59ec98e72442c1256e5200432395/eeef676b1f36f7c1c125773c00289240/$FILE/F%C3%BClbier_Gassen_DGRV_Research_Report_April_2010.pdf. (20 November 2013)

Fülbier R, Klein M (2013) Financial Accounting and Reporting in Germany: A Case Study on German Accounting Tradition and Experiences with the IFRS Adoption. Working paper. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2200805.

Gassen J, Fülbier R, Sellhorn T (2006) International Differences in Conditional Conservatism – The Role of Unconditional Conservatism and Income Smoothing. European Accounting Review 15, pp. 527-564

German Association for Small and Medium-sized Businesses (2011a) Bank Regulation Requirements and positions of Small and Medium-Sized Enterprises. http://www.bvmw.de/uploads/media/Policy-Brief-Bank-Regulation.pdf. (27 November 2011)

German Association for Small and Medium-sized Businesses (2011b) Die Kreditklemme ist Regulierungsversagen.http://www.bvmw.de/uploads/media/Kommentar_in_ifo_Institut_14-08-2009_01.pdf. (27 November 2011)

German Central Bank (2002) Monatsbericht Oktober 2002. http://www.bundesbank.de/Redaktion/DE/Downloads/Veroeffentlichungen/Monatsberichte/2002/2002_10_monatsbericht.pdf?__blob=publicationFile. (19 August 2013)

German Central Bank (2003) Ergebnisse der dritten Auswirkungsstudie zu Basel II – Länderbericht Deutschland. http://www.bundesbank.de/Redaktion/DE/Downloads/Kerngeschaeftsfelder/Bankenaufsicht/QIS/ergebnisse_der_dritten_auswirkungsstudie_zu_basel_ii_laenderbericht_deutschland.pdf?__blob=publicationFile. (27 November 2011)

German Central Bank (2009) Bank Lending Survey: eine Zwischenbilanz und aktuelle Entwicklungen. Monatsbericht Januar 2009. http://www.bundesbank.de/Redaktion/DE/Downloads/Veroeffentlichungen/Monatsberichtsaufsaetze/2009/2009_01_bank_lending_survey.pdf?__blob=publicationFile. (1 June 2013)

German Central Bank (2012a) Bankenstatistik Oktober 2012. Statistisches Beiheft 1 zum Monatsbericht. http://www.bundesbank.de/Redaktion/DE/Downloads/Veroeffentlichungen/Statistische_Beihefte_1/2012/2012_10_bankenstatistik.pdf?__blob=publicationFile. (13 November 2012)

German Central Bank (2012b) EZB-Zinssätze http://www.bundesbank.de/Navigation/DE/Statistiken/Zeitreihen_Datenbanken/Makrooekonomische_Zeitreihen/its_list_node.html?listId=www_s11b_mb01. (27 April 2012)

German Central Bank (2013a) Zinssatz der EZB für Hauptrefinanzierungsgeschäfte. http://www.bundesbank.de/Navigation/DE/Statistiken/Zeitreihen_Datenbanken/Makrooekonomische_Zeitreihen/its_details_value_node.html?tsId=BBK01.SU0202&listId=www_s11b_mb01. (18 March 2013)

German Central Bank (2013b) Monatsbericht Januar 2012. http://www.bundesbank.de/Navigation/DE/Veroeffentlichungen/Monatsberichte/monatsberichte.html. (18 March 2013)

German Central Bank (2014) Basel III. http://www.bundesbank.de/Navigation/DE/Aufgaben/Bankenaufsicht/Basel3/basel3.html. (3 Februar 2014)

German Federal Statistical Office (2010) Zugang kleiner und mittlerer Unternehmen zu Finanzmitteln. http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/DE/Content/Publikationen/Fachveroeffentlichungen/UnternehmenGewerbeInsolvenzen/KleineUndMittlereUnternehmen/KMUFinanzmittel,templateId=renderPrint.psml. (28 November 2011)

German Federal Statistical Office (2013) Auftragseingangsindex. https://www.destatis.de/DE/ZahlenFakten/Indikatoren/Konjunkturindikatoren/Konjunkturindikatoren.html;jsessionid=EBC4AEB31F391F593AF609CD69028193.cae2. (19 March 2013)

Gerum E, Mölls S, Shen C (2011) Kapitalmarktorientierte Rechnungslegung in Deutschland zwischen Anspruch und Realität – Theorie und Empirie. Zeitschrift für betriebswirtschaftliche Forschung 63, pp. 534-577

Göllert K (2008) Auswirkungen des Bilanzrechtsmodernisierungsgesetzes (BilMoG) auf die Bilanzpolitik. Der Betrieb 22, pp. 1165-1171

Graham J, Harvey C, Rajgopal S (2005) The economic implications of corporate financial reporting. Journal of Accounting and Economics 40, pp. 3-73

Graham J, Li S, Qiu J (2008) Corporate misreporting and bank loan contracting. Journal of Financial Economics 89, pp. 44–61

Grunert J, Norden L, Weber M (2005) The role of non-financial factors in internal credit ratings. Journal of Banking and Finance 29, pp. 509-531

Hackethal A, Schmidt R (2000) Finanzsystem und Komplementarität. Working Paper Series: Finance and Accounting Goethe-University of Frankfurt No. 50/2000

Haghani S, Voll S, Holzamer M (2008) Bedeutung und Management von Financial Covenants. Roland Berger Strategy Consultants Germany 04/2008, http://www.rolandberger.be/media/pdf/rb_press/RB_Bedeutung_und_Management_von_Financial_Covnants_20080429.pdf. (10 November 2012)

Haghani S, Voll S, Holzamer M, Warnig C (2009) Financial Covenants in der Unternehmensfinanzierung. Roland Berger Strategy Consultants Germany 07/2009. http://www.rolandberger.com/media/pdf/Roland_Berger_Financial_Covenants_20090725.pdf. (15 November 2012)

Haller A (2002) Financial accounting developments in the European Union: past events and future prospects. European Accounting Review 11, pp. 153-190

Haller A, Eierle B, Beiersdorf K (2007) ED-IFRS for SMEs – Entwurf eines internationalen Rechnungslegungsstandards zur Bilanzierung von Small and Medium-sized Entities – Ergebnisse einer Befragung deutscher mittelständischer Unternehmen, BDI, DIHK and DRSC. http://epub.uni-regensburg.de/2029/. (27 October 2012)

Haller A, Löffelmann J, Beiersdorf K, Bolin M, Etzel B, Haussmann K (2008) Rechnungslegung aus Sicht von Kreditinstituten als Rechnungslegungsadressaten. http://www.drsc.de/docs/press_releases/081218_DRSC_Bankenstudie_website.pdf. (26 September 2013)

Haller A, Löffelmann J, Etzel B (2009) BilMoG und Adressatenbedürfnisse – Empirische Erkenntnisse über die Einschätzungen von Kreditinstituten. Zeitschrift für internationale und kapitalmarktorientierte Rechnungslegung 9, pp. 216-226

Harhoff D, Körting T (1998) Lending relationships in Germany – Empirical evidence from survey data. Journal of Banking and Finance 22, pp. 1317-1353

Harris M, Raviv A (1991) The Theory of Capital Structure. The Journal of Finance 46, pp. 297-355

Hartmann-Wendels T (2011) Auswirkungen der Reformen der Bankenaufsicht berücksichtigen! Kreditvergabe der Banken, Sparkassen und genossenschaftlichen Kreditinstitute. ASU Die Familienunternehmer. http://www.familienunternehmer.eu/publikationen/positionspapiere.html. (28 April 2012)

Hartmann-Wendels T (2013) Basel III – Auswirkungen auf Banken und Finanzsystem. Zeitschrift für betriebswirtschaftliche Forschung Sonderheft 67, pp. 72-96

Hausman J (1978) Specification Tests in Econometrics. Econometrica 46, pp. 1251–1271

Healy P, Wahlen J (1999) A Review of the Earnings Management Literature and Its Implications for Standard Setting. Accounting Horizons 13, pp. 365-383

Heid F (2007) The Cyclical Effects of the Basel II Capital Requirements. Journal of Banking and Finance 31, pp. 3885–3900

Hellmann A, Perera H, Patel C (2013) Continental European accounting model and accounting modernization in Germany. Advances in Accounting 29, pp. 124-133

Holthausen R, Watts R (2001) The relevance of the value-relevance literature for financial accounting standard setting. Journal of Accounting and Economics 31, pp. 3-75

Hribar P, Collins D (2002) Errors in Estimating Accruals: Implications for Empirical Research. Journal of Accounting Research 40, pp. 105-134

Huber M (2011) Die Entwicklung eines Beraterleitfadens für derivative Sicherungsinstrumente für das Kreditinstitut. Diplomica Verlag GmbH, Hamburg

Illing F (2013) Deutschland in der Finanzkrise. Chronologie der deutschen Wirtschaftspolitik 2007-2012. Springer Verlag Fachmedien, Wiesbaden.

Institute for International Finance (2011) The Cumulative Impact on the Global Economy of Changes in the Financial Regulatory Framework. http://www.iif.com/download.php?id=oXT67gHVBJk. (3 February 2014)

Institute for Small Business Research (2011a) Schlüsselzahlen der KMU nach Definition des IfM Bonn. http://www.ifm-bonn.org/index.php?id=889. (27 November 2011)

Institute for Small Business Research (2011b) Durchschnittliche Eigenkapitalquoten der KMU und Großunternehmen für den Zeitraum 1997 bis 2009. http://www.ifm-bonn.org/index.php?id=560. (27 November 2011)

Institute for Small Business Research (2012a) KMU-Anteile 2010 in Deutschland nach der KMU-Definition der EU-Kommission. http://www.ifm-bonn.org/index.php?id=1015. (25 October 2012)

Institute for Small Business Research (2012b) Mittelstand in Deutschland gemäß der KMU-Definition der EU-Kommission. http://www.ifm-bonn.org/assets/documents/SZ-Unt&Ums&Besch_2004-2010_D_KMU_nach_EU-Def.pdf. (25 October 2012)

Institute for Small Business Research (2014) KMU in Deutschland gemäß der KMU-Definition der EU-Kommission. http://www.ifm-bonn.org/fileadmin/data/redaktion/statistik/unternehmensbestand/dokumente/KMU-D_2004-2011_EU-Def.pdf. (20 May 2014)

Ivashina V, Scharfstein D (2010) Bank lending during the financial crisis of 2008. Journal of Financial Economics 97, pp. 319-338

Jacobson T, Linde J, Roszbach K (2005) Credit Risk versus Capital Requirements under Basel II: Are SME Loans and Retail Credit Really Different? Journal of Financial Services Research 28, pp. 43–75

Jensen M, Meckling W (1976) Theory of the firm: managerial behavior, agency costs and ownership structure. Journal of Financial Economics 3, pp. 305-360

Jones J (1991) Earnings Management During Import Relief Investigations. Journal of Accounting Research 29, pp. 193-228

KfW Development Bank (2011) Unternehmensbefragung 2011. Folgen der Krise auf die Unternehmensfinanzierung weitgehend überwunden – strukturelle Finanzierungsprobleme rücken wieder in den Vordergrund. http://www.kfw.de/kfw/de/KfW-Konzern/Research/Befragungen/Unternehme.jsp. (27 November 2011)

KFW Development Bank (2012) Unternehmensbefragung 2012. http://www.kfw.de/kfw/de/I/II/Download_Center/Fachthemen/Research/Studien_und_Materialien/PDF-Dokumente_Unternehmensbefragung/Unternehmensbefragung_2012_LF.pdf. (13 November 2012)

KFW Development Bank (2013) Mittelstandspanel 2013. https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF-Dokumente-KfW-Mittelstandspanel/KfW-Mittelstandspanel-2013.pdf. (11 May 2014)

LaFond R, Roychowdhury S (2008) Managerial Ownership and Accounting Conservatism. Journal of Accounting Research 46, pp. 101-135

Leftwich R (1983) Accounting Information in Private Markets: Evidence from Private Lending Agreements. The Accounting Review 58, pp. 23-42

Lehmann E, Neuberger D (2001) Do lending relationships matter? Evidence from bank survey data in Germany. Journal of Economic Behavior and Organization 45, pp. 339–359

Leland H (1994) Corpoarte Debt Value, Bond Covenants, and Optimal Capital Structure. The Journal of Finance 49, pp. 1213-1252

Leland H, Toft K (1996) Optimal capital structure, endogenous bankruptcy, and the term structure of credit spreads. The Journal of Finance 51, pp. 987-1019

Lenger S, Ernstberger J (2011) Das Finanzierungsverhalten deutscher Unternehmen – Hinweise auf eine Kreditklemme? Kredit und Kapital 44, pp. 367-392

Leuz C, Nanda D, Wysocki P (2003) Earnings management and investor protection: an international comparison. Journal of Financial Economics 69, pp. 505-527

Leuz C, Wüstemann J (2003) The Role of Accounting in the German Financial System. Center for Financial Studies, Working Paper of the Goethe-University Frankfurt No. 2003/16

Liu Y, Ning Y, Davidson W (2010) Earnings Management Surrounding New Debt Issues. The Financial Review 45, pp. 659-681

López-Garcia J, Mestre-Barberá R (2011) Tax effect on Spanish SME optimum debt maturity structure. Journal of Business Research 64, pp. 649-655

Lo A (2012) Reading About the Financial Crisis: A Twenty-One-Book Review. Journal of Economic Literature 50, pp. 151-178

Machauer A, Weber M (1998) Bank behavior based on internal credit ratings of borrowers. Journal of Banking and Finance 22, pp. 1355-1383

Mansfield E (1962) Entry, Gibrat's Law, Innovation, and the Growth of Firms. American Economic Review 52, pp. 1023–1951

Marquardt C, Wiedman C (2004) How Are Earnings Managed? An Examination of Specific Accruals. Contemporary Accounting Research 21, pp. 461-491

McNichols M (2000) Research design issues in earnings management studies. Journal of Accounting and Public Policy 19, pp. 313-345

Melcher W, Schaier S (2009) Zur Umsetzung der HGB-Modernisierung durch das BilMoG: Einführung und Überblick. Der Betrieb 62, pp. 4-8

Modigliani F, Miller M (1958) The Cost of Capital, Corporation Finance and the Theory of Investment. The American Economic Review 48, pp. 261-297

Modigliani F, Miller M (1963) Corporate Income Taxes and the Cost of Capital: A Correction. The American Economic Review 53, pp. 433-443

Moody's Analytics (2011) Implementing Basel III: The Challenges, Options & Opportunities. http://www.moodysanalytics.com//basel3implementation2011. (27 November 2011)

Moses O (1987) Income Smoothing and Incentives: Empirical Tests Using Accounting Changes. The Accounting Review 62, pp. 358-377

Nelles M, Klusemann M (2003) Die Bedeutung der Finanzierungsalternative Mezzanine-Capital im Kontext von Basel II für den Mittelstand. Finanz Betrieb 1, pp. 1-10

Nichols D, Wahlen J, Wieland M (2009) Publicly traded versus privately held: implications for conditional conservatism in bank accounting. Review of Accounting Studies 14, pp. 88-122

Nikolaev V (2008) Debt Covenants and Accounting Conservatism. Journal of Accounting Research 48, pp. 137-175

Nippel P (2004) Eigenkapitalunterlegung von Kreditrisiken und die Auswirkungen auf die Fremdkapitalkosten von Kreditnehmern. Journal of Business Economics 74, pp. 199-222

Obermann M (2011) Bilanzpolitik und Kreditvergabeentscheidungen Auswirkung von Kreditvergabeentscheidungen auf das rechnungslegungspolitische Verhalten von mittelständischen Unternehmen. Gabler Verlag, Wiesbaden

O'Brien R (2007) A Caution Regarding Rules of Thumb for Variance Inflation Factors. Quality and Quantity 41, pp. 673-690

OECD (2012) Financing SMEs and Entrepreneurs 2012. An OECD Scoreboard. http://www.oecd.org/document/61/0,3746,en_2649_34197_50108861_1_1_1_1,00.html. (27 April 2012)

Peek E, Cuijpers R, Buijink W (2010) Creditors' and Shareholders' Reporting Demands in Public versus Private firms: Evidence from Europe. Contemporary Accounting Research 27, pp.49-91

Penman S, Zhang X (2002) Accounting Conservatism, the Quality of Earnings, and Stock Returns. The Accounting Review 77, pp. 237-264

Petersen M, Rajan R (1994) The Benefits of Lending Relationships: Evidence from Small Business Data. Journal of Finance 49, pp. 3–37

Pittman J, Fortin S (2004) Auditor Choice and the Cost of Debt Capital for Newly Public Firms. Journal of Accounting and Economics 37, pp. 113–136

Puri M, Rocholl J, Steffen S (2011) Global retail lending in the aftermath of the US financial crisis: Distinguishing between supply and demand effects. Journal of Financial Economics 100, pp. 556-578

Quignon L (2011) Basel III: no Achilles' spear. Economic Research by BNP Paribas. http://economic-research.bnpparibas.com/applis/www/RechEco.nsf/ConjonctureByDateEN/81391A165B85FB54C12578C00042E75A/$File/C1105_06_A1.pdf?OpenElement. (27 November 2011)

Redak V, Tscherteu A (2002) Basel II, Prozyklizität und Kreditentwicklung – erste Schlussfolgerungen aus der QIS 3. http://www.oenb.at/de/img/fmsb5_baselii_tcm14-9317.pdf. (27 November 2011)

Repullo R, Suarez J (2004) Loan pricing under Basel capital requirements. Journal of Financial Intermediation 13, pp. 496–521

Rieg R, Gruber T, Reißig-Thust S (2012) Biltroller und Biltrolling: Empirische Ergebnisse zur Zusammenführung von externem Rechnungswesen und Controlling im Mittelstand. http://www.hochschule-aalen.de/studium/img/news/2258_BC_2012_3_Rieg-Gruber-Reissig-Thust_S_100_105.pdf. (21 November 2013)

Roychowdhury S (2006) Earnings management through real activities manipulation. Journal of Accounting and Economics 42, pp. 335-370

Saurina J, Trucharte C (2004) The Impact of Basel II on Lending to Small- and Medium-Sized Firms: A Regulatory Policy Assessment Based on Spanish Credit Register Data. Journal of Financial Services Research 26, pp. 121–144

Saurina J, Trucharte C (2007) An Assessment of Basel II Procyclicality in Mortgage Portfolios. Journal of Financial Services Research 32, pp. 81–101

Schäfer D (2003) The New Basel Capital Accord and its Impact on Small and Medium-sized Companies. Economic Bulletin 40, pp. 209–214

Schanz D, Schanz S (2010) Finding a New Corporate Tax Base after the Abolishment of the One-Book System in EU Member States. European Accounting Review 19, pp. 311-341

Schuhmacher M (2006) Rating für den deutschen Mittelstand: neue Ansätze zur Prognose von Unternehmensausfällen. GWV Fachverlage, Wiesbaden

Schwaiger W (2004) Basel II Impact Study. Wirtschaft und Management 1, pp. 29–52

Scellato G, Ughetto E (2010) The Basel II reform and the provision of finance for R&D activities in SMEs: An analysis of a sample of Italian companies. International Small Business Journal 28, pp. 65–89

Shivakumar L (2000) Do firms mislead investors by overstating earnings before seasoned equity offerings? Journal of Accounting and Economics 29, pp. 339-371

Siemens Financial Services (2003) Unternehmensfinanzierung im Fokus. http://finance.siemens.com/financialservices/global/de/presse/studien/Documents/studie_2003_futurepanel.pdf. (25 October 2012)

Slovik P, Cournède B (2011) Macroeconomic Impact of Basel III. OECD Economics Department Working Paper No. 844, OECD Publishing.

Smith C, Warner J (1979) On Financial Contracting – An Analysis of Bond Covenants. Journal of Financial Economics 7, pp. 117-161

Stiftung Familienunternehmen (2011) Die volkswirtschaftliche Bedeutung von Familienunternehmen. http://familienunternehmen.de/media/public/pdf/studien/Die_volkswirtschaftliche_Bedeutung_der_Familienunternehmen.pdf. (23 October 2012)

Sweeney A (1994) Debt-covenant violations and managers' accounting responses. Journal of Accounting and Economics 17, pp. 281-308

Szczesny A (2003) Risikoindikatoren, Rating und Ausfallwahrscheinlichkeit im Kreditgeschäft. ZEW Wirtschaftsanalysen Band 67, Nomos Verlag, Baden-Baden

Szczesny A, Valentincic A (2013) Asset write-offs in private firms – The case of German SMEs. Journal of Business Finance and Accounting 40, pp. 285-317

Teoh S, Wong T, Rao G (1998) Are Accruals during Initial Public Offerings Opportunistic? Review of Accounting Studies 3, pp. 175-208

Van der Stede W, Young S, Chen C (2005) Assessing the quality of evidence in empirical management accounting research: The case of survey studies. Accounting, Organizations and Society 30, pp. 655-684

VanHoose D (2007) Theories of Bank Behavior under Capital Regulation. Journal of Banking and Finance 31, pp. 3680–3697

Verband der Bayerischen Wirtschaft (2012) Studie – Auswirkung der CRD IV auf die Unternehmensfinanzierung. http://www.vbw-bayern.de/agv/vbw-Aktionsfelder-Europa-Finanzmarkt_und_planung-Basel_III_vbw_fordert_Korrekturen--45293,ArticleID__24253.htm. (27 April 2012)

Vos E, Yeh A, Carter S, Tagg S (2007) The happy story of small business financing. Journal of Banking and Finance 31, pp. 2648-2672

Watts R (2003) Conservatism in Accounting Part I: Explanations and Implications. Accounting Horizons 17, pp. 207-221

White H (1980) A Heteroscedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroscedasticity. Econometrica 48, pp. 817–838

Wilkens M, Entrop O, Völker J (2001) Strukturen und Methoden von Basel II – Grundlegende Veränderungen der Bankenaufsicht. Das Kreditwesen 4, pp. 187–193

Zang A (2012) Evidence on the Trade-Off between Real Activities Manipulation and Accrual-Based Earnings Management. The Accounting Review 87, pp. 675-703

Zhang J (2008) The contracting benefit of accounting conservatism to lenders and borrowers. Journal of Accounting and Economics 45, pp. 27-54

Zwirner C, Künkele P (2012) Eigenständige Steuerbilanzpolitik – Möglichkeiten, Anwendungsbereiche, Konsequenzen. NWB Unternehmensteuern und Bilanzen 7, pp. 1-16

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