Bank loan financing of
Austrian SMEs

The influence of bank relationship and firm
characteristics on bank loan interest rate and
size

Master Thesis

to obtain the academic degree of

Master of Science

in the Master’s Program

General Management
STATUTORY DECLARATION

I hereby declare that the thesis submitted is my own unaided work, that I have not used other than the sources indicated, and that all direct and indirect sources are acknowledged as references.
This printed thesis is identical with the electronic version submitted.

Wels, 20.11.2016

Signature
Expression of Thanks

Above all, I want to thank my beloved wife for her everlasting support during my entire studies. Without her the low points would have been much deeper and I would not have overcome challenges that well.

Further, I want to express my thanks to my parents. Without them I would have been not able to start studying at all.

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1. Introduction

SMEs represent the majority of enterprises in the economic Austrian landscape. With 425,276 SMEs in 2014 they count for 99.7 percent of all enterprises in Austria (Austrian Chamber of Commerce 2016). It is not surprising that research on their financing practises increased over the last decades.

Austrian SMEs frequently access financial capital through banks and emphasize the importance of this resource (Brunner, Mahlberg and Schneider 2010, p. 23). However, access is not granted for each of the applying companies (Langwieser and Pascher 2014, p. 45).

The evaluation process of banks is all about assessing the credit being not repaid, thus determining whether or not the firm is able to repay the loan. The probability of the repayment ability of a specific firm has to meet a certain acceptable level. This level ensures the bank that the potential benefit of granting a loan will exceed the inherent risk.

However, some firms do not meet the criteria in the first run. Nonetheless, they may access a loan but less than they applied for. Granting firms with a minor credit worthiness less loan volume leave the banks having less risk exposure, which means that their risk is better diversified (Comptroller of the Currency Administrator of National Banks 1998, p. 29-30).

Banks distinguish between firms which receive a loan. Firms with a better credit worthiness inhere less risk of default. They are found to operate successfully even if their market environment becomes more competitive or is hit by a crisis. Thus, they are seen as being more capable to raise the needed money for repayment more easily even if the operations become more difficult. On the other hand some firms are credit worth, but are seen to be not that capable.

Banks regard the different credit worthiness of grantable firms. Depending on the final assessment of the firm, the bank specifies the loan’s terms and conditions (T&C). T&Cs are distinguished into (1) price T&Cs, such as interest rate and cost of financing, and (2) non-price T&Cs, such as collateral requirements, loan size, loan maturity and loan covenants (Drakos 2013, p. 718). By adjusting T&Cs banks try to enhance the risk/gain-profile.

The first section is about the sources of financial capital which may be tapped by SMEs. Next, the financial situation for Austrian SMEs will be summarized and bank credits, as a form of financial resource, explained in more detail. After discussing the interest rate of bank
credits and related issues, possible influencing factors on bank credits’ interest rates and size. Relevant hypothesis will be generated and tested by applying a unique data sample of Austrian SME’s thereafter.

2. Sources of financial capital for SMEs

A company which is in need for monetary capital has several possibilities to raise financial capital. Financial theory distinguishes two major sources – internal and external financing. By internal financing the enterprise raises the financial capital through resources which are in its own possession. This is generally accomplished by the retention of operational income or the liquidation of company owned assets. If these resources are not sufficient anymore a funding gap arises. At that time the company has to increase its financial resources by tapping some external source. Whether the company chooses equity, mezzanine or loan financing, the financial capital received by each of the three possible resources is acquired from outside the company (Langwieser and Pascher 2014, p. 45 and Geyer et all. 2009, p. 135). Figure 1 provides a general overview on the classifications of corporate finance possibilities:

Figure 1 - Overview of corporate financing modelled after Langwieser and Pascher (2014)
2.1. Equity capital versus debt capital

Considering the legal status of the financial capital provider, theory differentiates furthermore between equity capital and debt capital. A significant distinction is made on the duration of capital provided. Equity capital is provided for an indefinite period of time, debt capital for a limited duration (Thommen and Achleitner 2006, p. 490). The distinction of the two forms of capital includes other aspects too: Equity capital is provided by the owner and reimbursement is made in form of participation. One has to consider that through the participation reimbursement the investor becomes an actual owner. As an owner the provider of capital has the right to participate directly or indirectly in the companies’ leadership. In contrast, debt capital is provided by a debtor, who receives a fixed or variable interest on his investment. The debt investor does not have any right to participate in the enterprise’s leadership. However, if the company is liquidated his status of claim on subsequent liquidation sales are higher than those of equity capital providers. While the debt investor is not liable for the company, the equity investor is liable for the company to some extent. In case of debt investments the company can deduct its taxable profit for the interest rates. Equity capital is taxed through profit taxes (Schaufelbühl, Hugentobler and Blattner 2007, p. 421 and Gayer, Hanke, Littich and Nettekoven 2009, p. 139). Although from the point of law equity capital and debt capital can be distinguished, in the perspective of business administration the distinguishing line is more blurred (Thommen and Achleitner 2006 p. 490).

2.2. Internal financing

By internal financing the enterprise raises the necessary financial capital through its own operations and is therefore a direct result of the entrepreneurial risk taken (Langwieser and Pascher 2014, p. 44). Schaufelbühl et all. (2007) acknowledge three types of internal resources in regard to the operational income:

The first resource is self-financing, which is also named profit retention. Thereby the profits made by the companies’ operations are not spilled to the owners, but retained to be reverted for current investments or for future needs for financial capital. If the profit retention is visible in the financial balance it is called disclosed reserve, if it is not apparent it is said to be a hidden reserve. In both cases it is equity capital. Although in some situations the creation of hidden reserves is of advantage for the company, rules of accounting constrain the ability in creating such (Schauer 2009, p. 94). Especially the International Financial Reporting Standards (IFRS) claim for a true and fair view of a particular company and restrict possibilities on building hidden reserves (Schaufelbühl et al. 2007, pp. 412–414).
The second resource is provisions. Provisions are classified to be debt finance and can be built for expected future payment obligations for a particular purpose. The volume and the due date are not known by the company before the case becomes true. Therefore the company already builds a financial position in advance to have sufficient financial savings to meet the expected future needs (Schaufelbühl et al. 2007, p. 418).

The third type of resource is through depreciations. A company which invested into a machine reduces its next yearly profits by the depreciation rates. As no actual cash transfers are related to depreciations the thereby gained cash reserves can be used for financing the company. By tapping this financial resource, the company acquires equity capital (Schaufelbühl et al. 2007, pp. 419-421).

Another resource, which is considered to be fourth type of resource for internal financing, is through sales of current and fixed assets. By selling assets the income achieved provides the company with a lump sum of equity capital, which can be used to be reinvested in the company (Langwieser and Pascher 2014, p. 45).

2.3. External financing

Excesses the need for financial capital the internal financing resources, the financial capital providers outside the company have to be tapped. Three major types of external financing can be distinguished (Langwieser and Pascher 2014, p. 45):

Equity financing is financing by the owners or to-be owners. As the name also suggest, it is classified to be equity capital. The company is granted a certain investment sum by the equity investor and provides profit participation and/or indirect leadership participation as reimbursements (Schaufelbühl et al. 2007, p. 433). The type of equity financing which is available for a particular company depends on its legal form. Although a public company may raise financial capital through going public, distribution of new shares or going private, other legal forms of companies do not have access to these types of equity financing (Thommen and Achleitner 2006, pp. 521 – 540). Depending on the law applied in the various countries, the access to various external financing alternatives varies. In Austria legal forms of enterprises which are not allowed to issue securities are individual companies, partnerships and limited partnerships, and limited companies. Individual proprietors do only have the possibility to finance their business through equity financing by depositing their own private financial capital in the enterprise. This is because the legal form is based on single proprietorship and would be violated if any other owner enters. Partnerships can raise
financial capital not only through private investments, but also by accessing new owners, who participate through an investment. However, too many owners may hinder the operations which leave equity financing as a limited resource for partnerships. In contrast, limited partnerships can access limited partners, who merely participate at profits, but do not have any leadership participation. Thereby higher amounts of investments through equity financing can be acquired. Limited companies can gain financial capital through private investments by the existing partners but also through new partners’ placements. Nonetheless, too many partners leave the company being inefficient (Prätsch, Schikkora and Ludwig 2012, pp. 87–89). An accessible alternative to reduce the number direct financial capital providers and the number of partners for limited partnerships and limited companies thereby is to tap private equity funds. However, these may gain high power due to the vast volume of money provided and leaves the companies in high dependency (Elsinger, Köck, Kropp, and Waschiczek 2016, p. 17).

Mezzanine financing comprises elements of both equity capital and debt capital. Money is provided in form of debt financing, but may be seen characteristically to be equity financing. Mezzanine capital investors commonly have a low rank in legal claim when the company invested becomes liquidated. Furthermore, the investments are not security-backed and terms and conditions are agreed on flexible. Due to the higher risks for the investor, mezzanine capital is provided against a relatively high reimbursement, which means high costs for the company (Langwieser and Pascher 2014, p. 45). Often not only interests are paid but the investor is also granted profit participation. A form of mezzanine capital is silent partnership, whereby the investor becomes an unofficial partner and participates on profits made.

The third form of external financing, which is relevant for SMEs is credit financing. Compared to equity and mezzanine financing, credit financing is debt capital. Terms and conditions will be discussed as well fixed in advance, and on its basis the lender borrows the financial capital the company (Geyer et al. 2009, pp. 138-139). Considering short-term credit alternatives, SMEs have relatively similar access to the various types of credit. Short-term credit alternatives are supplier credit, customer credit, various types of bank credits, factoring and forfeiting (Thommen and Achleitner 2006, pp. 556-565).

Similarly to equity financing, the access to the various forms of credit for a particular company is dependent on the company’s legal form (Langwieser and Pascher 2014, p. 45). Long-term credit alternatives are more limited for SME’s compared to large companies and corporates. Both do have access to long-term bank credits and leasing. However, other
forms i.e., bonds and most special types of bonds are merely accessible for corporates which do have permission to tap financial markets. Nonetheless, companies of a particular size do have the possibility to raise financial capital through promissory note bonds (Thommen and Achleitner 2006, pp. 565-573). Although each size of company may access bank credit, the importance of credits with a medium- or long-term duration rises with the size of the company (Brunner, Mahlberg and Schneider 2010, p. 24). Because of the focus of this study on bank credits these will be explained in detail in the next chapter.

3. Financing of SMEs in Austria

Companies in Austria are classified to be a smallish, a small or a middle company on the basis of the number of its employees, the yearly volume in sales and as a second financial criterion on the basis of the volume of balance sheet total. Smallish companies employ up to nine employees, achieve yearly sales of a maximum of two million Euros and show two million Euros in balance sheet total. Small companies have 10 to 49 employees and both, yearly sales and balance sheet total do not exceed 10 million Euros. Middle companies employ 50 to 249 people and achieve yearly sales of a maximum of 50 million Euros and 43 million Euros in balance sheet total. If one of the financial criteria is exceeded, the company is still being classified according the other two criteria. A middle company which excesses two criteria is classified to be a company of the next size (Austrian Chamber of Commerce 2016).

Austrian SMEs do have a high demand for financial capital resources. Lindner and Hoelzl found that 77 percent of Austrian SMEs have had financial requirements in 2012. Splitting the requirements into the financing duration needed, 38 percent postulated a short-term need (up to 12 months), 39 percent a medium-term need (one to three years) and 39 percent a long-term need (more than three years). Regarding the size of the companies it was found that the need for financial requirement increases with the size. 27 percent of smallish enterprises (with a maximum of five employees) have sufficient financial capital resources. In comparison, merely five percent of medium sized companies (with 49 - 250 employees) do not have had a current need for financing (Lindner and Hoelzl 2013, p. 17).

Although most Austrian SMEs stipulate a need for financing, not each does have access. In 2016 approximately 48 percent of Austrian SMEs found themselves having little problems in accessing financing within the last six months. Of these 24 percent claimed to have medium financial limitations and 24 percent high. Two percent did not access the degree of financial capital needed. Although the perceived access to financial capital remained relatively stable
over the last three years, the perceived external financing gap, i.e. the “[...] difference [...] between the need for external funds [...] and the availability of funds” was found to decline (European Central Bank 2016, p. 6).

The financing resources tapped by SMEs are unequally distributed. The three most commonly financial capital resources in order to their usage are bank financing, retained profits and leasing. Although supplier credits and state subsidized financing support contribute to some extent to a raise of financial capital, other resources are hardly tapped (Lindner and Hoelzl 2013, p. 17).

Figure 2 - Source of finance for investments among SMEs with investment requirements in the last 3 years, according to Lindner and Hoelzl (2013)

Figure 2 indicates that bank financing is the most important resources for SMEs for financing. Two out of three SMEs accessed financial capital through banks.

Brunner, Mahlberg and Schneider published a study on the importance of diverse financing resources for Austrian SMEs in 2010. They found that the importance of bank credits was relatively high. Out of twelve possible resources each kind of bank credit – short-term, medium-term and long-term – is in the top five. Short-term credit was the most important bank credit, which was assessed by 28 percent of SMEs to be very important. Medium-termed credit accounted for 15 percent and long-term credit for 22 percent (Brunner, Mahlberg and Schneider 2010, p. 23).
4. Bank loans

Due to the emphasis of this study the following section will describe credit financing in more detail.

“A credit is a contract between two parties, the lender and the borrower” (Geyer et al. 2009, p. 38). Thereby the lender confirms to lend the lender a certain sum under certain terms. These terms include for example the volume lent, currency, maturity, interest rate and possible covenants. Credits are classified to be external financing as it is provided by some external resource. Further, it is debt capital due to absent ownership rights of the borrower (Geyer et al. 2009, p. 38).

Credit financing can be described by the following characteristics:

1. Creditor position: The credit accessed becomes a debt for the company. Therefore, the lender becomes a debtor and has the right of reimbursement if the credit cannot be paid back by the company.
2. Claim on repayment: The debtor has a right for repayment of the volume lent as well for the interest rates stipulated.
3. Absence of a say: The lender does not have any say regarding the leadership of the company. However, terms may be adjusted to provide the debtor with a limited say in case of drastic decisions made by the debtors.
4. Limitation in time: Frequently loans have a certain maturity.
5. Covenants: Commonly covenants are applied to collateralize the credit.
6. Tax impact: The taxable profit is reduced through the classification of interest rates to be expenses (Geyer et al. 2009, pp. 38-39).

In the landscape of bank offerings, it becomes obvious, that each bank labels its different credits individually. Thus, it is hardly possible to distinguish types of bank credit by the various labels.

Independently from the bank’s labels, credits are frequently distinguished by its maturity – short-term, medium-term and long-term (Brunner, Mahlberg and Schneider 2010, p. 23). Nonetheless, bank credits can be distinguished by other features as well. Coyle names nine elements, which may contribute to a single loan: (1) Term of the loan, i.e. how long it is granted until termination, (2) interest-rate basis, (3) structure of pricing, (4) funding in form of loan or facility, (5) repayment profile, (6) security and guarantees, (7) covenants, (8) representations and warranties and (9) currency of borrowing (Coyle 2002, p. 8).
A concrete classification according to the underlying covenant of a certain credit was provided by Baker et al. (2005):

An overdraft loan is, frequently, an unsecured form of credit. The debtor is granted a limited, specific amount of financial capital which can be accessed whenever it is needed. Due to the settlement in advance, the debtor has not to apply for each loan disbursement. The repayment can be made flexible in time and height (Baker et al. 2005, p. 11).

A mortgage loan is secured by some mortgage, i.e. premises or building. Frequently three alternatives of repayment are provided. By accessing an amortisable loan, the repayment is made in constant, continuous rates, while, according to the instalment loan, the continuous rates decrease over time. The third possibility of repayment is provided by the bullet instalment loan. Thereby the entire loan volume is paid back at the time of termination. Merely the interest rates are repaid during the credit exposure (Baker et al. 2005, p. 12-13).

In exchange for a Lombard loan the bank is provided with investment securities as a security. An alternative is to provide goods to secure the credit. However, this is unusual due to the higher complexity of contractual specifications (Baker et al. 2005, p. 15-16).

The loan against assignment of receivables is secured by receivables which are assigned to the bank. The assignment can be undisclosed, i.e. the customer is not informed about the assignment, or disclosed, i.e. the customer is informed on the direct payment to the bank. The receivables itself are either specific or unspecific. The latter is named blanket assignment which leaves the receivables characteristics independent of the agreement (Baker et al. 2005, p. 16-17).

If bills of exchange serve as a security for the credit, the credit is named discount credit with bills of exchange. Thereby the bank is able to convert the bill of exchange in the event of default (Baker et al. 2005, p. 17-18).

Independent of the certain type of credit served to the customer, each credit is designed to be a profitable offer for the bank. Therefore the price components of a credit will be discussed in the next section.
5. The interest rate of a credit

5.1. Bank’s income

A credit is a product a bank offers to generate income. A credit issued generates through two different kinds of sources profit for the bank.

First the bank charges a lump sum, which is constituted by the credit provision fee and other initial costs. The amount of the provision fee is frequently related to the amount of credit provided. Thus, it is commonly a certain percentage of the credit issued to the customer. Additionally, lump sums for initial costs are passed to the borrower, e.g. inquiries at the Kreditschutzverband 1870.

The second source of income through credit lending is the interest rate charged. The interest rate provides the bank with a constant inflow of profit. Thereby the income is distributed over the entire period of the credit issued. As the present study’s focus of research is on influencing factors on the interest rate, it will be discussed in more detail.

5.2. The structure of a credit’s interest rate

The borrower of a loan has to pay the interest rate, which was agreed with the bank (Creutz 1993, p. 127). Two different representations are available: The nominal and the effective interest rate. The nominal interest rate is the rate calculated on the exposed credit volume, which the borrower has lent from the bank. The latter not only represents the portion related to the exposed volume of the loan, it also includes each type of the loan’s cost. The credit provision fee and any other costs which are invoiced by the bank are priced into the interest rate, i.e. the effective interest rate (Geyer et al. 2009, p. 146).

However, banks consider the interest rate more differentiated. The interest rate is a kind of price for the product credit. Equally to producers of physical goods, banks have to calculate a price, which at least has to cover the costs. The following figure represents the composition of the interest rate of a credit.
5.3. Financing costs

Before a bank is able to provide financial capital to a customer, it has to accumulate the financial capital first. Banks do have three major sources from which the financial capital can be accessed. First, banks make use of the primary deposits made by private or commercial customers. The financial capital obtained thereby can be distributed in form of credits. Although banks constantly compete for primary deposits, the demand for credits may exceed the supply of disposable financial capital. Banks may then tap another internal financial resource. Similar to other companies, banks can liquidate assets. Frequently most assets held by a bank are not physical but non-physical. For example banks do make direct investments into different kind of securities through their investment banking entities. Such investments can be liquidated to provide the credit departments with financial capital. The third source of financial capital is external and named refinancing. Banks may refinance with the central bank’s financial services to increase its disposable financial capital. Short-term refinancing, i.e. over-night, is possible through marginal lending facilities, long-term through open market lending by standard tenders (Deutsche Bundesbank 2016).

Each of the alternatives available to finance credits involves costs. The private or commercial depositor is granted an interest rate on the deposits held, which are expenses for the bank. The liquidation of assets held by the bank is bound to trading fees. Moreover, if the return on the assets is higher than that of the issued credit, then opportunity costs become evident. The third alternative, central bank lending, is charged with a certain interest rate by the central bank.
It may be argued that the inflation or deflation has to be priced separately into the financing costs. When considering the first alternative of refinancing, i.e. deposits, Creutz already includes a premium for inflation or deflation in the interest rate paid for deposits. If the inflation or deflation is priced into the interest rate paid by a commercial bank to its depositors, it can be concluded that the central bank does price the inflation in the same way into the interest rate of its credits lent. As the commercial bank has to pay the interest rate for the accessed credit from the central bank, the inflation costs are already considered when refinancing with the central bank.

The last source, liquidation of assets, bears an inflation premium or deflation discount of another nature. According to the Dow-Theory of Dow and Jones, all market conditions are already priced into the market price of a certain asset (Murphy 1999). Thus, if a bank sells its securities an inflation premium or deflation discount is already priced into the current selling price.

A major driver of the financing costs is the equity backing regulation according to Basel III. Credits of a volume below one Million Euro have to be equity backed by a basis value of 7.9 percent, credits of a volume above one Million Euro with 10.5 percent. The basis value may be discounted for credits of higher quality, i.e. less risk of default (Felderer, Fortin and Breinlinger 2011).

5.4. Operating costs

The operations of a bank incur costs. The bank has to attract existent or potential customers to sell financial credit through its own branches. May it be by online or by offline advertising channels, advertising efforts raise the costs for banks. When a customer was attracted a bank consultant has to fully understand the purposes and needs of the customer and provide relevant advice and information. On the other hand the bank consultant has to request information of the prospective borrower to assess the underlying financing conditions. Excessive calculations have to be made to produce a personalised offer. Once an offer has been accepted by the credit customer, the credit has to be officially set by the bank consultant and the credit account created. The bank thereby has to bear a considerable amount of direct and indirect costs when issuing a certain credit.

Kovner, Vickery and Zhou (2014) subdivide the costs for a bank into diverse categories. The following categories are related to operating costs for credit services in banks:

1. Information technology and data processing (Referring to data processing expenses and telecommunications expenses)
2. Corporate overhead (Referring to advertising and marketing expenses, accounting and auditing expenses, expenses for printing, stationery, supplies and postage, rent expenses\(^1\))

3. Directors’ fees and other compensation

4. Legal issues

5. Consulting and advisory (Kovner et al. 2014 appendix, p. 4)

Considering the sources of operating costs, expenses for staff contribute to the highest share of operating costs in European banks, especially in the case of smaller banks (European Central Bank 2014, p. 25 and Gropp, Gruendl and Guettler 2012, p- 30).

5.5. Risk premium

The compensation for the risk of issuing a credit is represented in the risk premium or spread (Geyer et al. 2009, p. 143). According to Schmoll two general types of risks are related to credits: Passive and active risks (Schmoll 1992 as cited by Barthruff 2014).

Passive risks are referred to market risks, i.e. those not controllable by the bank itself (Barthruff 2014, p. 14). These are classified into interest risk, monetary value risk and currency risk (Schmoll 1992 as cited by Barthruff 2014). The interest risk is related to changes in the general level of interest rates. The monetary value risk refers to changes in the monetary value of a specific currency, which may result into inflation or deflation. Currency risk becomes evident if a credit is quoted in another currency than the national currency.

Considering the two possibilities of interest rates, i.e. variable and fixed, the impact for the bank of market risk is different for each of the two cases. The variable interest rate is dependent on some index, e.g. EURIBOR, and adapted in a frequent basis. Thereby the actual interest rate of the debtor is adjusted to changes in the market risk automatically. For banks this means, that the market risks are being adjusted frequently and passed to the debtor. By contrast, credit can be issued at fixed interest rates, leaving the bank bearing the risk of negative changes in market risks. Thereby the negative effects cannot be passed to the borrower. However, if the market risks deceases, it is the bank which benefits and not the borrower.

\(^1\) Rent expenses were added by the author of the present paper to acknowledge costs for physical representation room
The second general category of risks, active risks, can be subdivided into three separate risks: Default risk, liquidity risk and covenant risk (Schmoll 1992 as cited by Barthruff 2014). The risk of default is the risk, that the borrower does not pay the accessed credit back or merely pays back a certain part (Barthruff 2014, p. 14). The liquidity risk refers to the inability of the borrower to pay certain rates of credit in time. This does not inhere that the borrower cannot repay the credit accessed. It means that the borrower cannot pay the current rates without selling fixed assets (Obenaus and Weidacher 2006, p. 440). The covenant risk is related to the risk that the liquidation value of covenants attached to the credit decreases. In case of default it is the covenants which will be sold to cover the remaining credit exposure. If the credit exposure exceeds the value of the covenants a gap would arise. Therefore it is common that a bank applies a calculated discount on the liquidation value of a covenant when it is attached to a credit (Duthel 2013, pp. 129-130).

Independent from the types of risks described, risks can be divided into measurable and non-measurable risks. Measurable risks can be defined both in their probability of occurrence and in their extent. Non-measurable risks lack either in the measurement of probability of occurrence or in its extent, but can also lack in both (Kupsch 1973, p. 34). When considering credits the concept of expected and unexpected losses compromises the concept of measurable and non-measurable risks. The expected losses are those which the bank considers to become evident in granting credit. Unexpected losses are those losses which exceed the expected losses (Basel Committee on Banking Supervision 2005, p. 2). Short-term the bank has to cover the expected losses through the interest rate and the provision fee. Nonetheless, long-term the unexpected losses have to be covered too. This is a prerequisite for sustainable bank operations. Therefore the author of the present study considers not only including expected losses into the risk premium but also the estimated unexpected losses of a credit.

Literature provides two general concepts of credit risk calculation. Top-down concepts value the risk of a portfolio of credits. It is the aggregated data which is accessed to measure the risk of credit exposed. Bottom-up concepts measure the risk of each single credit exposed and sums them up (Basler Ausschuss für Bankenaufsicht 1999, p. 28).

The credit default loss exposure can be calculated by the following equitation, which can be applied for top-down as well as bottom-up concepts. The equitation not only represents the present loss, but also the loss of future income due to interest income on credit exposed (Österreichische Nationalbank 2004, pp. 141, 151).\(^2\)

\(^2\) For meta-study on recovery rates see Böttger et al. 2008
**Credit default loss exposure**

\[
\text{Credit default loss exposure} = \text{book value of credit} + \text{future interest rates} + \text{default administration costs} - \text{net collateral income} - \text{recovery gains}
\]

- **Book value of credit**: Credit size exposed, including fees, which was not paid back yet.
- **Future interest rates**: Interest rates which have to be paid from date of calculation until maturity.
- **Default administration costs**: Costs for default process (including legal fees and collateral liquidation costs).
- **Net collateral income**: Revenues from collateral sales.
- **Recovery gains**: Liquidation profits, which the bank may receive if the company becomes liquidated.

The equitation is found to represent the entire loss of credit exposed unrelated to any probability of actual loss. Additionally, it considers potential losses, by including future loss of income. The author of the present study will alter the equitation to include the concept of expected and unexpected loss for a more realistically calculation.

Expected losses are regarded by the probability of default. Unexpected losses will be included by a buffer of a certain percent, which is determined by the bank. Furthermore, as the loss of future income is a potential loss and not a direct loss for the bank, it will be neglected in the calculation.

**Prospective credit default loss**

\[
\text{Prospective credit default loss} = (\text{book value of credit} + \text{default administration costs} - \text{net collateral income} - \text{recovery gains}) \times \text{default probability} \times (1 + \text{unexpected loss rate})
\]

- **Unexpected loss rate**: Buffer of a certain percent of the total amount of expected credit default loss.
The adjusted equitation of prospective credit default loss respects the concept of expected and unexpected losses. Furthermore, it considers the actual probability of a default loss. By adding the probability of default, the general risk definition of Kupsch is met. The default probability can be estimated through reference groups. The same is true for the unexpected loss rate, which should consider the standard deviation of an aggregate of former credit default losses within the reference group. The prospective credit default loss risk becomes measurable and thereby can be regarded in the risk premium on an individual basis.\(^3\)

Considering the equation of the prospective credit default loss, the risk premium is influenced by several factors. First the volume of a credit may influence the risk for the bank and second the convets attached. Furthermore, the default probability may have an impact on the interest premium level as well as on the expected loss. The last two possible influencing factors may be especially related with the risk concerned with a particular company. Therefore, those companies which are less solid may pay a higher interest premium.

Adding the risk premium and the risk-free rate, i.e. financing and operating costs, together of a bank’s best customers it is named prime rate (Petersen and Rajan 1994, p. 12). It can be concluded that the prime rate is the minimum rate of interest rate applied to the bank’s customers.

The default risk and liquidity risk are referred to the term credit worthiness risk (Barthruff 2014, p. 14). Credit worthiness is “a person’s, company’s or country’s ability and willingness to pay his […] debts in due course, i.e. when they become payable.” (Obenaus and Weidacher 2006, p. 189). Banks evaluate the credit worthiness as good as possible to estimate the default and liquidity risk. The more accurate and precise the risk is measured the better the bank can make the decision on whether to grant credit to a particular company or not, and under which terms and conditions. Furthermore, if the credit is granted, the bank is able to estimate a relatively realistic and fair risk premium for the particular debtor (Bankenverband Deutscher Banken 2010, p. 2).

According to Causholli and Knechel (2012, p. 554) monitoring costs contribute separately from the risk premium, as a building block in its own, to the costs of the interest rate. However the author of this study considers the monitoring costs being highly dependent on the risk of default and liquidity. Through monitoring the risks are assessed permanently and thereby cause pre-ante costs. Due to the monitoring costs dependency on the individual risk

\(^3\) As a matter of completeness, for a more detailed calculation future incomes and losses have to be discounted by the value of time.
of the borrower, they are considered to contribute to the costs of risk premium and therefore do not constitute a separate class of costs.

### 5.5.1. Information asymmetries

A fundamental concept which is tightly related to the default risk and liquidity risk is that of information asymmetries. Information asymmetries are evident if one party possesses more information than the other party. The higher the difference is, the higher are the asymmetries and the risks inherent (Blanchard and Illing 2009, p. 193). The problems resulting from information asymmetries are classified into moral hazard and adverse selection (Holmstrom 1984 cited by Nayyar 1990, p. 514).

First describes “[…] problems associated with the buyer’s inability to observe actions taken by the seller.” (Akerlof 1970 cited by Nayyar 1990, p. 514). In the case of credit lending the borrower may use the funds granted to other objects than it was agreed on, because of the limited control by the bank over the borrower’s actions (Bebczuk 2003, p. 7).

Adverse selection becomes an issue “[…] when the buyer is unable to observe either the sellers’ characteristics or the contingencies under which the seller operates.” (Akerlof 1970 cited by Nayyar 1990, p. 514). A bank is affected by adverse selection if it cannot distinguish between two projects on the basis of their risks (Bebczuk 2003, p. 7). Thus it is not possible for the bank to assess the projects risk properly.

Although Bebczuk contributes monitoring costs to be a third stream of asymmetric information the author of the present study consider monitoring costs to be a side effect of reducing asymmetric information (Bebczuk 2003). This is in line with Homstrom who argues that due diligence and monitoring are efforts to reduce problems arising with asymmetric information (Homstrom 1979 cited by Sufi 2007, p. 630).

A common measurement to reduce asymmetric information is ratings.

### 5.5.2. Ratings

The systematic process result of credit worthiness estimation and information asymmetry reduction is named rating, i.e. the estimation of the credit worthiness on a formal scale (Obenaus and Weidacher 2006, p. 189). A total company rating is frequently made up of three elements: (1) Hard fact- and soft fact-rating, (2) industry-rating and (3) individual-rating
component. The first element represents the estimation of the financial strength of an individual company. Hard facts are measurable and provided in form of balance sheets and profit and loss statements. In contrast, soft facts can be not or hardly measured but influence a company and its operations. Examples are owner’s and manager’s experience, employee development measurements and rate of innovation. The industry-rating adds specific industry risk factors to the rating. As these two components are highly standardized in most banks, the experience and personal assessment of the bank advisor is hardly integrated. Therefore the bank advisor is permitted to a certain extend to influence the rating through the individual-rating component directly (Bankenverband Deutscher Banken 2010, pp. 2-3).

A credit rating of a company is only valid for a particular period of time. As the company itself and the business environment changes over time, the rating becomes outdated at some point in time. Therefore ratings are made on a regular basis (Bankenverband Deutscher Banken 2010).

Summarized the risk premium is determined by diverse risks. The market risk, or passive risks, becomes evident when issuing a fixed interest credit. The active risks are evident for all kinds of credit granted. It is composed by the default risk, liquidity risk and covenant risk. The various risks combined constitute the risk premium of a credit interest rate.

5.6. Profit margin

The margin of profit represents the profit gained through the frequently charged interest rate. It is the balance between the entire interest rate less the risk and cost components. Any discounts made through concessions to the customer have to be deducted from the profit margin. Concessions to customers therefore must not exceed the profit margin, otherwise the bank will receive a continuous loss in providing the credit further.

However, as explained before, the profit gained through the interest rate is one source of profit, i.e. recurring profit, for the provision of credits. The other source, the non-recurring profit, is evident in the credit lump fees when issuing the credit.

6. Relationship lending

A bank has to make several decisions in granting a credit. It has to decide whether or not to grant credit to a specific firm and on which terms and conditions. Once the credit was granted the bank will have to adjust the credit outstanding on a regular basis according to the
current environment. Each of these decisions is based on information that is available for the bank. The acquisition of such necessary information is often limited in its quantity and quality.

Information on a single borrower can be assessed directly at the borrower but also externally through rating agencies or public available sources. This latter source may be more efficient for banks than accessing the information by its own. Nevertheless, external resources have regularly a considerably limited access to information on the borrower (Moro, Fink and Kautonen 2012). This leaves the banks with limited information on which the credit decisions would have to be made. It emphasises the advantages of generating information internally, especially for SMEs, which hardly provide information public (§277 UGB).

Information can be taped internally through the various contacts between the bank and the customer. Through the regular contacts a relationship is built wherein information is spilled out, which may be used for (further) credit decisions (Berger, Klapper and Udell 2001).

Credit lending which is based on a long-term establishment and utilization of bank-borrower relationship is referred to as relationship lending. Ongena and Smith describe this relationship as “[…] the connection between a bank and customer that goes beyond the execution of simple, anonymous, financial transaction” (Ongena and Smith 2000, p. 223). Through these relationships private information is accumulated internally by the bank which can be exploited in making lending decisions as well as in lending rearrangements and reducing information asymmetries thereby (Berger and Udell 1995, p. 367; Elsas 2005, p. 34; Fernando, Chakraborty and Mallik 2002, p. 14; Horworth and Moro 2012, p.167 and Peek and Rosengren 1995, p. 3).

Especially the relationship with the housebank provides an intensive and relevant relationship. This suggests a high relevance of relationship lending for housebank-relationships. Elsas and Krahnen consequently equated housebank-relationship with relationship lending (1998, p. 1286).

Relationship lending is assumed to provide the bank with a substantial advantage in determining the decisions on credits appropriate. First, the information is gained efficiently once the relationship was established. Economies of scale become evident in accessing further information on the borrower as it becomes relatively inexpensive for the bank (Ferrary 2002, p. 685 and Gropp, Gründl and Güttler 2012, p. 30). Second, the quantity of information is substantial as the relationship is permanently and often long-termed. In the course of time many information can be accumulated internally thereby (Fernando, Chakraborty and Mallik
Third, the information acquired may be proven against the existent information pool and may be scrutinised relatively thoroughly by the bank (Berger and Udell 1995, p. 632). Fourth, the information is resourced directly at its origin. Thereby information dilution should be minimal and the information's quality relatively high. The bank can experience in the course of time the true type of the particular company (Fernando, Chakraborty and Mallik 2002, p. 14 and Boot 1999, p. 10).

These expected positive effects of information acquired through the bank-borrower relationship should reduce the costs of information asymmetries (Compare with the chapter on “risk premium” in section “interest rate composition”). On the bottom line, relationship lending should provide the bank with the advantage to assess the customers' ability to repay the credit granted more accurately and realistically (Ongena and Smith 1997, p. 5 and Stein 2014, p. 369). Boot's exclamation on information accessed through relationship lending to be a proprietary in the bank makes its value apparent (Boot 1999, p. 10).

Relationship lending is interwoven with the concept of trust. Trust is especially relevant when the engagement with a single person and the evaluation of the behaviour is needed because of a certain present risk (Fink and Kessler 2010 cited by Moro and Fink 2013). Thus, when making a decision on granting credit, which comprises diverse risks mentioned in the chapter on the interest premium, trust is a factor of relevance. Excluding trust from the concept of relationship lending, the concept will forfeit its quality (Bromiley and Harris 2006 cited by Moro and Fink 2013).

Trust has to be differentiated from information received through relationship lending. Although considerable information was gathered by the bank within the relationship to some level, information asymmetry will be remaining in form of behavioural uncertainty. This uncertainty can be for some extend overcame by trust being present (Moro and Fink 2013, p. 928). Mayer, Davies and Schoorman (1995 cited by Moro and Fink 2013) revealed three factors which contribute to trustworthiness: Ability, benevolence and integrity. Concerning the relationship of a bank with its customer, the ability of the SME's manager reduces the perceived risk of default. If the manager of the SME is perceived to voluntarily taking good actions, the bank officer may be of the opinion that the SME's manager will stick to this behaviour when paying the credit back. If the SME's manager furthermore attaches himself to the values and principles of the bank officer, integrity will positively influence the level of trust (Moro and Fink 2013, p. 928-929).
6.1. Concepts of relationship lending

Relationship lending has been extensively researched since the early 90’s because of the assumed reduced costly information asymmetries (Uchida, Udell and Yamori 2006, p. 6; Petersen and Rajan 1994, p. 4 and Elsas and Krahnen 1998, p. 1285). In its infancies relationship lending was commonly differentiated from transaction lending. Transaction lending was defined as arm’s length lending including single transactions. Relationship lending was assigned to banks, transactional lending was found to be related to capital markets. The reason behind is the capital markets’ arm’s length finance (i.e. bond-finance), which stands in contrast to a banks’ long-term relationships with its borrowers (Ogena and Smith 2000, 229 and Boot and Thakor 2000, p. 708). However, due to the particular distinction made it was found that specific questions cannot be answered while sticking to the existing exclusive distinction between relationship and transaction lending (Boot and Thakor 2000, pp. 679-680).

By further research efforts it was found that banks do not only engage in relationship lending but also in transaction lending (Boot and Thakor 2000, p. 679-680, Moro and Fink 2013, p. 935 and Trönnberg and Hemlin 2014, p. 365-366). The distinction was thereby not blurred in itself. It is the exclusive assignment of the concepts to the particular financial providers which vanished. It is the bank’s strategy to steer how intensive it is involved in each (Boot and Thakor 2000, p. 679-680). Although, the distinction between relationship lending and transaction lending is still existent, one has to be careful in the understanding of the latter. Transaction lending primary relies on a single customer and a single transaction (Boot 1999, p.10). Transactions with the bank and its customer can happen on a singular basis, whereby the transaction is not anonymous, i.e. non-anonymous or borrower-specific transactions. These non-anonymous transactions do contribute to the strand of bank relationship. Lehmann and Neuberger regard this subtle distinction when specifying relationship lending (Boot 1999, p. 10 and Lehmann and Neuberger 1998). In this study the focus will be on relationship lending, which involves and regards non-anonymous transactions. Anonymous arm’s length transactions will be not considered.

Lehmann and Neuberger integrated transaction lending when considering relationship lending. They comprise two views which contribute to relationship lending: By the transaction-based view, the bank does learn more on its borrower with each further transaction made between them (Lehmann and Neuberger 1998, p. 6). As the bank has to assign the specific transaction made to a certain customer to raise the knowledge on its customers, it is a prerequisite that the transactions are not anonymous (Ongena and Smith 2000, p. 223 and Boot and Thakor 2000, p. 680). These transactions are not only provided
directly by credits, but also with other services provided by the bank, which are served to the specific borrower (Degryse and Van Cayselle 2000, p. 7). Information arises moreover by the analysation of the usage of other bank services tapped by the same borrower. In respect to deposits it is the regularity of savings made, their amount and the flexible usage of opportunities of other forms of savings (e.g. securities and insurances). The cash account provides information on regularity and amount of income as well as on expenditures, the income's and cost’s sources, usage of supplier’s credit and the cash reserves (Petersen and itself without perso

The transaction-based view emphasizes “hard” information. This is manifested in the relatively objective transactional information resources which are financial statements, financial ratios and business reports (Berger and Udell 2002, pp. 38-39).

The other view contributing to relationship lending, according to Lehmann and Neuberger, is the interaction-based view. It is the social component, which becomes evident in the continuous interactions between the bank and the borrower (Lehmann and Neuberger 1998, p. 8). Thereby another nature of information on the borrower is provided – soft information. As it is the bank officer who in the first place handles the credit lending process for the bank, the bank officer’s importance becomes obvious (Hattori, Shintani and Uchida 2012, p. 23). In the various interactions the bank officer learns about the customer’s industry, its influences and effects, and the companies' managers' behaviour and character (Berger and Utell 2006, p. 2951; Ferrary 2002, p. 685; Moro, Fink and Kautonen 2012 and Trönnberg and Hemlin 2012, p. 367). Thus the loan manager has the greatest access to borrower-related soft information within the bank (Berger and Utell 2002, p. 48; Hattori, Shintani and Uchida 2012, pp. 19-20 and Uchida, Udell and Yamori 2012, p. 120). However, it is hard to quantify and communicate this information within the bank, which leaves the bank officer holding most of the customer-related information (Berger and Udell 2002, p. 39 and 2006, p. 2951). However, it is soft information which is especially important in relationships between banks and small companies (Moro and Fink 2013, p. 935). Into the strand of the interaction-based view fall also lending personal preferences. So the bank officer is influenced by his own personality in engaging with the customer. Hawke and Hefferman (1983, p. 10) refer to interpersonal liking, i.e. an “[… orientation that] consists of a cognitive structure of beliefs and knowledge about the person, affect felt and expressed toward him or her, and behaviour tendencies to approach or avoid that person.”. It can therefore be concluded, that the soft information may be tainted by the bank officer’s perception, which becomes evident in the subjective character of soft information. In general, relationship lending seems to be made preliminary upon soft information (Berger and Utell 2002, p. 48 and 2006, p. 2951).
Relationship lending is especially of relevance for companies about which none or little information is publicly available (Elyasiani and Goldberg 2004, p. 315, Petersen 1999, p. 21). Frequently companies contributing to SMEs are not forced by law to publish information on their company. In the light of comparative advantage and effort necessary to publish company data, little information is voluntarily rendered by SMEs. As sources of information are rarely given for SMEs the information acquired through the bank-borrower relationship provide necessary and highly valuable insights into the particular companies (Uchida, Udell and Yamori 2006, p. 7).

In the light of the above it can be concluded, that relationship lending may have an influence on the credit itself. Considering the interest rate, the model of the interest rate composition provides insight. Therein the risk premium compensates the risk of the particular credit being defaulted. It can be argued that the less and blurred information on a particular borrower is available to the bank, the higher is the risk for a misjudgement of the credit worthiness. Consequently the bank may apply, due to the present information asymmetry a higher risk premium on the credit to compensate for the risk of misjudgement and limiting the credit volume exposed to the default risk. The bank will rationally decide on the highest risk of default, which is assumed to be possible for a certain credit. In contrast, if the bank has information in higher quantity and quality of a certain company the information asymmetry is more limited and the range of default risk estimated more accurately (Peltoniemi and Vieru 2013, p. 251).

Additionally, the costs of acquiring the information needed through relationships may be relatively little due to the already established monitoring. This should result into relatively little operating costs which are represented in the interest rate (Bharath, Dahiya, Saunders and Srinivasan 2008). Moreover, Horwoth and Moro showed that a high level of monitoring may result into more unworthy behaviour, because monitoring activities suggest a low level of trust between the bank officer and the borrower. Thus lower explicit monitoring due to the long-term relationship decrease adverse selection (Horwoth and Moro 2006, p. 512).

Although relationship lending may provide benefits, especially two types of costs are related to relationship lending. The first type is the soft-budget constraint, which becomes evident in ex ante renegotiations of the credit contract. A company which is too easily successful in renegotiations may receive incentives not to put that much of effort in repaying the credit, because it may be of the opinion that any further issue can be discussed successfully too. Especially in situations of financial distress the soft-budget constraint is on stake (Guariglia, Spaliara and Tsoukas 2015, p. 13). Banks may favour providing additional credit to benefit
the company’s surviving possibility, but thereby a negative incentive may be created for the borrower (Boot 1999, p. 16 and Elsas and Krahnen 1998, p. 1311).

The second type of relationship lending costs is that of holding-up. These costs arise from the information monopoly the bank accumulates through the ongoing relationship. The company may get into a lock-in situation and the bank may enforce its power by increasing interest rates or increasing its influence regarding other terms and conditions (Boot 1999, p. 17; Hernández-Cánovas and Martínez-Solano 2006 and Stein 2014, p. 387).

One may argue that a company would switch its bank if the negative effect of lock-in exceeds the positive effects of relationship lending. Switching the bank may result in decreased interest rates in certain situations (Stein 2014, pp. 381-383). However, this relates to the explicit costs of a credit. Implicit costs, like CFOs time consumed in negotiations and information submission, result into increasing transaction costs, which may counterbalance or exceed the positive effects of decreased interest rates. Therefore switching the bank, although interest rates may decrease, may be no monetary rewarding possibility, leaving the company being kept in a lock-in situation (Howorth, Peel and Wilson 2003, p. 315).

Summarized the interest rate may be lower for a company for which much information through relationship is provided, than for an opaque company, on which no information is provided through relationship. In the course of time borrower-related information, which can be utilized in credit decisions, will be accessed by the bank and accumulated. This, however, may increase holding-up costs for the companies, which countervail interest benefits or even may raise interest rates.

Relationship lending may influence the volume of credits too. If the company is being defined to be of higher credit worthiness than expected, because of the unique information gained in the relationship, it may be assigned to another borrower segment (Bankenverband Deutscher Banken 2010, p. 2). As this segment contains less risk, less credit is exposed to high risk. Therefore, the bank may provide the company with a higher credit size. However, the opposite effect may become evident. Opaque borrowers, which are less credit worth, may be assessed as such by the on-going relationship. At the beginning the bank may have assigned them into a less risky credit segment, but has to shift it to a riskier segment.

Concerning Austria, the importance of bank-customer relationships is high (Jäger and Redak 2006, p. 92). These relationships are for the most part long-termed, which becomes evident in that housebanks are of high relevance (Jäger and Redak 2006, p. 101 and Allen and Gale,
1995 cited by Gunter, Krenn and Sigmund 2013, p. 87). However, Häger and Redak analysed theoretical impacts of Basel II on Austrian relationship lending. According to Jäger and Redak, relationship lending and the instrument of credit-ratings are somehow connected. Companies have a need to improve their ratings for more favourable loan terms. Thus they provide the bank constantly with information on their business relationship. This is because credit-ratings are rather standardized and acquire specific information, thus the importance of the relationship on the level of the loan manager may vanish. For medium and large banks it was estimated that the importance of relationships may decrease, while the influence of standardized credit-ratings rises. However, small banks are thought to hold on relationship lending for maintaining a competitive advantage (Jäger and Redak 2006, p. pp. 98-101).

6.1.1. Relationship duration and credit interest rate

Berger and Udell undertook a research on small company relationship lending. The US-companies employed for the most part less than 50 people. Merely 20 percent exceeded 50 employees with a maximum of 500 employees. In applying the duration of time the bank-borrower relationship had existed, as strength of the same, it was revealed that longer relationships resulted in lower interest rate premium whereby interest rate premium was measured by premium over the prime rate. The effect was found to be highest for small companies, expect for micro firms. Furthermore, the information gained through the relationship was not only used for initial credit granting decisions, but also to redefine credits outstanding (Berger and Udell 1995, pp. 356, 370, 377-379).

US-companies were further researched by Petersan and Rajan. The data sample was the same as Berger and Udell had access to (Berger and Udell 1995, p. 370). In applying the duration of the relationship as a measure of its strength, the authors came to the conclusion that relationship duration does not have any relevant impact on the price of credits. However, a further measure of strength of relationship was applied by the concentration of a firm's debt, i.e. through how many banks debt is accessed. Test results suggested, that each additional bank tapped, raise the interest rate. This effect may be due to the worse quality of those companies according to Perersan and Rajan. However, data analysis did not provided explicit evidence for this argument.

Two reasons may serve as an explanation for the divergent results of the measurement for relationships on credit interest rates. First, the lender may have an information monopoly, whereby the bank becomes more independent from market forces when deciding on the interest rate. On the other hand, companies favour credit extension over interest rates,
therefore resulting in hardly any interest rate adjustment (Petersan and Rajan 1994, pp. 15-16, 34-35).

Another study on US-companies was conducted by Bharath, Dahiya, Saunders and Srinivasan. It was researched whether the costs, i.e. All-in-Spread Drawn (AISD), of borrowed loans of large firms differ in respect to the relationship status of the lender. The AISD represented the aggregated costs, whereby no precisions conclusions can be drawn on the extent of the relationship-lending status on interest rates solely. The measure of relationship strength applied was similar to that of Petersan and Rajan's concentration of firm's debt. Bharath, Dahiya, Saunders and Srinivasan calculated a ratio of number of loans applied by a single, specific bank to the total number of the company’s loans. Results suggested that relationship lending negatively correlate with spreads. Additionally it was found that spreads were lower when debt was accessed from relationship lenders than from non-relationship lenders (Bharath, Dahiya, Saunders and Srinivasan 2008, pp. 16-19).

An opposite result to Berger and Udell was provided by Degryse and Van Cayseele. The underlying data set consisted of more than 17,000 variable interest rate and fixed interest rate loans provided to over 13,000 Belgian companies (Degryse and Van Cayseele 2000, pp. 94-95). The measure applied for the measurement of relationship strength was duration, which equals that used by Berger and Udell (1995, p. 370). The analysis revealed a positive relationship between relationship duration and credit interest rate. Thus the credit interest rate increased in the duration of relationship. Comparing single-person companies with small companies, credit interest rates for the latter increase disproportionally higher with the duration of relationship. The result represents the lock-in problem which small companies seem to be especially confronted with (Degryse and Van Cayseele 2000, pp. 99, 103). The minor effect of relationship duration on credit interest rates for the smallest of small companies is in accordance with the results of Berger and Udell (Udell 1995, pp. 377-379).

Further evidence on a positive correlation between the bank-borrower relationship and the credit interest rate was provided by Hernández-Cánovas and Martínez-Solano. Their data consisted of more than 180 Spain SMEs. In applying relationship duration as a measure of strength it was revealed that longer relationships resulted in higher credit interest rates. A possible reason may be that the information monopoly gained by the bank, enables it to exploit the power of monopoly by increasing its profits, e.g. by increasing the interest rates for debts (Hernández-Cánovas and Martínez-Solano 2006, pp. 317, 320, 324, 331-332). Though, another measure of relationship strength was used, that of concentration. This adoption resulted in a rather different outcome. Credit interest rates of SMEs working with
fewer banks together had a reduced interest rate (Hernández-Cánovas and Martínez-Solano 2006, p. 342). Analyses suggested that the positive effect of concentrated lending derives from a reduction in the uncertainty of the loan. Drivers of reduced risk were found in negotiation flexibility, higher control over the loan and a limited free-rider problem. The latter is related to banks overlapping with each other and the reduced recovery achieved in case of company’s liquidation (Hernández-Cánovas and Martínez-Solano 2006, p. 326).

Harhoff and Körtnig conducted a study on approximately 1,400 German SMEs with a maximum number of 500 employees each. Loan data accessed were of the nature of lines of credit. Relationship strength was measured by the relationship duration and debt concentration. By the application of the first measure of relationship strength no significant effect of relationship duration on the price conditions could be found. Nonetheless, the authors argue that especially for high-quality companies, learning effects made by the bank may result into reductions in the credit interest rate. Because the results did not support their argument, they admitted, the firm’s quality measures may have been imperfect. It turned out, that in applying debt concentration as a measure no effect could be revealed on price conditions either (Harhoff and Körtnig 1998, pp. 16-17).

German companies were, furthermore, analysed by Lehmann and Neuberger. Their analysis was based on 357 questionnaires sent to German SMEs. Various types of credit usage were represented in the final data set: “[…] capital expansion, replacement investment, investments in new plant and equipment, credit lines, no special use […]” with a range in credit size of approximately 50,000 Euro to 5 Mio. Euro (Lehmann and Neuberger 1998, pp. 9-10 and Bundesministerium für Finanzen 1999, p. 61). In contrast to Harhoff and Körtnig, firm’s debt concentration was absent as a measure of relationship (Lehmann and Neuberger 1998, pp. 12 and Harhoff and Körtnig 1998, pp. 16-17). Nonetheless, relationship duration was applied. The authors came to the result that the loan rates did not correlate with the duration of the lending relationship. The authors came to the result that the duration did not depend on the status of the lending relationship (Lehmann and Neuberger 1998, pp. 17-18, 22).

Machauer and Weber drew on data from 125 bank-customer relationships with German firms when analysing the duration of relationship. Because of the companies’ yearly turnover of at least 50 Mio. DM each, which equals 25,57 Mio. Euro, the companies can be considered as corporates.4 The minimal loan size held by each of the companies was about 1,5 Mio. Euro. Machauer and Weber measured the relationship strength by both, its duration and the

4 Currency conversions were calculated according to Bundesministerium für Finanzen 1999, p. 61
number of banks from which debts are accessed from. Neither of the two measures revealed significant influence on the costs of a credit. The research was extended to the status of the bank. By interpreting internal bank notes the status of being a housebank was assessed for the individual relationships. Nonetheless, when analysing the effect of the housebank status no significant effect on the credit costs could be found either (Machauer and Weber 1998, pp. 6-7, 9, 13).

Another study on German companies was published by Stein. The author had access to a considerable vast set of data which included 3,741 firms with 18,119 observations. But not only the size of the data set was extraordinary, but also its quality, as it was used for official supervisory and monetary policy purposes. Unfortunately, no precise remarks on the firm sizes were provided. Nonetheless, the 25th percentile contributes companies of 5 Mio. Euro in sales, the 75th percentile sales of 41 Mio. Euro. The shortest relationships found in the data already accounted for 12 years each, thus relationships analysed were rather long term. Stein measured credit prices through a calculated spread-ratio. Thereby the spread based on the interest rate of the credit, thus representing credit interest rates relatively clearly. For the analysis relationship was measured by its duration and the firm’s debt concentration. Duration was defined as the period of time the specific bank had been the main lender of the firm (Stein 2014, pp. 370-374, 384-385). With a focus on the main lender the analysis of Stein is of high relevance for research on housebanks.

It was found that debt concentration of firms negatively correlated with borrowing costs. This effect was only found for companies who borrowed a relatively limited fraction of credit from banks. For bank-dependent companies, high debt concentration did not benefit them with decreasing borrowing costs (Stein 2014, pp. 977, 387).

An explanation for this effect may be that agency problems mitigate by a larger share of debt held at a single bank (Bris and Welch, 2005 cited by Stein 2014, p. 377). Further explanations are similar to that made by Hernández-Cánovas and Martínez-Solano (2006, p. 326). Congruently the free-riding risk for a bank is mitigated by concentrated lending. Moreover, bank’s monitoring incentives are higher if it holds a large fraction of a firm’s debt, which will result into mitigated moral hazard. Additionally, information and transaction costs may be lower for the bank if it is lending a large share of debt to a specific company. In case the company becomes financially distressed the positive effect on credit interest rates may vanish. As the power of bank is relatively high and the debt is concentrated at the same, it constitutes an opportunity to limit renegotiations with the company (Stein 2014, p. 377).

In contrast to debt concentration, relationship duration positively correlated with credit costs. Especially for bank-dependent borrowers the credit interest rate increased over the duration of relationship. Comparing the effect stemming from concentration with that from duration,
concentration was found having a higher impact on borrowing costs (Stein 2014, pp. 380, 387).

Regarding relationship strength in combination with duration, the discount on the borrowing costs in housebank relationships decreased over time. Analysis suggests that after ten years the positive effect vanishes (Stein 2014, p. 380). A reason may be that banks merely provide a discount at the beginning of the relationship, which will be resettled after a while (Petersen and Rajan, 1995; Sharpe, 1990 and von Thadden, 2004 cited by Stein 2014, p. 380). For the companies that had a moderate share of debt held at a bank, the combined effect of debt concentration and relationship duration was found to have a benefit for the companies in the short term. Medium and long term the costs rose due to information monopoly gained by the bank (Stein 2014, pp. 380, 387).

A study on Italian small companies was published by Angelini, Di Salvo and Ferri. Drawing on a data set of 1.095 companies holding lines of credit the effect of relationship duration was scrutinized. Analysis revealed a positive correlation of relationship duration and credit interest rates. Nonetheless, tests proved the correlation being insignificant. However, the authors explained the test positive correlation result with an excess of the lock-in effect over benefits of decreasing monitoring costs (Angelini, Di Salvo and Ferri 1998, pp. 936, 941).

Bester provided further evidence by establishing and testing a mathematical model on credit equilibrium. A basic assumption in business administration was represented by the model: If the demand for a good is high and the supply limited the seller may raise the price. Although the demand will be decreased thereby, the negative demand effect is more limited than the benefit achieved by the seller through the higher price. Considerations of Bester on the basis of his model resulted in a contrary suggestion when considering credits being the product. Even if an excess in credit demand is given, a bank may not be profitable in raising the interest rate (Bester 1985, p. 852). Reason is that especially the less-profitable, i.e. less credit worth, companies still are attracted by the higher-priced credit offers while companies, which are more credit worth, are less attracted (Bester 1985, p. 852 and Petersen and Rajan 1994, p. 19).

An explicit study on the housebank status as regarded to be relationship-lending was done by Elsas and Krahnen. They made their analysis on the same data used by Machauer and Weber (1998, pp. 6-7). Relationship banks were largely unaffected by their status in compensation. Thus it did not result into significant compensation differences, whether the relationship-lender was a housebank or a normal bank (Elsas and Krahnen 1998, pp. 1301-1302, 1313).
Summarizing existing studies on relationship lending, relationship strength is frequently measured not only by its duration but also by the concentration of a company’s debt at a single bank. Evidence on the effect of relationship duration on credit interest rates is manifold. Considering the geographical location of companies, evidences on American bank-customer relationships suggest a tendency for a negative correlation of relationship duration and credit interest rates (Berger and Udell 1995, pp. 356, 370, 377-379). In contrast, evidence on European bank-customer relationships provided mainly positive correlations in respect to credit interest rates (Degryse and Van Cayseele 2000, pp. 94-95; Hernández-Cánovas and Martínez-Solano 2006, pp. 317, 320, 324, 331-332 and Stein 2014, p. 380 and Angelini, Salvo and Ferri 1998, p. 941). However, frequently no significant effect of relationship duration on interest rates was found (Harhoff and Körtnig 1998, pp. 16-17, Machauer and Weber 1998, p. 13, Petersan and Rajan 1994, pp. 15-16 and Bharath, Dahiya, Saunders and Srinivasan 2008, pp. 16-19). The primary negative effect of relationship duration on interest rates for European companies compared to the contrary effect for American companies was found also by Hernández-Cánovas and Martínez-Solano (2006, p. 332) and Matias, Serrasqueiro and Cost (2002, pp. 104-105).

Independent of the companies’ location the correlation with credit interest rates was found to be higher for small companies than for micro, i.e. single-person, companies (Berger and Udell 1995, pp. 377-379 and Degryse and Van Cayseele 2000, pp. 94-95). It seems that European banks frequently utilized the increasing information monopoly to raise the interest rates (Stein 2014, pp. 380, 387 and Angelini, Salvo and Ferri 1998, p. 941).

According to the theory and the evidence provided, the following hypothesis is formulated:

**H1.1:** The longer the duration of bank-customer relationship is the higher is the credit’s interest rate.

### 6.1.2. Relationship duration and credit size

Compared to research efforts and studies on credit interest rates, credit size was hardly in researchers’ focus yet (Matias, Serrasqueiro and Cost 2010, pp. 104-105). Therefore only little evidence has been provided by existing studies.

Ksyicky and Norten conducted a meta-study on the basis of various American, European, Asian and Latin American studies. As the study had no focus on a specific size of companies, e.g. SMEs, or on a specific geographical region, the findings made are rather
generally. Nonetheless, results suggested that relationship duration has a positive effect on credit size. Thus, longer relationships provide companies with the benefit of a higher size in credit (Ksycky and Norten 2013, pp. 12-14, 17).

An US-study which focused on credit size was that published by Bharath, Dahiya, Saunders and Srinivasan. The authors not only analysed the credit price terms in respect to relationship lending, but also non-price terms. The effect of relationship-lending on credit size was similarly to that found in costs. Relationship-based loans were positively correlating with loan size, resulting in loans of higher volume compared to non-relationship based loans (Bharath, Dahiya, Saunders and Srinivasan 2008, pp. 16).

European based results were presented by Fernando, Chakraborty and Mallik. The data analysed comprised 226 companies each employing up to 500 people (Fernando, Chakraborty and Mallik 2002, pp. 8-9 and The Federal Reserve Board). The type of credit researched were credit limits on lines of credits (LOC loans) (Fernando, Chakraborty and Mallik 2002, p. 3). LOC loans are “[a] contract, [whereby] a bank promises to lend funds up to a limit, within a certain time period (usually a year), at preset price and non-price conditions.” (Fernando, Chakraborty and Mallik 2002, p. 5). Results revealed that relationship durations positively correlated with credit limits. The effect of an additional year of relationship had an impact of 1.6 percent increase in credit limit provided (Fernando, Chakraborty and Mallik 2002, p. 11). However, the effect deteriorates when relationship matures after year 5. Considering the size of the companies, large companies were compared with the full sample. As a result the impact of relationship duration weakened (Fernando, Chakraborty and Mallik 2002, pp. 13-14).

Moro, Maresch and Fink analysed the effect of information asymmetry on the size of credit granted to Italian SMEs. The authors represented the reduction of information asymmetry by four different variables: The quantity of information, its quality, timeliness and completeness. The fact that relationship lending is mainly based on the advantage of a decrease in information asymmetry, results are considered to be of high relevance. The correlation of each variable with the credit size proofed to be positive. Furthermore, it was revealed that the longer the relationship was and the more often the bank officer and the borrower had contact with each other, the lower was information asymmetry (Moro, Maresch and Fink 2015, pp. 134-137).

Portuguese companies were scrutinized by Matias, Serrasqueiro and Cost. Each of the 426 SMEs had a line of credit below 500.000 Euro. When tests were run on the determination of
credit size, relationship duration was intended to have a positive effect. However, results provided merely an insignificant negative correlation between relationship duration and credit limit. Further, the authors had an emphasis on the micro and small companies in the sample. Nonetheless, results were similarly to those rendered by analysing the entire data set. Credit lines were not considerably influenced by the duration of relationship. The authors considered that the mere duration is not an indicator for the quality of the relationship. Thus it is no measure of private information rendered by the companies to banks (Matias, Serrasqueiro and Cost 2002, pp. 107, 116, 120). The reason provided is similar to those of Harhoff and Körtnig when discussing the measure for quality (1998, pp. 16-17).

Studies, which had an emphasis on credit limits or sizes, were found to be rare. Independent of the companies’ geographical location evidences strongly suggest a positive correlation of relationship duration and credit size or limit (Ksycky and Norten 2013, p. 17; Fernando, Chakraborty and Mallik 2002, p. 11). A negative, however, insignificant correlation was found by Matias, Serrasqueiro and Cost (2002, p. 116). Splitting the results according to data’s origin of being European or American no clear suggestion can be made. For the duration of European relationships Fernando, Chakraborty and Mallik found a positive correlation, Matias, Serrasqueiro and Cost a negative one. For America evidence was merely provided in that relationship lending resulted in a higher size of credit compared to non-relationship based loans (Bharath, Dahiya, Saunders and Srinivasan 2008, pp. 16).

According to the previous evidence, the following hypothesis is formulated:

H1.2: The higher the duration of bank-customer relationship is the higher is the credit size provided.

7. Firm size

In contrast to relationship lending, which is characterised by the long term relationship between the bank and the company and constitutes a lending technique, factors which are not based on the relationship may have an influencing effect on credit terms and conditions too (Moro and Fink 2013, p. 928). Especially firm characteristic may have a significant influence on the actual credit provided. Companies which apply for a credit have to provide the bank with certain information, so that the bank can make a decision whether to lend the particular company funds or not. However, requested information has to be produced first and prepared for the purpose of credit application. Companies at a certain size are forced legally to provide basic information on a frequent basis to the public (§277 UGB). In contrast,
SMEs are hardly forced by law to produce similar information. Thus, they likely have to produce particularly the information required for the bank. The extent of the information required is substantial as Cowling and Westhead state (1996, p. 55). Therefore the process of information production, collection and preparation is bound to relatively high fix costs (Lehmann and Neuberger 1998, p. 4). Especially smaller firms are more inefficient in the information process, thus costs are higher per unit of information in comparison to that for larger companies (Dietrich 2012, p. 482). Due to these costs, SMEs may produce only the necessary information compared to larger companies, which are able to produce more and costliness information on their business. Thereby the bank may be in possession of more information on companies of a larger size.

However, some authors argue that smaller companies have leaner processes in producing information needed. Larger companies may have more complex information systems than smaller ones, which would result into a longer period of time needed to prepare the information adequately. If this is evident, larger companies would produce less information on their operations at a specific point in time, which would lead to more severe information asymmetries (Canton, Grilo, Monteagudo and van der Zwan 2012, p. 703).

But not only explicit information on the particular company may be relevant for a bank in its decision making process. Consider a company which had grown to a certain size. This may implicate that it had been successful in the past; otherwise it may not have had enough resources granted for growth. The implicit effect of former success is likely to reflect that the likelihood of credit repayment may be higher for these companies (Harhoff and Körting 1998, p. ii).

In addition to information asymmetries, Harhoff and Körting, considered that small firms may face a lack in available financing possibilities compared to larger companies. Findings made on their sample of German SMEs emphasise that the number of borrowing relationships increase with the size of a company (Harhoff and Körting 1998, pp. 7, 11). This means smaller companies tend to have less borrowing relationships and therefore more concentrated borrowing. Because of their limited funding possibilities, the bank’s bargaining power is likely to rise, while that of smaller companies is limited (Alessandrini et al. 2009, p. 287). Especially very small companies may have considerably limited bargaining power in credit negotiations (Cowling and Westhead 1996, p. 54 and Harhoff and Körting 1998, p. 7). Although the smaller companies are aware of the imbalance in bargaining power, due to the limited availability of other financial providers it may be in a bank-dependent situation (Dietrich 2012, p. 482). This situation is reflected in the theoretical considerations of Cowling...
and Westhead, who found the price for credit being relatively insensitive from the credit demand of very small companies (1996, p. 54). Higher prices will therefore decrease the credit demand by a factor below one. Although the price of credit for smaller companies is raised, they have to stick to their bank(s).

Taking the risk for a bank into consideration, the risk premium represents compensation for the risk of credit borrowing to a specific customer. Beck, Demirgüç-Kunt and Pería found that the risk of default is for smaller companies higher than for larger firms (2008, p. 14 and Cowling and Westhead 1999, p. 64). Banks therefore protect themselves of default losses in raising the interest premium due to higher risk involved (Geyer et al. 2009, p. 143). Furthermore, the risk of liquidity is an issue for the determination of the risk premium level. The implicated effect of past success of larger companies decreases the perceived liquidity risk, i.e. the risk that the borrower cannot pay the loan rate due, for larger companies (Serrasqueiro and Cost 2010, p. 110). In contrast, smaller companies are thought to have a higher risk for liquidity constraints (Obenaus and Weidacher 2006, p. 440). Taking the risks together, credit granted to smaller companies is entailed to higher risks (Beck, Demirgüç-Kunt and Pería 2008, p. 14 and Cowling and Westhead 1999, p. 64).

According to the theoretical thoughts of Cowling and Westhead on the relative price insensitivity of credit demand for very small companies, strengthen the probability for a limitation of credit size for smaller companies. In general, the larger the size of the credit granted is, the higher would be the relative financial damage to the bank in case of default (Tang 2010, p. 1561). Thus the bank may be forced to limit the credit provided to companies with a higher risk involved, i.e. smaller companies.

As the demand will hardly be influenced by a rise in the interest rate, the bank is able to raise its profit to a certain level by increasing the interest rate without extending the credit size (Cowling and Westhead 1996, p. 53-54). Thus, the exposed risk to default and illiquidity will be restricted although the relative amount of profit remains to be high.

The limitation of a certain riskier credit is furthermore emphasised by the Bankenverband Deutscher Banken, when considering portfolio management principles. Thereby lending a larger credit to a high-risk company will limit the future abilities of the bank to lend credits to other high-risk companies (Bankenverband Deutscher Banken 2010, p. 2). This derives from the limited distributable size of credit for the aggregated credit segment of high-risk companies. It may happen that the bank becomes unable to provide new credit to riskier companies when it had already lent the entire available funds for this credit segment.
One may argue that the bank’s relative costs for negotiations and the scrutiny process are likely to be relatively high when credit volume is too little. Although the bank may have raised the interest rate to compensate these costs, it may be forced to increase the size of the credit granted because the interest rates are calculated from the basis. Should the basis being too limited, a higher interest rate will not have a substantial change in absolute figures (Geyer et al. 2009, pp. 150-151).

7.1. Firm size and credit interest rate

Lehmann and Neuberger undertook a research on commercial loan pricing in Germany. The conclusions were drawn from a sample of 357 questionnaires sent to various banks in Germany. Among other factors, focus was laid on firm size. The authors found evidence for a correlation between credit interest rates and firm size. The larger the firm the less interest rate was charged for the loan outstanding (Lehmann and Neuberger, 1998).

The results of the study performed by Lehman and Neuberger emphasise those of Harhoff and Körting. The researchers gathered data on 1,399 SMEs with a maximum of 500 employees in Germany (Harhoff and Körting 1998). Although the measures of firm size differed from that applied by Lehmann and Neuberger (Harhoff and Körting measured firm size by number of employees, Lehmann and Neuberger by turnover-size) a negative correlation of credit interest rates with firm size was found (Lehmann and Neuberger, 1998; Harhoff and Körting 1998). Other determinants on the credit interest rate, which were assigned to represent firm characteristics, were age, financial distress, legal form, employment growth, recent change of legal form and ownership, the relation of profits to interest and debt to asset ratios. Among these determinants firm size had the highest influence on the credit interest rate. This suggests that firm size has a high influence when considering firm characteristics and their effect on the credit interest rate (Harhoff and Körting 1998).

In the study of Cowling and Westhead on bank lending decisions, the interest rate margins of loans were analysed on their determinants. The size of the firm was found to have the highest influence on the interest rate margin of small loans, i.e. loans with a volume under £20,000 (Cowling and Westhead 1996). This result highlights the high influence of firm size on credit interest rates found by (Harhoff and Körting 1998, p. 16). Firms accessing small loans had to pay a higher credit interest rate margin when being smaller in size. Size was thereby measured by the number of current employees. This effect was found to result from
the level of risk associated with the particular firm. While smaller firms bear a higher risk of default, bigger firms’ default risk is less (Cowling and Westhead 1996).

Cowling further researched the effect of firm size on the risk premium applied for a credit. The data set consisted of British companies with one to 197 employees and holding either overdraft facilities or fixed term loans. It was found, in accordance with his studies accompanied by Westhead, that firms who are relatively large in size did receive a lower credit interest premium than smaller ones (Cowling 1997, p. 3).

A contrary result was provided by Degryse and Van Cayseele when analysing more than 13,000 Belgium companies. Their classification of firm size was a combined measure of employee’s number and turnover. Small firms were defined as having less than ten employees and a turnover of below 250 million Belgium francs (approximately 7 million US-Dollar), medium-sized companies at least ten employees and a turnover of 250 million Belgium francs up to 1 billion Belgium francs (approximately 28 million US-Dollar) and large firms with an excess of 1 billion Belgium francs. The test results revealed that single-person companies pay lower credit interest rates than small firms. However, the results provided did not proof to be significant (Degryse and Van Cayseele 2000, pp. 94, 99).

Matias, Serrasqueiro and Cost did analyse a sample of 426 observations on Portuguese SMEs which held a short term line of credit. Each company did not exceed fifty employees and a turnover of seven Million Euro. The lines of credit held were below 500,000 Euro each. The measure of firm size applied was the natural logarithm of liquid assets. The analyzation of the effect of company size on credit interest rates revealed that company size significantly impacted interest rates. However, no significant effects could be found in splitting the total sample in those companies which are below and those which are above the median in size (Matias, Serrasqueiro and Cost 2010, pp. 107, 110, 115).

In contrary to the other studies presented, Dietrich did his research from the bank’s view. Thus, his data set consisted of fifteen Swiss commercial banks and their credit pricing models. Data was provided for different volumes of credit: up to 100,000 CHF, 300,000 CHF, 1,000,000 CHF and 5,000,000 CHF. Converted into Euro the segments were approximately: 62,000 Euro, 185,000 Euro, 620,000 Euro and 3,100,000 Euro.\(^5\) These credits were fixed-interest rate credits. By analysing a probable correlation between company size and credit interest rates a negative correlation was found. In respect to the costs of loans, banks did not differentiated between the sizes of the particular companies. Thus marketing and accounting costs were perceived to be fixed. However, evidence was found that it is the operational

\(^5\) Conversion rate CHF – Euro on 31.12.2006 was 1 : 0.6215 (http://www.finanzen.at/waehrungsrechner/schweizer-franken-euro)
costs which are a key driver in credit interest rates. By the analysis of the profit margin further insight was provided. Smaller companies had to pay a higher profit margin compared to larger companies, thus representing the higher negotiation power of the latter (Dietrich 2012, pp. 486-487, 489-490, 492).

The result of higher profit margins applied for smaller companies revealed by Dietrich emphasises the findings of Elsas and Krahnen. Their results derived from a German data set wherein company size was measured by turnover. Four classes of companies derived: Less than 72 Million DM, 72 – 120 Million DM, 120 – 250 Million DM and more than 250 Million DM (Elsas and Krahnen 1998, p. 1289). Converted into Euro segments that are approximately less than 36.8 Million Euro, 36.8 – 61.4 Million Euro, 61.4 – 127.9 Million Euro and more than 127.9 Million Euro (Bundesministerium für Finanzen 1999, p. 61). Therefore, the results derive from a sample of companies which comprises relative large companies. The credit interest premium applied, however, was found to be negatively correlating with company size. A reason considered is that smaller companies bear higher risk compared to larger companies (Elsas and Krahnen 1998, pp. 1289, 1293, 1301).

In contrast to focusing on a single country, Beck, Demirgüç-Kunt and Pería conveyed a global research among 91 banks of 45 countries on SMEs financing practices. In analysing the data sample, the authors found that SMEs had to pay higher credit interests and fees compared to large companies. This result was reflected in the additional data provided on the key drivers for bank involvement in the segment of SMEs. Far ahead banks in developed countries are driven by their perception of the SME segment being profitable, counting for 81 percent of bank’s key drivers.

Further, banks of developed countries were compared with those of developing countries. SMEs in developing countries were confronted with higher credit interest rates and fees compared to SMEs which accessed credit in developed countries (Beck, Demirgüç-Kunt and Pería 2008, pp. 3-4, 26).

Summarizing the insights made by previous research on credit interest rates and firm size, support is provided for a negative correlation between firm size and credit interest rates. However, no study on Austrian companies could be found, which provided insight for the credit situation in Austria.

On the basis of existent theory and evidence the following hypothesis is stipulated:

H2.1: The larger a firm is the lower is the credit’s interest rate.
7.2. Firm size and credit size

Compared to studies on the influence of firm size on interest rates, the influence on volume seemed to be hardly pursued. Therefore only limited evidence can be provided on these variables.

Alessandri et al. did analyse a sample of 526 Italian firms which were separated into small firms with eleven to 50 employees and large firms with 50 up to 500 employees. The investigation was made by three different periods in time beginning in 1993 and ending in 2003. The authors found that the requested size of volume by micro companies is rather small when the bank frequently rejects companies with high risk inherent. Renegotiation for a smaller seized credit is by these banks hardly permitted. The authors further found that among small companies it is the smallest ones which are most rarely rationed by banks. Alessandri et al. conclude on the basis of this finding that it reflects the fact of the initially request for small sized credits (Alessandri et al. 2009, p. 290).

The results of Alessandri et al. stand in contrast to that made by Beck, Demirgüç-Kunt and Pería in analysing banks worldwide. The latter found that the size of the loan was taken into account in merely one to two percent of the banks’ lending criteria to SMEs. This indicates that the size of loan had hardly an effect on the decision of loan approval. However, data suggested further that it is especially the segment of large companies that is not applied with the criteria of loan size. In case of loans for SMEs the importance of the loan's size is generally higher (Beck, Demirgüç-Kunt and Pería 2009, p. 38).

Matias, Serrasqueiro and Cost tested their sample of Portuguese SMEs not only for credit interest rates but also for a correlation between company size and credit size. Firm size proofed to have a highly positive impact on the credit limit (Matias, Serrasqueiro and Cost 2010, pp. 116-117).

Similarly Dietrich provided not only insight into the correlation of company size and credit interest rates but also with loan size. Results provided a positive correlation of loan size and company size. Thus, companies in Switzerland which are lager in size are served with a higher volume of credit (Dietrich 2012, pp. 491-492). Unfortunately merely limited emphasises was laid on this correlations, thus no explaining effects were provided.

Moro, Maresch and Fink analysed data, which was accessed not from SMEs but banks. The 16 Italian banks provided data on the relationship with their SME-customers. The measure of
firm size applied was that of annual sales. The analysis revealed that larger companies are granted more short-term credit (Moro, Marsch and Fink 2015, p. 133).

The results on the influence of firm size on credit volume indicate a positive correlation in European countries. However, information on this relationship is hardly provided and the effort made seemed frequently to be a by-product of the relevant studies.

Thus the following hypothesis is stipulated:

H2.2: The larger a firm is the higher is the credit size provided.

8. Firm age

Harhoff and Körntig refer to a company’s quality when considering the effect of firm age on credit terms. According to the authors the older a company is, the longer it survived on the market under competition (Harhoff and Körntig 1998, p. ii). These theoretical considerations are represented by the rate of bankruptcy of companies in Austria:

Figure 4 indicates less probability of bankruptcy for companies that are relatively old in age. Especially in the first eight years the probability of insolvency is considerably high. Therefore the risk of default is thought to be lower for companies that are older.
The quality of a company may considerably derive from the quality of its managers. In leading the company well and making appropriate decisions they impact the general development of the company. According to Huyghebaert and Van de Gucht the quality of the companies’ managers is highly related to the issue of adverse selection (2007, p. 105). Although Bebczuk refers to the selection between some projects, adverse selection is also evident in bank’s selection of the best borrower for a particular loan (2003, p. 7). Especially young companies, i.e. start-ups, are thought to bear risk for adverse selection. Due to the inherent costs of information and the lack in information on younger companies, banks may have to bear higher costs for those compared to older ones (Van Caneghem and Van Campenhout 2010, pp. 349-350) Therefore banks may be more reluctant to distribute loans to start-ups. However, when granting a loan to a young company, banks may provide them with a larger amount of credit, to offset the higher costs for information obtain (Huyghebaert and Van de Gucht 2007, p. 108).

Another issue which arises when considering the company age is moral hazard. Once a company did obtain a credit by a bank, the company will make its investment. Although the reason for credit was bespoken within the process of credit application, the company may consider investing the credit into some alternative (Akerlof 1970 cited by Nayyar 1990, p. 514 and Huyghebaert and Van de Gucht 2007, p. 109). The risk that young companies act in fraud may be limited by granting smaller sizes of credit (Huyghebaert and Van de Gucht 2007, p. 109).

Either considering adverse selection or moral hazard, both are linked to some degree to information asymmetries. Young firms may be especially affected by information asymmetries. Due to their limited credit history, the assessment of the liquidity risk is more difficult (Peterson and Rajan 1994, p. 6, Schmoll 1992 as cited by Barthruuff, C. 2014 and Canton et al. 2012, p. 703). Additionally the risk of default is eminent for younger companies, thus credit worthiness may be relatively worse. The risk for the bank should be relatively high in granting credit to young companies (Blanchard and Illing 2009, p. 193).

In comparison to older companies, the relationship with the bank should be weaker due to the relative short time of existence (Peterson and Rajan 1994, p. 3). Therefore the costs of credit may be higher, especially for American companies (Berger and Udell 1995, pp. 356). In contrast, strong ties to banks seem to result into higher credit interest rates in Europe (Stein 2014, pp. 380, 387 and Angelini, Salvo and Ferri 1998, p. 941). Younger companies may not be that affected by this negative effect, as they are not that long in existence.
Moreover, young companies may be less exposed to lock-in effects. This may offset the possible negative effect of information asymmetry on credit interest rates charged.

8.1. Firm age and credit interest rate

Cowling and Westhead investigated whether or not firm size matter in lending decisions made by banks. In their analysis of 272 British small companies with less than 200 employees the authors made findings on the credit interest rate (Cowling and Westhead 1996, 58). The effect of firm age was rather small on the interest rate margin of small loans, i.e. those with a volume up to £20,000. However, for loans in excess of £20,000 firm age was found to be a determinant of the interest rate margin. The older the firm the less credit interest rate margin was applied to the loan. Cowling and Westhead concluded that this effect may derive from the individual track record of each firm. Thus young companies, which have a lack in firm history, are riskier compared to more established companies (Cowling and Westhead 1996, 64-65).

An analysis of U.S. companies was made by Petersan and Rajan. They investigated a data sample of 3,404 companies, which had a median in firm age of 10.5 and employed each less than 500 people. Results revealed a significant negative correlation between firm age and credit interest rates. Further, a marginal declining effect on the interest rates was found. By a comparison of companies younger than ten years with those of ten years and older the decreasing effect on the credit interest rates through age became smaller. Additionally it was found that the effect of firm age was more than twice weaker than that of firm size (Petersan and Rajan 1994, pp. 6-7, 13-15).

The negative correlation of firm age and interest rates was emphasized by Harhoff and Körntig who analysed short time finance in form of lines of credit. They drew their data from a sample containing 1,399 German companies, with a median of eleven in firm age and less than 500 employees. It was found that young firms had to pay higher credit interest rates compared to established companies. The negative correlation of firm age and credit interest rates proved to be significant. In the study it was assumed that the company's age indicates its reputation (Harhoff and Körntig 1998, pp. 9, 13, 15-16). As reputation is based on some previously achieved result, the authors indirectly accounted a possible influence of a company’s track record.

As Petersan and Rajan, Lehmann and Neuberger found that firm age has a non-linear impact on credit interest rates. The authors based their research on a data set of 357
questionnaires accessed from German banks. Banks especially attracted very young companies, i.e. start-ups, which led to higher competition within this segment. As a result the credit interest rates offered were relatively low. The authors found an explanation in the relatively secured status of start-ups in their early beginning. So, governmental guarantees and other collaterals are provided within the first years, which minimize the risk for banks. However, companies of the age of 2-6 years were significantly found to pay the highest credit interest rates. In contrast to “normal” banks, which charged the highest credit interest rate within these years, housebanks offered the lowest credit interest rates within these years (Lehmann and Neuberger 1998, p. 14).

Degryse and Van Cayseele exploited a data sample of 3.073 loans accessed through Belgium banks. Their analysis concentrated on companies with an age of 5 to 6. Although the age of firms researched was limited, they found that the credit interest rate decreased. Further it was considered, that the age of firm may be a proxy for the public information component. In comparison to the private information component, which was reflected by the length of relationship, age did contribute less than the relationship duration to the effect on credit interest rates (Degryse and Van Cayseele 2000m, p. 102).

Angelini, Salvo and Ferri studied Italian companies which showed liquidity constraints. In average the 1.858 small companies were 18.8 year in age, thus the data sample represented rather old companies compared to other published studies. Although results suggested a negative correlation of firm age and credit interest rates, it was no significant (Angelini, Salvo and Ferri 1998, pp. 935, 940).

The aging effect on the borrowing costs of Japanese companies was scrutinized by Sakai, Uesugi and Watanabe. The data basis was extraordinary large as it covered almost sixty percent of all small companies in Japan. In the analysis a downward slope was found. Thus, the older the company becomes, the less borrowing costs are. The effect vanished by the age of fifty. The authors had the opportunity to further differentiate between defaulting and surviving companies given to the data provided on defaults. In comparing these two types of companies on the basis of their borrowing costs, defaulting companies had to pay higher costs for credit (Sakai, Uesugi and Watanabe 2008).

Based on the evidence provided by existent published studies the following hypothesis is formulated:

H3.1: The older a firm is the lower is the credit’s interest rate.
8.2. Firm age and credit size

Huyghebaert and Van de Gucht conducted a study on determinants of the financial structure of young firms. The data set consisted of 244 Belgium companies operating in the manufacturing industry. They found that banks face increased adverse selection and risk shifting risks in dealing with start-ups. These derive from the absence of firm history and reputation but also from a high risk for failure. In the case of absent screening, adverse selection risk was minimized by reducing the size of the credit and thereby the size of exposed credit. Although credit was provided to start-ups, borrowing in the whole segment seemed to be restricted by the banks. Especially banks did restrict their financing of start-ups in high-risk industries which, moreover, held a large proportion of highly liquid assets. Reason is the risk of moral hazard as these companies may relatively easily change their objects of investment (Huyghebaert and Van de Gucht 2007, p. 125-126, 128-129).

In regard to the existent empirical evidence, the following hypothesis is formulated:

H3.2: The older a firm is the higher is the credit size provided.

9. Method

9.1. Measuring instrument

Data were collected by interviews, which based on a mainly full-standardized questionnaire. The interviews were carried out by telephone in form of a two-step interview. In the first step the interview partner was asked questions which tested whether the company represented was appropriated for the study. Ultimately companies which were bank financed through loans or/and overdraw facilities and employed less than 250 employees were appropriate for the entire interview. Of the 56 questions, four addressed basic information of the interview partner’s person, seven questions basic information of the company, 27 questions investigated the company’s housebank, the bank officer and the relationships with them. The remaining 18 questions investigated the current credit situation and the latest credit applied for. The questionnaire provided the interview partner mainly with single or multiple choice answers, which were arranged according to an ordinal or interval scale. If appropriate, rational scales were used, which could occasionally be filled with an individual, one-word answer when necessary (Schuster 2010). Merely the question on the company’s year of foundation was formulated as an open question.
9.2. Conduction

The telephone interviews were conducted in the period of February to November, 2016 by five interviewers. Contact data of potential Austrian companies, which were appropriate in size, was selected from the national Austrian database Firmenbuch.\(^6\) So far research on credit interest rates and credit size is highly limited for Austria, which is the reason for a general, unspecific sample of companies being recruited for the study. To receive a relative holistic representation for Austrian SMEs, to gain a general idea of the Austrian situation, companies contacted were located all over Austria and further not limited to any specific sector. Contact data to the person responsible for financing of the specific companies was not provided in the contact data list, thus the interviewers had to inquire for that person. The interviews were arranged with the person being responsible for the company's credit and having direct contact with the housebank. The actual topic of research was not provided by the interviewers. The interview was conducted in a fixed order by the interviewers. Once a company neglected having a loan or overdraft facility at some bank or being larger than 249 employees within the introduction questions, the interview was being stopped. To build higher trust with the interviewee and increase the willingness to disclosure relevant information within the conversation no direct question on credit figures were being asked. Thus, questions were designed in a way the interviewee had to compare his expectations with the actual situation. While conducting the interview, the interviewer filled the online questionnaire at the computer according to the interviewees’ answers. Thereby, fully completed interviews were held with 197 Austrian SMEs.

9.3. Descriptive Analysis

Each of the inquired 197 SMEs is legally located in Austria. Most companies of the data sample employ less than 20 employees (47.2 percent). The number of larger companies is relatively balanced between the group of 20-49 employees (26.9 percent) and the group of 50-249 employees (24.9). The standard deviation is .833 and the variance .693. The range in SMEs age reaches from 3 years to a maximum of 181 years, with a median of 29 years, a standard deviation of 35.745 and a variance of 1277.683. The length of bank relationship with the housebank is for 23.4 percent of the companies below or equal to 10 years. In contrast, almost three of four companies have a longer relationship than 10 years with their housebank (74.1 percent). The standard deviation notes at .973 and the variance at .948. All in all, the entire data sample comprises a large fraction of small companies, of young companies and of companies with a relatively long established bank relationship.

\(^6\) Austrian companies have to be registered in the Firmenbuch for receiving their legal status.
Table 1 - Descriptive statistics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean value</th>
<th>Standard deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you describe</td>
<td>197</td>
<td>0</td>
<td>6</td>
<td>1.25</td>
<td>.048</td>
<td>.681</td>
</tr>
<tr>
<td>your firm's current</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>situation as regards</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>debt financing from</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>banks?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was the interest rate</td>
<td>186</td>
<td>0</td>
<td>4</td>
<td>2.03</td>
<td>.053</td>
<td>.720</td>
</tr>
<tr>
<td>negotiated on the latest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>loan you received</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How long have you been</td>
<td>193</td>
<td>0</td>
<td>5</td>
<td>4.54</td>
<td>.070</td>
<td>.973</td>
</tr>
<tr>
<td>a client in this bank?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SME_employees</td>
<td>196</td>
<td>0</td>
<td>3</td>
<td>1.77</td>
<td>.059</td>
<td>.833</td>
</tr>
<tr>
<td>SME_age</td>
<td>187</td>
<td>3.00</td>
<td>181.00</td>
<td>40.8556</td>
<td>2.61391</td>
<td>35.74470</td>
</tr>
</tbody>
</table>

9.4. Variables and measures

9.4.1. Dependent variables

The interest rate is available as specific figure for the interviewee. This lies in the nature of
the criteria for the particular interviewee with whom the interview was held; the person has to
be in direct contact with the bank and thereby has fully knowledge about the company’s
financials. Nonetheless, it is not a variable which is easily straight forward to measure within
the context of this study. First, the interviewee should feel comfortable enough to answer the
question truthfully. The specific interest rate is non-disclosed information for the company
and, further, considered to be relatively critical information. Asking directly for the level of
interest rate may lead to a stop of the interview by the interviewee or to inaccurate answers.
Second, depending on the particular current and past economic environment but also on the
kind of interest mode, the interest rate may be hard to be compared with each other by a
specific point in time. Especially fixed interest rates are highly dependent on the economic
environment at the time of credit settlement. Therefore, interviewees were asked to compare
personal expectations at the time of credit application with the actual interest rate agreed on
by the following question: “Was the interest rate negotiated on the latest loan you received”.
The variable was measured by the following single-choice answers possibilities: The interest
rate was (1) higher than you expected, (2) as high as you expected, (3) lower than you
expected or (4) don’t known.
The variable credit volume is precisely measurable, but similarly to interest rates, may constitute critical information. According to Austrian Business Law only companies with the legal form of GmbH and AG are forced to publish financial documents (§277 UGB). Companies with other Austrian legal forms do not have the obligation to publish. SMEs frequently are of other legal forms, especially if they are relatively small in size. Therefore, the companies can hide any debts from the public. Due to the sensitivity of the information on credit volume held, the interviewees are asked indirectly. The question addressing the possible volume of credit was: “How would you describe your firm’s current situation as regards debt financing from banks?”. The following single choice answers were provided: (1) We receive all the credit we need, (2) we do not receive sufficient credit but we can manage nevertheless, (3) we do not receive sufficient credit and insufficient funding causes some problems, (4) we do not receive sufficient credit and insufficient funding causes severe problems, (5) our firm does not currently have bank loans and (6) don’t know.

In regard to the distribution of the relevant variables, the answers regarding the interest rate are highly concentrated on “equal to what you expected” (value 2). Merely some companies found the interest to be “higher than you expected” (value 1) or “lower than what you expected” (value 3).

The distribution in answers for the firm’s current financial situation regards bank debt finance is relatively concentrated on the positive side, whereby value 1 represents “We receive all the credit we need.”
9.4.2. Independent variables

Relationship duration between a SME and its housebank was measured by the years since the company became customer of the housebank. Basing the measure of strength for relationship on the years it is already established, provides the opportunity to make test results more comparable to existing studies. The classification of housebank was not limited, therefore leaving the interviewee to decide by once own on the specific bank relationship. The questionnaire contained the question “How long have you been a client in this bank?” which allowed the interviewee to classify the relationship within one of five ranges of duration: (1) Less than 1 year, (2) 1-2 years, (3) 3-5 years, (4) 6-10 years, (5) more than 10 years and (6) not known.

The size of the company was measured by the number of current employees. Although alternative measures for size like market capitalisation, book value and sales were considered, these may be not or merely hardly applicable for SMEs due to availability of the data. Some may not be known by the interview partner and some fluctuate more easily comparted to the number of employees. Additionally the official company size definition of the Austrian Chamber of Commerce is based on the number of employees too and future research results may be more comparable with the results of the present study by applying this type of size measure. Interviewees were presented the question “How many employees
does your firm currently have?”. The following answer possibilities were provided: (1) 1-20 employees, (2) 21-49 employees, (3) 50-249 employees and (4) more than 250 employees. Companies with more than 250 employees were considered to be large companies, whereby the data were excluded from the final data sample.

The dependent variable company age is measured by the infant foundation of the company. Although the business manager or owner may have changed or the company itself transformed into another legal status, the history of a company starts by the first time it does business. The history of a company, independent of changes regarding managers and owners, is considered to be of relevance for credits (Peterson and Rajan 1994, p. 6, Schmoll 1992 as cited by Barthruff, 2014 and Canton et al. 2012, p. 703, Blanchard and Illing 2009, p. 193). In contrast to relationship duration and company size, age was not arranged as an interval scale, but as an open question. In case the interviewee could not name the specific year, the interviewer pleaded to name the time of foundation estimated for 5 years. The specific formulation of the question was as follows: “In what year was your firm founded? If you do not know the exact year, please estimate the founding year for instance rounded to the nearest 5 or 10 years. An educated estimate is a useful response to the researchers.”

A considerable large fraction of long relationships are represented in the data sample. With a major weight on “more than 10 years” (value 5), most companies hold long term relationships with their bank. Of the remaining durations merely “3-5 years” and “6-10 years” show noticeable weight, whereas “less than one year” and “1-2 years” are hardly represented.

Figure 7 - Distribution of relationship duration
The visualized distribution of SME_employees shows that especially small companies are represented in the data sample. The values 1 to 3 represent "less than 20", "20-49" and "50-249" employees.

Figure 8 - Distribution of SME_employees

SME_age shows that mostly young companies, in regard to the maximum firm age of 188, participated in the study. Companies above the age of 100 years were relatively little represented.

Figure 9 - Distribution of SME_age
### 10. Findings

The influence of the variables relevant to the hypotheses, which were constituted in the last sections, is being measured and tested by a correlation analysis, i.e. Pearson-Correlation.

<table>
<thead>
<tr>
<th></th>
<th>How would you describe your firm’s current situation as regards debt financing from banks?</th>
<th>Was the interest rate negotiated on the latest loan you received</th>
<th>How long have you been a client in this bank?</th>
<th>SME_age</th>
<th>SME_employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was the interest rate negotiated on the latest loan you received</td>
<td>Pearson-Correlation: - .229**, Sig. (2-sided): .002, N: 186</td>
<td>- .108, 186</td>
<td>- .074, 186</td>
<td>- .041, 186</td>
<td>- .575, 186</td>
</tr>
<tr>
<td>SME_employees</td>
<td>Pearson-Correlation: -.012, Sig. (2-sided): .873, N: 196</td>
<td>-.041, 196</td>
<td>.053, 196</td>
<td>.163*, 196</td>
<td>.025, 196</td>
</tr>
</tbody>
</table>

Table 2 - Correlation matrix

It is interesting that the correlation results are rather low, ranging from -.108 to .076. Especially correlations based on the credit size were extraordinary low.

Relationship duration and the credit interest rate show a correlation of -.108 and thereby the highest in strength. It is interesting that the direction of the effect is negative. Discussion on European studies emphasise that longer relationships increase the interest rate of commercial credits. The correlation’s strength is, however, in absolute terms rather low and statistically not significant (.143). This result is not surprising, compared to previous studies. Frequently results were proofed being not significant; especially in studies scrutinizing American companies (compare Petersan and Rajan 1994 and Bharath, Dahiya, Saunders
and Srinivasan 2008). H1.1 which postulated that longer relationship duration increases credit interest rates is therefore rejected.

The correlation of company size and the credit interest rate shows a value of -.041. Although the correlation shows a negative sign and meets expectations, it is relatively low in strength and, moreover, not statistically significant (.575). H2.1 postulated that larger companies will benefit from lower interest rates on credits, but is not confirmed by the given data.

The correlation value of company age and credit interest rate is -.074. Similarly to size it shows the expected negative effect. However, it is relatively low in strength and not statistically significant (.321). H3.1 proposed that older companies will be granted a credit interest rate. The results did not confirm this hypothesis.

The correlation of relationship duration and credit size provided shoes a value of .060. Although the sign of the correlation is positive, data did not support the correlation being significant (.408). Furthermore, the strength is the lowest of the correlations tested.

Therefore, H1.2, which constituted a positive effect of relationship duration on credit volume, is rejected.

The test of the correlation of company size and credit size provided a value of -.012. The strength is considerably low and the correlation not significant (.303). H2.2 postulated a positive correlation of the two variables. However, this hypothesis is rejected.

Result of the correlation of company age and credit size is a value of -.076. Besides, it proofed to be not significant (.303). H3.2, which constituted a positive correlation between firm age and credit size, is not supported and therefore rejected.

A regression was tested with the dependent variable “Was the interest rate negotiated on the latest loan you received”. As predictors served the variables contact person (age), SME legal status, contact person (sex), SME_age, How long have you been a client in this bank? and SME_employees.

<table>
<thead>
<tr>
<th></th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>3,067</td>
<td>6</td>
<td>.511</td>
<td>1.048</td>
<td>.396</td>
</tr>
<tr>
<td>Residual</td>
<td>84,377</td>
<td>173</td>
<td>.488</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>87,444</td>
<td>179</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 - ANOVA, dependent variable: “Was the interest rate negotiated on the latest loan you received"

The regression proofed to be not significant.
A separate regression was tested with the dependent variable “How would you describe your firm’s current situation as regards debt financing from banks?”. As predictors served again the variables contact person (age), SME legal status, contact person (sex), SME_age, How long have you been a client in this bank? and SME_employees.

<table>
<thead>
<tr>
<th></th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>3,106</td>
<td>6</td>
<td>.518</td>
<td>1,148</td>
<td>.337</td>
</tr>
<tr>
<td>Residual</td>
<td>80,278</td>
<td>178</td>
<td>.451</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>83,384</td>
<td>184</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4 – ANOVA, dependent variable “How would you describe your firm’s current situation as regards debt financing from banks?”

Similarly to the first regression, the result on the second was not significant.

11. Discussion

Empirical analysis shows that stronger relationships between the company and the housebank do not have a significant influence, neither on the interest rate nor on the credit size granted. The advantages from relationship lending for the company base on the assumed frequent transactions of quantitative and qualitative information (Moro, Maresch and Fink 2015). Udell and Berger argue that it is the latter, which contributes mainly to positive effects for the companies (Berger and Utell 2002, p. 48 and 2006, p. 2951). This qualitative information is hardly possible to be stored and gathered. Various studies showed that most of this information is accessed by the bank officer, who handles the credit process directly, and is made more or less available by the same for the entire bank (Berger and Utell 2006, p. 2951; Ferrary 2002, p. 685; Moro, Fink and Kautonen 2012 and Trönnberg and Hemlin 2012, p. 367). However, distribution of qualitative information is relatively limited. Thus, the bank officer ultimately holds most of the information, even long termed. Personnel fluctuation in the bank officer position, which seems to happen rather frequently, may erase any positive effects of a longer relationship as a considerable amount of qualitative information, gathered on the single company, gets lost thereby.

Theory emphasises that the effect of relationship on the credit interest rate is the outcome of the tension between economies of scales and the lock-in effect. The information accessed by the bank officer represents the concept of economies of scale. Frequent information on the company accessed by the banks provides economies of scales and thereby lowering the
costs for each further transaction, e.g. credit process (Ferrary 2002, p. 685 and Gropp, Gründl and Güttler 2012, p. 30). Considering the implication for the composition of the credit interest rate, the operating costs will be lowered and thereby the credit interest rate can be decreased. Yet, by a possible high personnel fluctuation rate, these economies of scale cannot be realised by the banks.

The oppositional force, which is the lock-in effect, becomes evident when banks exploit the relationship by offering higher credit interest rates. Considering lock-in effects, the considerably competitive Austrian banking landscape has to be acknowledged (Schaeck and Ciha, 2007). Competition for new customers should be high and offers made to potential customers relatively attractive. Thus, banks may run into danger of losing customers, when exploiting existing relationships. Therefore, even though relationships in Austria are rather long term, banks cannot afford to exploit the same (Jäger and Redak 2006). Lock-in effects may ultimately not be relevant for Austrian companies, as banks cannot afford to increase interest rates significantly. Summarized it seems neither economies of scales are achieved nor does the bank exploit relationships by a lock-in. This results into a balanced situation, whereby the interest rate for credits is not affected.

Another aspect is the increasing introduction of standardized ratings in Austrian banks. Relationship lending is mainly based on the advantage of a decrease in information asymmetry (Moro, Maresch and Fink 2015). When the information needed becomes more explicit and clearly, the company manager is better able to provide the bank with relevant information. The quality or/and quantity of the information needed is more likely provided sufficiently by the company manager. This implicates that the positive effect of relationship duration on the accessed information thereby vanishes and the information asymmetry as well.

The result of the non-significant correlation between relationship duration and credit size may be best explained too by frequent personnel fluctuations in the bank officer’s position as well by the introduction of ratings. If the size of a specific credit is being sized up, the bank officer would only endorse this, if it can be justified by the given data. Experience with the specific company cannot fully evolve, when the bank officer is only responsible for the customer for limited period of time. Therefore, the general relationship with the bank, whether it is long termed or not, may not benefit the company when applying for a higher credit size. Taking ratings into account, the bank officer hardly can influence the outcome. Therefore, even though qualitative data is present and could be utilized by the bank officer when deciding on the specific credit size, the bank officer is bound to the rating’s outcome.
The correlation between company size and credit interest rate does not proof being significantly. The same is true when correlating company size and credit size. This result is surprising since previous studies on European SMEs occasionally found that company size has not only a significant, but also a relative strong influence on credit interest rates (Harhoff and Körting 1998 and Cowling and Westhead 1996). The increasing importance and introduction of standardized ratings may request company information, which is more easily accessible and produced, as the necessary information is more obvious for the company’s manager. Thus, the quantity and quality deficits of smaller, opaque companies may be overcome (Van Caneghem and Van Campenhout 2010). Thereby company manager could prepare themselves more effective for the appointments with the bank officer. Further, credit ratings favour quantitative over qualitative information. The first could be more easily prepared by the company’s manager than qualitative information. For example the yearly financial statements, which are often produced by the tax consultant, bear lots of information on the company. The disadvantage of small companies, which do have more limited resources in information preparation compared to larger ones, would thereby decrease. The implicit effect of former success, as stated by Harhoff and Körting, may hardly be regarded anymore with the introduction of standardized ratings (1998).

Additionally Harhoff and Körting consider that small firms may face a lack in available financing possibilities compared to larger companies (1998). Therefore, the bank’s bargaining power is said to be higher for larger companies, while that of smaller companies is limited (Alessandrini et al. 2009). Dietrich referred hereby to a bank-dependent situation for the companies (2012). Considering the high competition among banks, product prices should be relatively homogenous. Thus, a bank, which raises the interest rate for a specific credit not fairly, may relatively easily lose the customer due to bank-switching. Even, if a company calls for a higher size of credit, the bank may be relatively forced to serve the customer. Otherwise, irrelevant of the company’s size, the customer will apply for a larger credit at another bank. Within Austrian commercial bank-customer relationships the bargaining power will therefore be at the customer-side, relatively independent of the company’s size.

The non-significant result regarding the correlation of firm age and credit interest rates is, although the effect of firm size is commonly stronger than that of firm age, extraordinary surprising (Petersan and Rajan 1994 and Harhoff and Körting 1998). Data on the rate of bankruptcy measured in years after foundation clearly shows, that the older the company is, the lower is the likelihood for bankruptcy. Especially companies, which are older than eight years have a relatively low rate in bankruptcy. As the companies in the data sample are 29 years in age at median, companies are relatively matured in age compared to companies...
filing bankruptcy. So, the probability for bankruptcy may become marginally and insignificantly at some point in firm age. Thereby, the differences in liquidity risk and the risk of default among older companies is considered relatively negligible.

In accordance with the marginal bankruptcy rate of older companies, the issue for adverse selection becomes less important. At some point in firm age it may become relatively irrelevant in which company the bank invests as the risk is anyway relatively low. This suggests that the range of risk premium, and the credit interest as such thereby, is relatively similar among these companies. Companies, which are older, have a longer history, which is available for the bank. Thus, moral hazard may become more controllable for the bank. Risk is then too, not priced that strongly into the credit interest rate. If the risk for moral hazard or adverse selection is low, the bank officer may lower restrictions on the credit size. Moreover, the same should be true, if the liquidity risk and the risk of default is limited. Additionally even if the company shows a considerable history, because of its matured age, it may be not always that relevant to the bank officer. This may be especially the case, when the company is run by managers and not by the owner. Managers may be employed for some limited time. As in the former years the company was run by another manager, the bank officer may relate the aspect of history always to the actions of the relevant manager of that period. Taking into account the high fraction of older companies in the data sample, the non-significant results of company age are not that surprising anymore. For a better understanding of these possibilities, correlation testing, especially with a data sample that compromises a higher fraction of younger companies, would be necessary.

The measures applied for the relationship duration was the years since the SME became customer of the housebank. This measure was applied in various studies before and yielded relatively often into the insight, that relationship duration does not contribute to credit interest rates. However, for Germany, Spain and Belgium a correlation was found, thus, an influencing effect was considered to be relevant for Austrian SME’s credits too. Debt concentration as another measure of relationship strength would have been an alternative to duration. Occasionally it better explained the effect on credit interest rates and therefore provides another point of view, as relationship duration has proved to have no effect on credit interest rates. In respect to credit size, relationship duration was found in previous studies to be relatively often a contributing factor to the credit’s outcome. The application of debt concentration may bear some power of explanation for Austrian SMEs.

Taking into account that credit interest rates and credit size were measured by the expectation compared to the actual outcome, expectations seems to be relatively well met.
This suggests that banks either inform and advise their commercial customers well or that the companies’ managers have a relatively good knowledge in the credit market conditions.

Considering the measure of firm size applied, that of current number of employees, other measures applied may result into another result. Data on annual sales and on book value of total property assets may be accessible. In Austria companies are frequently measured by the employees’ number, the annual sales and balance sheet total. Therefore, the latter two measures may be an appropriate alternative in measure. Nevertheless, the number of employees should be more comparable with international studies than the other two alternatives of measure.

12. Conclusion and implications

Relationship duration with the housebank has proved to be not influential on the credit interest rate or credit size of Austrian SMEs. This is curious, considered that most companies analysed had been customer of the housebank since more than ten years. In respect to the credit interest rate and credit size it seems that SMEs do not benefit from longer relationships with housebanks in Austria. They likely are not granted with a higher size in credit or a discount on its interest rate. This leads to the idea that Austrian SMEs may profit when changing the bank for an initial discount or higher size in credit. Under the current competitive banking landscape even smaller companies may have enough bargaining power to discuss for some benefit with a bank when considering moving to it. This may be especially relevant, when the SMEs are considered to be highly creditworthy.

Austrian SMEs further seem to not benefit from changes in firm size in respect to credit interest rates or credit size granted. Although the popular idea, that a larger company is being generally less exposed to risk, is prevailing, banks do not regard this in setting the final output. Managers of Austrian SMEs, applying for a credit, therefore, should not put too much weight on building the argumentation upon the company’s size in discussions with the bank officer. Analysation suggests that this will not contribute to the final credit specifications. Furthermore, when establishing the next year’s budget or calculations, controllers, especially those of rapid growing SMEs, should not include a discount factor on the interest expenses for future bank credits based on the larger size of the company. However, reversely, analysation does not suggest adding a premia on future interest expenses of projected new credits. The same is valid for the planning process of the financial resources size, which can be accessed from the bank. Potential credit size seems to be not influenced by the company’s larger size.
The results on the influence of firm age revealed to have no effect on credit interest rate and credit size. It seems that banks do not consider the age of the applying company in their decision on the final credit interest rate or size. This suggests, like the result on company size, that Austrian SME managers should not overestimate the relevance of the company's age so to speak the controller when budgeting for the upcoming year.

Generally the housebank-concept and the benefits emerging from the unique relationship were not confirmed by the analysis. This suggests that companies should not overestimate the gains through binding themselves to a specific bank. Rather, from the monetary or quantity perspective, they should consider to inquire several different banks for a credit offer, when a credit is needed. Nevertheless, the company's financial manager should assess the potential gains against the effort. Thus, especially if a relative high volume in credit is needed, multiple inquiries at banks may yield in a lower credit interest rate or a higher credit size than relying solely on the housebank.

13. Limitations and directions for future research

First, data were accessed through the instrument of highly standardized interviews conducted by telephone. The interview bears the risk of social bias whereby the interviewees tend to answers which are in congruency with the cultural and social conformity. This may be of higher relevance for company managers, who represent an entire company. Additionally, if a question is not understood correctly and the interviewee requests for explanation, the interviewer may influence the interviewee by providing additional information. Especially for more complex questions interviewees may come considerably fast to their cognitive limitations. Further, the dependent and the independent variable were surveyed at the same time by accessing each data within a single, once-time interview. A longitudinal study with questionnaires on which the company managers work on their own, would overcome these limitations better and provide an enhanced understanding. Moreover, qualitative interviews will provide enhanced insight in future relevant research topics.

Second, relationship duration was measured at the same time with the expected credit interest rate. At the time the credit was accessed, the relationship duration was shorter than at the point in time when the interview was executed. Furthermore, merely companies holding a overdraw facility or term credit were researched. Those which credit inquiry was denied by the bank were not represented in the study. These emphasise the importance of follow-up, longitudinal studies and a certain focus on credit denied companies.
Third, the financial environmental situation is likely to have an impact on the expectations of the SMEs manager. It may be that investor’s irrational behaviour, which can be seen on financial markets at certain periods in the economic cycle, is also true for debtors. Thereby the expectations on the credit’s interest rate or credit size may be deluded depending on the current phase of the economic cycle. This emphasises further the importance of a longitudinal study.

Fourth, answers selectable were frequently limited. For instance, the companies accessed had mostly long term relationships lasting for more than ten years. The scale of relationship duration measured merely more than ten years as the highest selectable answer. The data resulting from the interviews thereby were relatively compressed. Future researchers are well advised to regard the especially long term bank relationships in Austria by providing appropriate scales.

Fifth, the sample is limited in size and the analysis is based solely on this unique data. Therefore the result is not a generally valid, but valid for the specific Austrian sample. By basing future studies on samples containing a higher number of companies, the results would be greater in its representative character.

Sixth, the measurement was based on the customer of banks. However, banks may have a diverging perception, which may result into different values of the variables and results. Future research effort has to be made to clarify banks’ perception.

Seventh, the data sample comprised solely relationships of SMEs and housebanks. Therefore, no direct comparison could be drawn on the basis of the bank status. Studies on the definition of housebank status for Austria and its application within further research will contribute to a better comparability of future studies.

Eighth, hypotheses were tested each by applying a single type of measurement. As research efforts are limited for Austrian commercial credits, future research should contain different kinds of measure for a single variable to reveal which measure explain the certain variables best.

Though limitations are present, the author is of the opinion that the study represents one of the first pieces of the puzzle of empirical knowledge on Austrian commercial credits. Future studies will sharpen the insight as well as develop and expand fundamental knowledge,
which strengthen and improve the relationship between commercial credit customers and their banks.
14. References


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