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Individual Credit Market Experience and Beliefs about Bank Lending Policy: Evidence from a Firm Survey*

Abstract

We study how firms' individual credit market experience influences their beliefs about the bank lending policy, using the Austrian Business Survey between 2011 and 2016. Firms which have recently experienced a loan rejection are more likely to believe that the lending policy is restrictive. We see similar effects for firms who were granted loans, but with conditions worse than anticipated. Exploiting the panel structure shows that firms without recent credit market experience are less likely to change their beliefs, which converge towards the middle category. Our findings are in line with theories of rational inattention and with asymmetric experience effects.

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Keywords: Formation of beliefs, rational inattention, pessimism, persistence, behavioral macroeconomics

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I. Introduction

Since the financial crisis, and even more since the current pandemic and energy crises, governments around the world have tried to secure access to credit to revive and stabilize investment, employment, and hence overall growth. Given the dynamic nature of investment, firms' decisions depend directly upon their beliefs about current and future economic conditions.[1] Research provides ample evidence on the formation of beliefs concerning various macroeconomic variables.[2] However, beliefs about access to credit have not yet been studied. Our results suggest that firms tend to have higher investment growth rates if they believe that access to credit is better. Thus, policy makers and central banks could benefit from having more information on firm beliefs about access to credit and how these beliefs are formed.

In this paper, we try to fill this gap by analyzing a large survey of firms in Austria, the WIFO Business Survey. The survey is unique in several ways. First, the survey takes place quarterly, and thus it has not only a cross-sectional dimension but also a panel dimension. We use data for the period 2011 to 2016. Second, the survey contains, next to standard business indicators, two questions regarding access to credit. Firms generalize the current lending policy of banks, characterizing it as accommodating, normal or restrictive, which we henceforth call bank lending policy or more generally bank lending. Besides their belief regarding the bank lending policy, firms also report their individual credit market experience, i.e., whether they have negotiated a loan during the last three months, whether they received a loan, and whether the loan conditions were as anticipated or not. Like other European countries, Austria has a bank-

[1] We use the term 'beliefs' and do not differentiate between perceptions and expectations since research has shown a strong positive correlation between beliefs for different time dimensions (Coibion et al., 2020b).

[2] Coibion et al. (2020b) as well as Coibion et al. (2018) review the effect of beliefs on investment. Coibion et al. (2020a) analyse beliefs about inflation. Gennaioli et al. (2016) discuss beliefs about growth.

based financial system in which bank credit is by far the most important source of external finance (ECB, 2017). These two questions and the unique panel dimension allow us to analyze whether beliefs about bank lending policy are influenced by the firm's own recent credit market experience, and whether positive and negative experiences have symmetric effects. Moreover, this contributes to understanding why and when firms update their beliefs, if they do so.

Our analysis provides three novel insights into how firms form beliefs about bank lending policy. First, firms form beliefs about bank lending policy based on their individual experience in the credit market. Second, the effects of positive and negative experience in the formation of beliefs are asymmetric, with the negative experience overweighing the positive experience. For example, a credit rejection is associated with a higher probability that firms assess bank lending policy as being restrictive. This effect is not limited to a rejection. Even if a firm receives a loan but the terms are worse than anticipated, it is more likely to belief that bank lending policy is restrictive. Our results demonstrate that the asymmetry in belief formation, which we call pessimism, arises not only if a firm does not receive a loan, but more generally if the conditions of the loan it receives are worse than anticipated Thus, we show that negative experience has larger and also more persistent effects than positive experience.

Third, further exploiting the unique panel structure of our data, we find that firms with recent credit market experience are more likely to change their beliefs, whereas those without recent experience more often assess the lending policy as normal. This finding is in line with the concept of rational inattention in the formation of beliefs. The different response behaviors of firms with and without recent experience have important implications for the construction of aggregate indicators. An aggregate indicator can be improved by adding a survey question about whether the respondent has recently had any experiences with respect to the question of interest. In our context, we recommend adding a question about whether a firm has recently

been active on the credit market. Moreover, we document some degree of heterogeneity of belief formation. Finally, our results are highly policy relevant as firms' beliefs influence their investment and employment decisions. Public information has, at least up to now, no effect on firms' beliefs.

The paper is structured as follows. In section 2, we review the related literature. We introduce the testable hypotheses in section 3. Our data set is discussed in section 4. The empirical analysis is presented in section 5. In section 6, we show robustness tests using different subsamples and data definitions. We conclude in section 7.

II. Literature Review

Our paper is related to the literature on the formation of beliefs and the role experience plays in it. The evidence from the existing literature shows a strong positive correlation between beliefs about different time dimensions, i.e., perceptions and expectations (Coibion et al., 2020b). Most papers study how inflation expectations are formed. The expectations of professional forecasters are those closest to actual inflation rates (Coibion et al., 2018), which are adopted by households over time (Carroll, 2003). The common conclusion of these papers is a rejection of the full-information rational expectations hypothesis; most of them suggest that this is due to information frictions.

We focus on experiences as a source of information.[3] The literature on inflation expectations provides ample evidence that experience matters when individuals form their expectations (Eminidou et al., 2020). Recent consumption experience, such as the one made with an increase in the oil price, influence households' inflation expectations (Coibion and Gorodnichenko, 2015). Their perceptions are also biased by the frequency of a purchase (Georganas et al., 2014;

[3] Another important source of information is public information (Cavallo et al., 2017; Georganas et al., 2014).

D'Acunto et al., 2019). Moreover, consumers in high inflation countries have more realistic inflation perceptions than those in low-inflation countries (Cavallo et al., 2017). But effects differ between groups: comparing age cohorts of survey respondents shows that inflation expectations depend on the respondent's age and are affected more heavily by recent inflation experiences (Malmendier and Nagel, 2016). Exploiting panel and time dimensions of their survey, Madaira and Zafar (2015) find that the weights given to experience amassed over a lifetime and sources of information differ between demographic groups. The effect of experience pertains to other macroeconomic variables: expectations about house prices in the U.S. are extrapolations of the recent developments of house prices in the respondent's municipality, and the volatility of house prices influences the distribution of expectations. Also, expectations of a higher country-wide unemployment rate increase if the respondent is unemployed (Kuchler and Zafar, 2019).

Our paper is also related to the papers that study whether the impact of experience is symmetric. Most closely related to our study is a lab experiment conducted by Kuhnen (2015), who analyzes how experience affects the perception of risk and shows that negative experience induces pessimism. She finds that subjective beliefs about risky assets are overly pessimistic when the subject has experienced a loss and that belief errors are larger. The evidence from firm surveys is ambiguous, with Massenot and Pettinicchi (2018) finding that German firms are over-optimistic regarding their future business situation if their business has improved, and Barrero (2022) finding that firms in the U.S. are over-pessimistic if their business has deteriorated.

We contribute to the literature on the impact of individual experience on the formation of beliefs about macroeconomic indicators, such as inflation and unemployment, by studying firms instead of households. Moreover, we study bank lending policy which has not been

analyzed so far, but is of crucial importance for economic policy, especially for measures that ensure access to credit for firms. In this context, we document a positive correlation between the firms' beliefs about bank lending policy and investment and employment. Having data from a regularly conducted survey allows us to follow firms over time, and thus control for unobserved firm characteristics in a panel setting. The panel dimension also enables us to study how firms adjust their beliefs and to derive implications for the construction of indicators and survey design.

III. Testable Hypotheses

Information plays a crucial role in the formation of beliefs (Coibion and Gorodnichenko, 2015). In general, firms can use new information, their individual experience, and public information to form beliefs. The costs of getting and using information will differ between firms. For instance, information based on past experience is freely and readily available, whereas some costs may arise in exploring new information. There are still non-negligible costs for acquiring and processing freely available, public information. Our data contain the firms' beliefs about bank lending policy as well as their experience on the credit market three months prior to the survey, with the possible experience categories ranging from receiving credit at anticipated conditions to rejections by the bank (for more details, see section 4.1). As experience creates information without additional costs, we formulate the following hypothesis:

Hypothesis 1: Firms' beliefs about bank lending policy reflect their own experience on the credit market.

The surveyed firms report several categories of worse-than-anticipated experience, ranging from loans at worse conditions, i.e., worse terms and/or with lower credit volume than anticipated, to outright rejections. The differential impact of positive and negative experiences on investments in safe and risky assets has been studied by Kuhnen (2015) in a lab experiment.

The results document that individuals are significantly better at learning from the information about the asset's expected return in the gain condition (positive outcomes) relative to the loss condition (negative outcome), as their subjective beliefs are less aligned with the objective posterior probabilities in the case of a loss than in the case of the gain. Similarly, the effect of negative versus positive credit market experiences on beliefs about the bank lending policy may be asymmetric. If firms react more strongly to negative than to positive outcomes, we label this as pessimism. We analyze several possible outcomes of credit applications, ranging from the acceptance at expected conditions, or facing worse than expected conditions, to the rejection and discouragement of potential borrowers. The analysis of relatively continuous (non-binary) outcomes of the lending process is an extension of the previous literature because we can identify what events are perceived as positive or negative. This asymmetry is tested by the following hypothesis:

Hypothesis 2: *The firm's belief about bank lending in general is more likely to be restrictive or less likely to be accommodating when its credit market experience is negative.*

As managers face costs when they acquire, update and process new information from their external environment, they weigh the costs and benefits of using additional information. It may be rational to ignore new information under some circumstances, we call this rational inattention. With rational inattention, the agents are less likely to update their information than in a world of costless information acquisition (as in Sims, 2003; Maćkowiak and Wiederholt, 2009). Rational inattention is related to the under-reaction to new information and provides a micro-foundation of sluggish real adjustments (e.g. Sims, 2003).

There is ample evidence that survey respondents consider the mid-point as the neutral option (e.g. Krosnick and Presser, 2010). Therefore, selecting the mid-point often indicates

indifference or ambivalence (Schaeffer and Presser, 2003; Sturgis et al., 2014; Nadler et al., 2014). In our survey, the mid-point of the answer categories is the assessment that the lending policy is normal. Rational inattention implies that firms that do not follow the credit market closely, do not process new information and, as a result, have a higher probability of selecting 'normal' as an answer. Once firms need a loan, they prepare for bank negotiations, collect and process informative signals on the bank's willingness to grant a loan until the credit negotiations end. Therefore, firms pay more attention to the credit market and are willing to incur the cost of acquiring and processing new information. The rational inattention argument leads to the following hypothesis:

Hypothesis 3: (a) The beliefs about bank lending policy of firms that do not need a loan converge towards the middle category 'normal', and (b) firms that need a loan are more likely to change their beliefs about bank lending policy.

IV. Data Description

Data Source

We use data from a business survey conducted by the Austrian Institute of Economic Research (WIFO). This type of business survey is conducted throughout the European Union with the main aim of providing early indicators of the current and near-term economic developments.[4] The monthly survey covers responses from 1,360 Austrian firms on average, in the manufacturing, construction, and service sectors. It is based on a panel of regularly answering

[4] The WIFO Business Survey is based on a voluntary participation of firms. The sampling frame are firms with 15 or more employees (manufacturing and construction) and firms with 10 or more employees (services). Around 50 percent of the answers come from firms in services, 34 percent from manufacturing and 16 percent from construction. WIFO is addressing new participants on a regular basis to keep the number of participants high. As confidentiality is guaranteed, we can assume that firms do not answer strategically.

firms and has an average response rate of 62 percent. Responses represent more than 50 percent of firm employment in Austria. The survey also contains a question on the belief about bank lending policy, which has been used in previous research (e.g., Fidrmuc and Hainz, 2013, and Huber, 2018, for Germany). The Austrian survey is unique because it is the only one that also asks firms about their recent credit market experience. The questions were introduced in 2011, after the the financial crisis, to provide early indicators of the state of bank lending (for a more detailed description of the WIFO survey, see Appendix A online).[5]

Both questions are asked quarterly (February, May, August, and November). The first question asks for the firm's assessment of bank lending policy: *"How do you currently assess the readiness of banks to provide loans to firms?"* The possible answers are: *accommodating, normal*, and *restrictive*. Accordingly, we label this as the belief regarding bank lending policy, since research has shown a strong positive correlation between a firm's perception of the current macroeconomic situation and the expectations about the future situation (Coibion et al., 2020b).

The second question is about the recent credit market experience of the firm and reads: "*Did you sign a loan agreement in the last three months?*" The eight possible answers include four "yes" categories (*at anticipated terms, at anticipated volume but with worse terms, at anticipated terms but lower volume, at lower volume and worse terms*) and four "no" categories (*no need, non-acceptable terms, rejection by the bank, no realistic chance*).

We can aggregate these eight answers into four broad categories (Table 1 shows the aggregation of the answer categories). In the first category, there are firms who get the loan at anticipated terms. In the second category, there are firms who get a loan, but at terms worse

[5] Less than three percent of the firms in the sample are publicly listed, which stresses the importance of bank lending for them.

than anticipated (that is, at worse terms, lower credit volume, or both). In the third category, there are firms that do not need a loan. Finally in the fourth category, there are firms that end up without loans, including firms that are rejected by the bank, firms that find the terms non-acceptable, and firms that are discouraged). During our analysis, we will label these four broad groups as 'as anticipated', 'not as anticipated', 'no need', and 'credit constrained' respectively. The survey contains several other questions, among which the question on firms' future business situation is especially interesting for our analysis. We use the answers to this question as a form of self-assessment of creditworthiness and include it as a control variable. This question is: "*Our business will develop in the next six months as follows: it will improve, it will be stable (given the seasonal effects), it will worsen*".

Descriptive Statistics

Regarding our analysis, data is available for the period from November 2011 to November 2016. Altogether, we have 21 quarterly waves of the survey with 28,000 observations (see descriptive statistics Table B.1 in Appendix B online). This allows us to exploit the time dimension and to conduct a panel analysis. Considering that we lose at least one survey wave for the computation of lagged variables, we have 8.5 (maximum 20) observations per firm on average.

The descriptive statistics (Table 1) reveal that the belief that bank lending policy is normal in 59.8 percent of our observations. The belief that it is restrictive (30.0 percent) is more likely than that it is accommodating (10.1 percent). Over time, the share of firms with accommodating beliefs increased slightly, while that of those with restrictive beliefs decreased slightly (see Figure B.1 in Appendix B (online)). Table 1 also provides information on the individual credit market experiences. Most firms (74.6 percent) did not need a loan in the previous three months. Among firms that got a loan, most did so as anticipated (13.0 percent); the share of firms with

conditions that are not as anticipated is much lower (6.3 percent). The share of firms that are credit constrained (6.1 percent) is of a comparable size to that of those with unanticipated conditions.

[insert Table 1 about here]

Among the firms that do not need a loan, most believe that bank lending policy is normal (49.7 percent of all observations), followed by restrictive (18.4 percent), then accommodating (6.5 percent). Most firms that signed a credit contract at anticipated conditions believe that bank lending policy is normal (7.4 percent), however more firms indicated a belief that bank lending policy is accommodating (3.4 percent) rather than restrictive (2.1 percent).

Among the broad category of firms that get a loan but not as anticipated (6.3 percent), the group with volume as anticipated but worse terms is the most important (3.7 percent), followed by worse terms and lower volume (1.6 percent) and lower volume only (1.0 percent). Within this broad category, about two thirds assess bank lending policy as restrictive. Most others assess it as normal, and only a few assess it as accommodating. While the beliefs are similar among those with worse terms and lower volume, firms that face both are even more likely to respond with a restrictive assessment, and they never say that lending policy is accommodating.

In the broad category of credit constrained firms (6.1 percent), the share of firms which face non-acceptable terms (2.5 percent) and discouraged firms (2.3 percent) is similar and much higher than firms that were rejected by the bank (1.3 percent). In this category, most firms believe that bank lending policy is restrictive. The rest of the firms assess it as normal, as there is hardly any (or even no for those that were rejected) accommodating response. The pattern of responses is a bit less pronounced among the discouraged firms than among firms with non-acceptable terms and rejected firms.

The panel data allows us to observe the credit market experience of individual firms over a period of five years. Firms with loans had on average 3.6 loans within the 21 survey waves. Nearly one third of firms with loans had at least one period when they did not receive a loan despite having requested one. Similarly, nearly all firms that needed a loan but did not receive a loan during one period had received one in another period. However, a large share of firms reported that they had no need for a new loan throughout the analyzed period (39 percent of firms).

Beliefs about Bank Lending Policy and Economic Behavior of Firms

The firms' beliefs are strongly correlated with their economic decisions, including most importantly, employment and investment. Figure 1 relates lagged beliefs about lending policy and the change of employment (quarterly log-differences corresponding to growth rates).[6] The average employment change is approximately zero in our sample (-0.20 percent). However, we see interesting differences: Firms believing that lending policy is accommodating increased their employment (about 0.51 percent). In contrast, firms reporting restrictive beliefs show a decline of employment of nearly -0.42 percent. The firms in the 'normal' category exhibit a small decline of employment of -0.20 percent.

[insert Figure 1 about here]

We see a similar pattern for investment, which is taken from the WIFO annual investment survey.[7] The sample average investment growth (annual difference of logs) is 0.00 percent. Again, firms believing that the lending policy is accommodating, invest more (0.56 percent),

[6] In the business surveys firms report the number of their employees.

[7] The investment survey targets the whole calendar year. Therefore, we cannot assign the investment survey to a particular wave of the business surveys. Correspondingly, we use all business surveys of the particular year for the comparison.

firms with restrictive beliefs invest less (-1.03 percent), and firms with 'normal' beliefs also show a small decline of investment (0.18 percent).

V. Regression Analysis

Empirical Strategy

We regress the firm's belief about bank lending in general on its individual credit market experience using OLS. The dependent variable, *lpol*, is equal to 1 if a firm assesses the general bank lending as accommodating (or restrictive), and 0 otherwise. Alternatively, we include all three categories (ordered as restrictive, normal, and accommodating).[8] Our main variable of interest is the firm's experience in the credit market – *experience* being a dummy variable for the different narrow or broad categories of credit experience described in section 4.1.

In addition to the *K* categories of credit market experience (eight categories of narrowly defined or four categories of broadly defined experience), the core explanatory variables include the expectation of the business situation of the firm in the previous quarter as a proxy for creditworthiness, *business*, as well as contemporaneous employment (in logs) as a measure for firm size, *size*. The other controls **Z** are time effects for the individual regions (nine federal states) and sectoral effects. The estimation equation can be stated as

$$lpol_{it} = \sum_{k=1}^{K} \alpha_k experience_{kit} + \beta_1 business_{it-1} + \beta_2 size_{it} + \mathbf{Z}_{it}\gamma + \varepsilon_{it}\,. \qquad (1)$$

In the next step, we estimate linear probability models for the transitions of beliefs about lending policy. In this approach, the dependent variable, *dpol*, is 1 if the belief about lending policy changes from one category to another, and 0 otherwise. We estimate *dpol* in subsamples

[8] The results for probit and ordered probit estimations are available upon request and they are largely similar to presented results and do not lead to different conclusions.

with firms that initially had the same belief about bank lending policy. For example, for the transition from normal to restrictive (as denoted by $N \rightarrow R$), we restrict the sample to firms that assessed the lending policy as normal (N) initially. *dpol* equals 1 for the transition $N \rightarrow R$ and 0 for the transitions $N \rightarrow A$ and $N \rightarrow N$. *dpol* is defined for all possible transitions and the estimation equation can be stated as

$$dpol_{it} = \sum_{k=1}^{K} \alpha_k experience_{kit} + \beta_1 business_{it-1} + \beta_2 size_{it} + \mathbf{Z}_{it}\gamma + \varepsilon_{it}\,, \qquad (2)$$

where all explanatory variables are defined as above. Standard errors are clustered on the firm level.

Results for Beliefs about Bank Lending Policy

Table 2 reports the estimation results for the narrow and broad credit experience categories, respectively. The dependent variable is defined as either being accommodating (columns (1) and (4)), restrictive ((2) and (5)), or a categorical variable including all three categories ((3) and (6)). The results show the important role that the firm's credit market experience plays in the formation of beliefs about the overall economy. If the bank offers credit at terms that the firm anticipates, the average marginal probability that a firm assesses the bank lending policy as accommodating is 18 percentage points higher than for no-need firms. By contrast, negative experience is clearly correlated with a worse assessment of the lending policy: the probability of reporting lending policy as accommodating is 4 percentage points lower for firms with worse credit terms and 7 percentage points lower for those with worse terms and lower volume. Lower volume alone is insignificant. For firms with non-acceptable terms, the probability of an accommodating belief is 7 percentage points lower. Discouraged firms are 8 percentage points less likely to assess lending policy as accommodating and rejected firms are 9 percentage points less likely. This reflects that no single firm that assesses the lending policy as accommodating

had a rejected credit request in the same quarter. Overall, our results demonstrate that worse assessments of bank lending policy are not restricted to firms that do not receive a loan (either rejected or discouraged). Even the beliefs of firms which get loans, but at worse terms and with lower amounts than anticipated, behave similarly to those which do not get loans at all.

[insert Table 2 about here]

Column (2) shows mirror effects for the bank lending policy being assessed as restrictive. For firms that get the loan as anticipated, the probability that lending policy is assessed as restrictive is 7 percentage points lower. Moreover, after a credit rejection, the probability that the firm assesses the lending policy as restrictive is 71 percentage points higher. The effects are only slightly lower if lending conditions are worse (62 percentage points). The impact of terms and volume shows that both effects are similarly important (35 and 31 percentage points, respectively). The overall impact of worse conditions is about the same as for firms which view the terms of the loan as non-acceptable (61 percentage points). Discouraged firms have a slightly lower coefficient (53 percentage points). The size of the coefficients is also economically large, as the share of restrictive beliefs in all observations is 30 percent.

Moreover, the results show that firms with positive business expectations are 3.1 percentage points more likely to assess the lending policy as accommodating and 3.8 percentage points less likely to assess it as restrictive. Firm size is insignificant in all three specifications.

The results for the categorical variable in columns (3) and (6) confirm that a positive experience significantly improves, and a negative experience lowers the belief about the lending policy in general, respectively. The results are also unchanged if we use broader credit experience categories (see panel B). All broad categories as well as the business situation of the firms are highly and robustly significant. Also, using firms which receive a loan as anticipated as the base category does not change our results (see Table B.2 in Appendix B online).

To summarize, we find support for *hypothesis 1* that individual experience matters for the belief about bank lending policy. Thus, our results match up with the literature that provides ample evidence that personal experience influences belief about inflation, house prices, and unemployment (Malmendier and Nagel, 2016; Madeira and Zafar, 2015; D'Acunto et al., 2021; Kuchler and Zafar, 2019). Our results are in line *hypothesis* 2, as we find that firms which receive a loan with terms and/or amount that have not been anticipated, are more likely to report their beliefs about bank lending policy as being restrictive and less likely to report it as accommodating. As the magnitudes of the coefficients hardly differ between different degrees of negative experiences, our results suggest that any outcome that is not as anticipated implies a similarly negative experience for the firm. This result is consistent with the notion of pessimism which Kuhnen (2015) has demonstrated in a lab experiment. We add to this literature by showing that firms assess a broad range of unanticipated outcomes as a negative experience.

Results for Change of Beliefs about Bank Lending Policy

The transition matrix in Table 3 shows that beliefs about bank lending policy tend to remain stable over time.[9] More than 80 percent of firms stating that lending policy is normal will keep this assessment in the next quarter. Similarly, more than three quarters of firms with restrictive beliefs will report the same belief in the next survey. Changes in beliefs are most likely to occur among firms that previously assessed lending policy as accommodating. Indeed, nearly half of the firms which assessed lending policy as accommodating in the previous quarter revise their beliefs.

[9] Similarly, Vellekoop and Wiederholt (2019) report that inflation expectations of Dutch households are also very stable.

[insert Table 3 about here]

We present the results of our analysis of the dynamics of beliefs about lending policy in Table 4. In a first step, we study whether changes in beliefs differ between firms that need a loan or not (panels A). For example, in the first regression in panel A, the dependent variable is defined as all changes in beliefs and denoted by Δ: the dependent variable is 1 if the belief changes (e.g. from normal to restrictive, 'N → R', or from accommodating to normal, 'A → N') and 0 when the belief does not change (e.g., 'N → N' or 'A → A').

In a second step, we look at the relationship between changes in beliefs and the firm's experiences (panel B). We run nine regressions to cover all possible transitions. For example, in panel B the first regression is denoted as 'N → R'; here, the dependent variable is 1 if the belief changes from normal to restrictive and 0 if the belief was normal and does not change to restrictive because it remains normal or is changed to accommodating. Note that in panel B, we restrict the sample to observations with the same beliefs in the previous period.

In panel A, we regress dynamics of the beliefs on a dummy variable which is one if a firms has no need for credit. The results show that firms that report no need for credit have a 5.8 percentage point lower probability to change their belief about bank lending policy in column (1) than firms that report a credit need. Firms with credit needs also have an 18.5 percentage point lower likelihood to switch away from normal and answer restrictive or accommodating, N → (A or R), as shown in column (2), and a 11.2 percentage point higher probability to switch to 'normal' when they stated restrictive or accommodating in the previous period, (A or R) → N, in column (3).

[insert Table 4 about here]

These results provide empirical support for *hypothesis 3(a)* that firms which do not need a loan are more likely to adjust their belief toward normal than firms with a financing need.

Furthermore, our results support *hypothesis 3(b)* that firms which need a loan are more likely to update their beliefs about the bank lending policy. This is consistent with the explanation that they obtained new information during the credit negotiation process, which affects their assessment of bank lending policy.[10]

In panel B of table 4, we regress the dynamics on the broad lending experience categories.[11] We find that firms with a negative experience, which are credit constrained or received loans at worse than anticipated conditions, are more likely to downgrade their belief about lending policy from normal to restrictive or keep it as restrictive. Negative experience also goes hand in hand with a lower probability that a restrictive belief will be upgraded to a normal belief or stay normal. Firms that get loans as anticipated have a higher probability of upgrading the belief as well as a higher persistence of accommodating assessments, and they have a lower probability of downgrading beliefs as well as a lower persistence of restrictive assessments.

Our findings imply that the responses to the question about bank lending in general are based on different degrees of exposure of the respondents to the issue. In particular, the neutral answer category (normal lending policy) is more frequently chosen by firms that have no recent credit market experience of their own. This should be considered when survey data is used as a source for economic policy decisions.

[10] Table B.3 in Appendix B (online) shows results for each possible transition. They confirm that firms that report to have no need for credit are more likely to switch towards an assessment of 'normal'.

[11] We considered two quarters in sensitivity analysis with similar results which are available upon request from authors. The number of observations is too small for transitions over longer periods. We cannot use the narrow categories as explanatory variables because this would lead to a low number of observations for several categories.

VI. Robustness Analysis

Panel Models

Unobservable factors can influence the impact of previous credit experience on beliefs about bank lending policy.[12] To deal with such omitted variable problems, we estimate (1) using a fixed effects model. The results in Table 5 are similar in terms of statistical significance; only in the regressions with the accommodating beliefs, worse terms, lower volume, and non-acceptable conditions no longer have a significant impact. Moreover, the size of the coefficients is smaller than in the pooled estimation. All categories of credit experience remain significant when we consider the impact on the belief that bank lending in general is restrictive. The regressions for all three beliefs about bank lending in general (column (3)) confirm that all categories of credit market experience are highly significant. The results for the broad credit categories are also similar to the detailed categories.

[insert Table 5 about here]

Persistence of Credit Market Experience

The beliefs about lending policy are likely to be based not only on recent, but also on long-term experience of firms on the credit market.[13] Therefore, we include up to four lags of previous credit experience (see Table 6), which lowers the number of observations to approximately half of the full sample.

Positive experience on the credit market seems to have only little impact on the formation of beliefs about lending policy, especially when an accommodating evaluation is considered. The

[12] This captures, for instance, differences in the ownership structure and in the attitude to use public information about credit standards.

[13] Alternatively, the seeming persistence of credit market experience can be due to overextrapolation of banks' willingness to lend.

effects are only marginally significant after one quarter and insignificant if more lags are included. The effects are slightly more important on the restrictive and categorical beliefs. Nevertheless, the effects of positive experience are only short-lived. By contrast, negative experience has a strong and long-lasting impact on beliefs. In fact, worse credit terms and credit constraints have longer lasting and statistically significant effects, which affect the beliefs about lending policy even after four quarters. As expected, with the passing of time, the size of the effect and its statistical significance diminish. The asymmetry that negative experience is more persistent than positive experience could reflect pessimism in a dynamic (or longer term) setting.

[insert Table 6 about here]

Firms with No Recent Credit Experience

Instead of including more lags, we can focus on firms which did not need a loan for a certain period (e.g. one or four quarters) and then tried to receive a credit (Table 7). In this robustness analysis, we compare firms without a need for credit one and four quarters before their recent credit experience. A longer absence from the credit market allows us to see the impact of one experience on the credit market more clearly. The number of observations also declines in this robustness check to only one quarter of the original sample if four quarters without credit experience are considered. Moreover, a selection bias may be prevalent in this analysis.

Despite these limitations, the estimations for subsamples without recent credit market experience are in line with our previous findings. As before, only firms receiving loans at anticipated terms assess bank lending policy more positively. Similarly, firms with worse credit terms and credit constraints have more negative beliefs. The impact on the restrictive belief is again higher than it is on the accommodating belief. However, the magnitude of the coefficients does not differ strongly between the samples with different frequencies of experience.

[insert Table 7 about here]

Our results for firms with no recent experience can also explain the dynamics and persistence of belief formation. In the environment characterized by rational inattention, the lack of recent experience even during a short period of constrained credit supply and previous negative experience can have a long-lasting impact on the beliefs regarding bank lending policy and affect firms' investment and employment decisions. The lack of recent experience can amplify the impact of experience if rational inattention is important.

Heterogeneity and Further Robustness Analysis

Access to credit is known to differ with respect to firm size, type of activity and location. Thus, experience could also have different effects on the beliefs of firms depending on size, sector and region. Our sensitivity analysis estimates coefficients of credit market experience which are specific for selected groups of firms. We again consider only broad loan categories, because the number of observations would be too low otherwise. In general, the results confirm the previous results. This is also in line with the fact that Austria is a relatively homogenous economy. The few statistically significant differences we can detect in the impact of credit market experience do not alter the general conclusions.

First, we investigate the role of firm size in the formation of beliefs. The position of the staff member reporting the belief should differ depending on firm size. In smaller firms, it might be the owner that both reports his belief and negotiates with the bank. In larger firms, this is less likely the case. Small firms are more opaque than large firms and may therefore find it more difficult to receive a loan. The previous estimations did not show a significant role of firm size as measured by the number of employees. Here, we compare three different groups of firms: small (up to 50 employees), medium (from 50 up to 250 employees) and large (250 and more employees). Large firms are more likely to assess lending policy as anticipated (12.9 percent)

than small firms (9.6 percent). Our estimation results (Table 8) show some differences in coefficients, although they are not robustly significant (test results are in Table B.4 in Appendix B online). Getting a loan as anticipated has larger effects on the beliefs of small firms than those of large ones for all beliefs. The heterogeneity of the coefficients with respect to firm size is smaller for loans with worse than anticipated conditions and for credit constrained firms. Medium-sized firms are slightly more affected by the lack of finance than small firms, but the difference between the coefficients is not statistically significant.

[insert Table 8 about here]

We also consider differences of credit market experience by sector (manufacturing, construction, and services, Table 9). In this exercise, we again observe the largest differences in coefficients across the sectors when experience is as anticipated, while experience that is not as anticipated and credit constraints lead to changes in beliefs that are quite similar across sectors. For 'as anticipated', the coefficients suggest that the impact on beliefs is most relevant for the service sector, followed by industry and construction.

[insert Table 9 about here]

Furthermore, we analyze whether the effect of individual credit market experience is heterogeneous between NUTS 1 regions (Table 10). We see some difference in coefficients, but they are not robustly significant.

[insert Table 10 about here]

Finally, we investigate whether the firms' beliefs depend on publicly available information on bank lending policy. For this purpose, we merged the business survey data with the information from the bank lending survey which measures the banks' credit standards in Austria. The

variable is insignificant in all specifications,[14] while all other results remain unchanged (see Table B.5 in Appendix B online). Thus, our results suggest that firms' beliefs about bank lending policy are not influenced by the publicly available information about this topic.

VII. Conclusions

We use unique panel data from a firm survey on beliefs about bank lending in general and firms' credit market experience which allow us to test three hypotheses and provide new insights on the formation of beliefs. Beliefs are important because they are strongly correlated with a firm's economic decisions, such as investment and employment. First, firms form their beliefs about bank lending policy based on their own previous credit market experience, using the information they gain during the credit negotiations.

Second, firms that do not receive a loan at the anticipated conditions or are credit constrained are more likely to believe that the bank lending policy is restrictive in contrast to firms that do not need a loan. According to our results, firms consider the rejection of a loan request, an offer at unacceptable conditions, and worse loan conditions than anticipated as similarly negative experiences. Moreover, negative experience has persistent effects on the firms' beliefs. These findings provide further evidence for the existence of pessimism that has so far mainly been studied in a lab experiment.

Third, firms that have no credit needs are less likely to update their beliefs than firms with credit needs. They also tend to assess bank lending policy as normal, and thus they converge to the middle option in the survey. We therefore find compelling evidence for the presence of rational inattention.

[14] Nevertheless, it may be interesting to mention that the results for accommodating and for all categories but not for restrictive become significant if regional time effects are replaced by simple regional effects and no time effects are included.

A firm's own credit market experience is a driving factor of the belief about bank lending in general. In contrast, available proxies for publicly available information remain insignificant. Therefore, survey-based indicators have high information value for the timely assessment of the lending behavior of banking systems which can be used for policy interventions. In particular, the results on rational inattention also suggest that, when aggregating individual beliefs for the whole economy, it is important to consider the differences between firms with and without credit need – for two reasons. First, only a minority of firms has credit demand, and thereby experience in a certain quarter, and second, firms without own credit experience tend to report the neutral option (normal). Thus, the indicator may be biased toward finding a normal assessment of bank lending policy. For survey design, this implies that information on the firm's own experience should be collected. When dealing with surveys related to credit financing, this means that at least one question on whether a firm has credit demand should be part of the questionnaire.

Our analysis for Austria also has policy implications for bank-based financial systems after major economic and financial disruptions. Our results suggest that a brief period of constrained credit supply creates negative experiences and due to pessimism negative beliefs which persist as firms are rationally inattentive in times when they do not need a loan. Thus, a period of constrained credit supply could have a lasting impact on the beliefs of a firm regarding bank lending policy and as such, affect firms' decisions. This could be one of the channels contributing to the stagnation of investment despite low interest rates, and to the low growth of the economy after the financial crisis and potentially also after the pandemic and the energy crisis. Although we cannot unravel the underlying mechanism and therefore leave this as an avenue of future research, our results imply that the impact of public information on firms' beliefs is limited. For policy communication, particularly by central banks, this means that it

could also cover the public belief about access to credit. New and more efficient channels of information transmission could help to improve the functioning of economic policies in general.

References

Barrero, J. M. (2022), The Micro and Macro of Managerial Beliefs, *Journal of Financial Economics* 143(2), 640-667.

Carroll, C. D. (2003), Macroeconomic Expectations of Households and Professional Forecasters, *Quarterly Journal of Economics* 118(1), 269-298.

Cavallo, A., Cruces, G. and Perez-Truglia, R. (2017), Inflation Expectations, Learning, and Supermarket Prices: Evidence from Field Experiments, *American Economic Journal: Macroeconomics* 9(3), 1-35.

Coibion, O. and Gorodnichenko, Y. (2015), Information Rigidity and the Expectations Formation Process: A Simple Framework and New Facts, *American Economic Review* 105(8), 2644-2678.

Coibion, O., Gorodnichenko, Y. and Kumar, S. (2018), How do Firms Form Their Expectations?, New Survey Evidence, *American Economic Review* 108, 2671-2713.

Coibion, O., Gorodnichenko, Y. and Ropele, T. (2020a), Inflation Expectations and Firm Decisions: New Causal Evidence, *Quarterly Journal of Economics* 135(1), 165–219.

Coibion, O., Gorodnichenko, Y., Kumar, S. and Pedemonte, M. (2020b), Inflation Expectations as a Policy Tool?, *Journal of International Economics* 124(103297), 1-27.

D'Acunto, F., Malmendier, U., Ospina, J. and Weber, M. (2021), Exposure to Daily Price Changes and Inflation Expectations, *Journal of Political Economy 129(5)*, 1615-1639.

ECB (2017), *Survey on the Access to Finance of Enterprises in the Euro Area, April to September 2017*, European Central Bank, Frankfurt.

Eminidou, S., Zachariadis, M. and Andreou, E. (2020), Inflation Expectations and Monetary Policy Surprises, *Scandinavian Journal of Economics* 122(1), 306-339.

Fidrmuc, J. and Hainz, C. (2013) The Effect of Banking Regulation on Cross-Border Lending, *Journal of Banking and Finance* 37(5), 1310-1322.

Gennaioli, N., Ma, Y. and Shleifer, A. (2015), Expectations and Investment, *NBER Macroeconomics Annual* 30, 379-442.

Georganas, S., Healy, P. J. and Li, N. (2014), Frequency Bias in Consumers' Perceptions of Inflation: An Experimental Study, *European Economic Review* 67, 144-158.

Huber, K. (2018), Disentangling the Effects of a Banking Crisis: Evidence from German Firms and Counties, *American Economic Review* 108(3), 868-98.

Jonung, L. (1981), Perceived and Expected Rates of Inflation in Sweden, *American Economic Review* 71(5), 961-968.

Krosnick, J. A. and Presser, S. (2010), Question and Questionnaire Design, in J. D. Wright and P. V. Marsden (eds.), *Handbook of Survey Research* (second edition), Emerald Group, Bingley, UK.

Kuchler, T. and Zafar, B. (2019), Personal Experiences and Expectations about Aggregate Outcomes, *Journal of Finance* 74(5), 2491-2542.

Kuhnen, C. M. (2015), Asymmetric Learning from Financial Information, *Journal of Finance* 70(5), 2029-2061.

Maćkowiak, B. and Wiederholt, M. (2009), Optimal Sticky Prices under Rational Inattention, *American Economic Review* 99(3), 769-803.

Madeira, C. and Zafar, B. (2015), Heterogeneous Inflation Expectations and Learning, *Journal of Money, Credit and Banking* 47(5), 867–896.

Malmendier, U. and Nagel, S. (2011) Depression Babies: Do Macroeconomic Experiences Affect Risk Taking?, *Quarterly Journal of Economics* 126(1), 373-416.

Malmendier, U. and Nagel, S. (2016), Learning from Inflation Experiences, *Quarterly Journal of Economics* 131(1), 53-87.

Massenot, B. and Pettinicchi, Y. (2018), Can Firms See into the Future? Survey Evidence from Germany, *Journal of Economic Behavior & Organization* 145, 66-79.

Nadler, J. T., Weston, R. and Voyles, E. C. (2014), Stuck in the Middle: The Use and Interpretation of Mid-Points in Items on Questionnaires, *Journal of General Psychology* 142(2), 71–89.

Schaeffer, N. C. and Presser, S. (2003), The Science of Asking Questions, *Annual Review of Sociology* 29, 65–88.

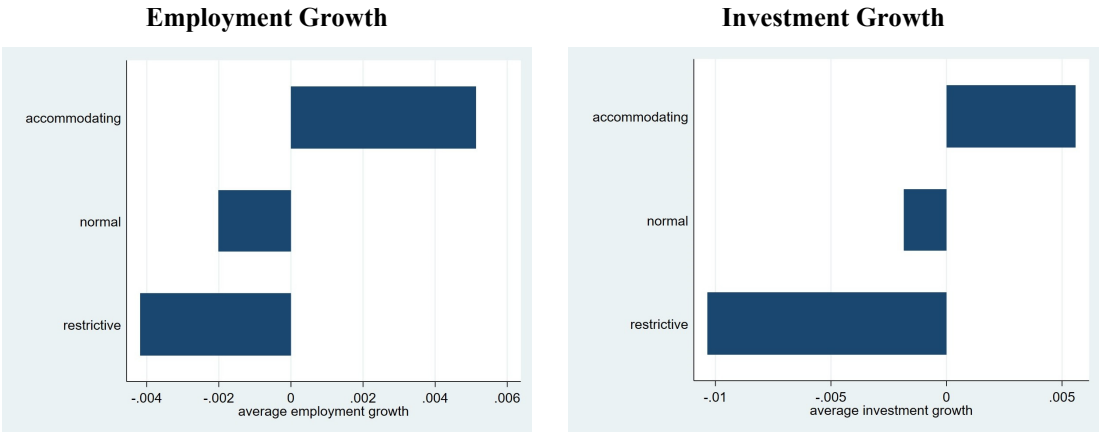
Sims, C. A. (2003), Implications of Rational Inattention, *Journal of Monetary Economics* 50(3), 665-90.

Souleles, N. S. (2004), Expectations, Heterogeneous Forecast Errors, and Consumption: Micro Evidence from the Michigan Consumer Sentiment Surveys, *Journal of Money, Credit, and Banking* 36(1), 39-72.

Sturgis, P., Roberts, C. and Smith, P. (2014), Middle Alternatives Revisited: How the Neither/Nor Response acts as a Way of Saying I Don't Know?, *Sociological Methods & Research* 43(1), 15-38.

Vellekoop, N. and Wiederholt, M. (2019), Inflation Expectations and Choices of Households, SAFE Working Paper 250.

Figure 1 Beliefs about Bank Lending Policy and Economic Behavior of Firms



Note: Beliefs are lagged by one quarter. Growth is computed as difference of variables in logs.

Table 1: Beliefs about Bank Lending Policy and Individual Credit Market

	credit market experience	beliefs about bank lending policy			total
broad categories	narrow categories	restrictive	normal	accommodating	share
as anticipated	at anticipated terms and volume	2.14	7.42	3.39	12.95
not as anticipated	at anticipated volume but with worse terms	2.20	1.32	0.14	3.66
	at anticipated terms but lower volume	0.58	0.37	0.09	1.04
	at worse terms and lower volume	1.39	0.19	0.00	1.58
	sub-total	4.17	1.88	0.23	6.28
no need	no credit need	18.44	49.73	6.46	74.63
credit constrained	non-acceptable terms	2.14	0.31	0.02	2.46
	rejection by the bank	1.29	0.05	0.00	1.34
	no realistic chance (discouraged)	1.86	0.46	0.03	2.34
	sub-total	5.29	0.82	0.05	6.14
total share	Total	30.03	59.83	10.14	100.00

Source: WIFO, own estimation.

Table 2: Determinants of Beliefs about Bank Lending Policy, OLS

A. Narrow Categories of Credit Market Experience

	(1)	(2)	(3)
dependent variable	accommodating[a]	restrictive[a]	all[b]
as anticipated	0.180***	-0.069***	0.248***
	(0.014)	(0.013)	(0.021)
worse terms	-0.040***	0.354***	-0.395***
	(0.011)	(0.026)	(0.031)
lower volume	-0.003	0.313***	-0.316***
	(0.021)	(0.042)	(0.052)
both	-0.071***	0.615***	-0.685***
	(0.007)	(0.023)	(0.025)
non-accept. terms	-0.067***	0.614***	-0.681***
	(0.006)	(0.023)	(0.026)
rejection	-0.088***	0.711***	-0.799***
	(0.008)	(0.016)	(0.020)
discouraged	-0.076***	0.530***	-0.606***
	(0.008)	(0.032)	(0.035)
business exp. (lag)	0.031***	-0.038***	0.069***
	(0.005)	(0.009)	(0.012)
employment (log)	-0.000	-0.007	0.007
	(0.003)	(0.005)	(0.007)
No of obs.	19,719	19,719	19,719
Adj. R^2	0.067	0.183	0.174

B. Broad Categories of Credit Market Experience

	(1)	(2)	(3)
dependent variable	accommodating[a]	restrictive[a]	all[b]
as anticipated	0.180***	-0.068***	0.248***
	(0.014)	(0.013)	(0.021)
not as anticipated	-0.042***	0.417***	-0.459***
	(0.008)	(0.021)	(0.025)
credit constrained	-0.075***	0.602***	-0.677***
	(0.006)	(0.019)	(0.021)
business exp. (lag)	0.031***	-0.039***	0.070***
	(0.005)	(0.009)	(0.012)
employment (log)	-0.000	-0.008	0.007
	(0.003)	(0.005)	(0.007)
No of obs.	19,719	19,719	19,719
Adj. R^2	0.067	0.178	0.170

Note: a - the dependent variable equals 1 if a firm assesses bank lending policy as accommodating (restrictive) and 0 otherwise. b - the dependent variable equals 1 if the surveyed firm assesses the lending policy as restrictive, 2 as normal and 3 as accommodating. Constant, sectoral and regional-time effects are not reported. No need is used as the base category. Clustered standard errors at the firm level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Source: WIFO, own estimation.

Table 3: Transition Matrix of Beliefs about Bank Lending Policy after 1 Quarter

		Belief			total
		restrictive	normal	accommodating	share
lagged belief	restrictive	76.9	21.5	1.6	100.0
	normal	10.2	82.6	7.2	100.0
	accommodating	4.1	42.5	53.4	100.0

Source: WIFO, own computation.

Table 4: Change of Beliefs about Bank Lending Policy (1 Quarter), OLS, Broad Loan Categories

A. Results for No Need

	(1)	(2)	(3)
dependent variable	Δ	N →(A or R)	(A or R) → N
no need	-0.052***	-0.185***	0.117***
	(0.010)	(0.014)	(0.014)
business exp. (lag)	0.014*	0.001	0.023**
	(0.007)	(0.008)	(0.011)
employment (log)	-0.001	-0.004	0.007
	(0.004)	(0.003)	(0.007)
No of obs.	16,459	10,001	6,458
Adj. R^2	0.006	0.041	0.021

B. Results for Different Experience Categories, No Need as a Base Category

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
dependent variable	N → R	N → N	N → A	R → R	R → N	R → A	A → R	A → N	A → A
as anticipated	-0.010	-0.071***	0.140***	-0.161***	0.156***	0.050***	-0.025***	-0.131***	0.204***
	(0.008)	(0.017)	(0.014)	(0.030)	(0.029)	(0.012)	(0.009)	(0.032)	(0.033)
not as anticipated	0.310***	-0.256***	-0.006	0.190***	-0.141***	-0.007*	0.144**	0.028	-0.152*
	(0.029)	(0.031)	(0.011)	(0.020)	(0.018)	(0.004)	(0.062)	(0.085)	(0.079)
credit constrained	0.366***	-0.267***	-0.031***	0.264***	-0.206***	-0.014***	0.332**	-0.150	-0.158
	(0.048)	(0.046)	(0.012)	(0.015)	(0.014)	(0.003)	(0.158)	(0.176)	(0.191)
business exp. (lag)	-0.009	-0.000	0.012**	-0.008	0.008	0.005	0.012	-0.038	0.038
	(0.006)	(0.009)	(0.005)	(0.013)	(0.012)	(0.004)	(0.011)	(0.026)	(0.028)
employment (log)	-0.003	0.006	0.000	-0.004	-0.000	-0.000	0.002	-0.000	0.004
	(0.003)	(0.004)	(0.002)	(0.007)	(0.006)	(0.002)	(0.004)	(0.014)	(0.016)
No of obs.	10,001	10,001	10,001	4,851	4,851	4,851	1,607	1,607	1,607
Adj. R^2	0.070	0.031	0.039	0.081	0.062	0.026	0.047	0.043	0.082

Note: Δ denotes all changes in beliefs. The dependent variable is equal to 1 if the belief changed and 0 if it remains unchanged. N → R denotes that beliefs changed from normal (N) to restrictive (R); and is equivalently defined for all other changes. The dependent variable is equal to 1 for the respective transition and 0 if no or a different transition was reported. Constant, sectoral and regional-time effects are not reported. Clustered standard errors at the firm level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.
Source: WIFO, own estimation.

Table 5: Determinants of Beliefs about Bank Lending Policy, Fixed Effects

A. Narrow Categories of Credit Market Experience

	(1)	(2)	(3)
dependent variable	accommodating[a]	restrictive[a]	all[b]
as anticipated	0.136***	-0.084***	0.221***
	(0.012)	(0.011)	(0.017)
worse terms	0.001	0.152***	-0.152***
	(0.011)	(0.022)	(0.025)
lower volume	0.008	0.203***	-0.195***
	(0.020)	(0.038)	(0.046)
both	-0.018*	0.288***	-0.306***
	(0.009)	(0.025)	(0.028)
non-accept. terms	-0.013	0.255***	-0.268***
	(0.008)	(0.023)	(0.026)
rejection	-0.038***	0.325***	-0.363***
	(0.012)	(0.026)	(0.032)
discouraged	-0.026**	0.257***	-0.283***
	(0.012)	(0.028)	(0.033)
business exp. (lag)	0.010**	-0.002	0.012*
	(0.004)	(0.005)	(0.007)
employment (log)	-0.006	-0.031***	0.025*
	(0.007)	(0.010)	(0.013)
No of obs.	19,719	19,719	19,719
No of firms	2,328	2,328	2,328
Adj. R^2	0.035	0.056	0.067

B. Broad Categories of Credit Market Experience

	(1)	(2)	(3)
dependent variable	accommodating[a]	restrictive[a]	all[b]
as anticipated	0.136***	-0.084***	0.220***
	(0.012)	(0.011)	(0.017)
not as anticipated	-0.002	0.194***	-0.197***
	(0.009)	(0.018)	(0.021)
credit constrained	-0.022***	0.264***	-0.285***
	(0.008)	(0.019)	(0.023)
business exp. (lag)	0.010**	-0.002	0.012*
	(0.004)	(0.005)	(0.007)
employment (log)	-0.006	-0.032***	0.026**
	(0.007)	(0.010)	(0.013)
No of obs.	19,719	19,719	19,719
No of firms	2,328	2,328	2,328
Adj. R^2	0.035	0.054	0.066

Note: a - the dependent variable equals 1 if a firm assesses lending policy as accommodating (restrictive) and 0 otherwise. b - the dependent variable equals 1 if the surveyed firm assesses the lending policy as restrictive, 2 as normal, and 3 as accommodating. Constant, sectoral and regional-time effects are not reported. No-need is used as the base category. Clustered standard errors at the firm level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Source: WIFO, own estimation.

Table 6: Determinants of Beliefs about Bank Lending Policy, OLS, Lag Structure, Broad Loan Categories

	(1)	(2)	(3)
dependent variable	accommodating[a]	restrictive[a]	all[b]
as anticipated	0.171***	-0.085***	0.257***
	(0.017)	(0.013)	(0.023)
as anticipated, 1st lag	0.035***	-0.035***	0.070***
	(0.012)	(0.012)	(0.019)
as anticipated, 2nd lags	0.022*	-0.027**	0.049***
	(0.011)	(0.011)	(0.016)
as anticipated, 3rd lag	0.020	-0.012	0.032*
	(0.013)	(0.011)	(0.018)
as anticipated, 4th lag	0.028**	0.009	0.019
	(0.012)	(0.013)	(0.019)
not as anticipated	-0.005	0.275***	-0.280***
	(0.012)	(0.027)	(0.032)
not as anticipated, 1st lag	-0.031***	0.123***	-0.154***
	(0.011)	(0.022)	(0.026)
not as anticipated, 2nd lags	-0.029***	0.123***	-0.152***
	(0.009)	(0.021)	(0.024)
not as anticipated, 3rd lag	-0.040***	0.096***	-0.137***
	(0.011)	(0.021)	(0.024)
not as anticipated, 4th lag	-0.021*	0.089***	-0.110***
	(0.012)	(0.021)	(0.026)
credit constrained	-0.016*	0.308***	-0.324***
	(0.009)	(0.025)	(0.029)
credit constrained, 1st lag	-0.018**	0.110***	-0.128***
	(0.007)	(0.020)	(0.022)
credit constrained, 2nd lags	-0.006	0.142***	-0.148***
	(0.008)	(0.021)	(0.024)
credit constrained, 3rd lag	-0.019**	0.119***	-0.138***
	(0.009)	(0.020)	(0.022)
credit constrained, 4th lag	-0.024**	0.134***	-0.157***
	(0.009)	(0.024)	(0.027)
business exp. (lag)	0.027***	-0.034**	0.062***
	(0.008)	(0.013)	(0.017)
employment (log)	0.001	-0.005	0.007
	(0.004)	(0.007)	(0.009)
No of obs.	10,355	10,355	10,355
Adj. R^2	0.092	0.231	0.227

Note: a - the dependent variable equals 1 if a firm assesses lending policy as accommodating (restrictive) and 0 otherwise. b - the dependent variable equals 1 if the surveyed firm assesses the lending policy as restrictive, 2 as normal and 3 as accommodating. Constant, sectoral and regional-time effects are not reported. No-need is used as the base category. Clustered standard errors at the firm level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Source: WIFO, own estimation.

Table 7: Determinants of Beliefs about Bank Lending Policy, OLS, No Recent Loans, Broad Loan Categories

	no loan in previous 1 quarter			no loan in previous 4 quarters		
	(1)	(2)	(3)	(4)	(5)	(6)
dependent variable	accm.[a]	restr.[a]	all[b]	accm.[a]	restr.[a]	all[b]
as anticipated	0.193***	-0.072***	0.265***	0.202***	-0.070***	0.272***
	(0.018)	(0.015)	(0.026)	(0.032)	(0.025)	(0.044)
not as anticipated	-0.022	0.379***	-0.401***	0.011	0.389***	-0.378***
	(0.015)	(0.034)	(0.040)	(0.035)	(0.071)	(0.089)
credit constrained	-0.058***	0.539***	-0.597***	-0.041	0.469***	-0.510***
	(0.009)	(0.031)	(0.034)	(0.026)	(0.079)	(0.086)
business exp. (lag)	0.029***	-0.038***	0.067***	0.027***	-0.053***	0.081***
	(0.007)	(0.012)	(0.015)	(0.010)	(0.019)	(0.023)
employment (log)	-0.000	-0.011*	0.011	0.001	-0.013	0.014
	(0.004)	(0.007)	(0.008)	(0.004)	(0.009)	(0.010)
No of obs.	12265	12265	12265	5754	5754	5754
Adj. R^2	0.047	0.084	0.091	0.034	0.064	0.074

Note: a - the dependent variable equals 1 if a firm assesses lending policy as accommodating (restrictive) and 0 otherwise. b - the dependent variable equals or 1 if the surveyed firm assesses the lending policy as restrictive, 2 as normal and 3 as accommodating. Constant, sectoral and regional-time effects are not reported. No-need is used as the base category. Clustered standard errors at the firm level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Source: WIFO, own estimation.

Table 8: Heterogeneity of Credit Experience, Firm Size, OLS, Broad Loan Categories

	(1)	(2)	(3)
dependent variable	accommodating[a]	restrictive[a]	all[b]
as anticipated, small	0.200***	-0.095***	0.295***
	(0.018)	(0.014)	(0.026)
as anticipated, medium	0.148***	-0.041*	0.188***
	(0.028)	(0.022)	(0.039)
as anticipated, large	0.152***	0.006	0.146*
	(0.045)	(0.052)	(0.082)
not as anticipated, small	-0.042***	0.397***	-0.439***
	(0.009)	(0.026)	(0.030)
not as anticipated, medium	-0.047***	0.450***	-0.498***
	(0.014)	(0.039)	(0.047)
not as anticipated, large	-0.032	0.440***	-0.472***
	(0.024)	(0.058)	(0.069)
credit constrained, small	-0.069***	0.568***	-0.637***
	(0.007)	(0.022)	(0.025)
credit constrained, medium	-0.093***	0.710***	-0.803***
	(0.008)	(0.027)	(0.029)
credit constrained, large	-0.076***	0.593***	-0.669***
	(0.026)	(0.074)	(0.083)
business exp. (lag)	0.031***	-0.039***	0.070***
	(0.005)	(0.009)	(0.012)
employment (log)	0.002	-0.012**	0.014*
	(0.003)	(0.006)	(0.007)
Observations	19,719	19,719	19,719
Adj. R^2	0.068	0.180	0.172

Note: a - the dependent variable equals 1 if a firm assesses lending policy as accommodating (restrictive) and 0 otherwise. b - the dependent variable equals 1 if the surveyed firm assesses the lending policy as restrictive, 2 as normal and 3 as accommodating. Constant, sectoral and regional-time effects are not reported. No-need is used as the base category. Clustered standard errors at the firm level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Source: WIFO, own estimation.

Table 9: Heterogeneity of Credit Experience, Sectors, OLS, Broad Loan Categories

	(1)	(2)	(3)
dependent variable	accommodating[a]	restrictive[a]	all[b]
as anticipated, industry	0.165***	-0.051**	0.216***
	(0.024)	(0.021)	(0.037)
as anticipated, construction	0.110***	-0.026	0.136***
	(0.032)	(0.031)	(0.049)
as anticipated, services	0.211***	-0.094***	0.305***
	(0.021)	(0.018)	(0.030)
not as anticipated, industry	-0.051***	0.414***	-0.465***
	(0.013)	(0.035)	(0.040)
not as anticipated, construction	-0.070***	0.488***	-0.559***
	(0.015)	(0.044)	(0.048)
not as anticipated, services	-0.026**	0.390***	-0.416***
	(0.013)	(0.032)	(0.039)
credit constrained, industry	-0.084***	0.606***	-0.691***
	(0.011)	(0.038)	(0.041)
credit constrained, construction	-0.078***	0.623***	-0.701***
	(0.015)	(0.053)	(0.057)
credit constrained, services	-0.068***	0.594***	-0.663***
	(0.008)	(0.023)	(0.026)
business exp. (lag)	0.031***	-0.039***	0.070***
	(0.005)	(0.009)	(0.012)
employment (log)	-0.000	-0.008	0.007
	(0.003)	(0.005)	(0.007)
Observations	19,719	19,719	19,719
Adj. R^2	0.068	0.179	0.172

Note: a - the dependent variable equals 1 if a firm assesses lending policy as accommodating (restrictive) and 0 otherwise. b - the dependent variable equals 1 if the surveyed firm assesses the lending policy as restrictive, 2 as normal and 3 as accommodating. Sectoral and regional-time effects are not reported. No-need is used as the base category. Clustered standard errors at the firm level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Source: WIFO, own estimation.

Table 10: Heterogeneity of Credit Experience, NUTS1-Regions, OLS, Broad Loan Categories

	(1)	(2)	(3)
dependent variable	accommodating[a]	restrictive[a]	all[b]
as anticipated, East	0.221***	-0.116***	0.337***
	(0.026)	(0.023)	(0.038)
as anticipated, South	0.164***	-0.090**	0.254***
	(0.033)	(0.036)	(0.057)
as anticipated, West	0.164***	-0.034**	0.198***
	(0.020)	(0.016)	(0.028)
not as anticipated, East	-0.034**	0.390***	-0.424***
	(0.014)	(0.036)	(0.043)
not as anticipated, South	-0.023	0.359***	-0.383***
	(0.017)	(0.043)	(0.052)
not as anticipated, West	-0.060***	0.472***	-0.532***
	(0.012)	(0.035)	(0.038)
credit constrained, East	-0.080***	0.569***	-0.649***
	(0.011)	(0.030)	(0.034)
credit constrained, South	-0.062***	0.522***	-0.584***
	(0.009)	(0.035)	(0.038)
credit constrained, West	-0.078***	0.685***	-0.763***
	(0.010)	(0.033)	(0.037)
business exp. (lag)	0.031***	-0.042***	0.073***
	(0.005)	(0.009)	(0.012)
employment (log)	-0.000	-0.008	0.008
	(0.003)	(0.005)	(0.007)
Observations	19,719	19,719	19,719
Adj. R^2	0.067	0.173	0.167

Note: a - the dependent variable equals 1 if a firm assesses lending policy as accommodating (restrictive) and 0 otherwise. b - the dependent variable equals 1 if the surveyed firm assesses the lending policy as restrictive, 2 as normal and 3 as accommodating, East - the capital city of Vienna, lower Austria Vienna, and Burgenland, West - Upper Austria, Salzburg, Tyrol and Vorarlberg, South - Carinthia and Styria. Sectoral and regional-time effects are not reported. No-need is used as the base category. Clustered standard errors at the firm level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Source: WIFO, own estimation.