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Abhandlungen

Credit Constraints in the Euro Area? – Bankers' Perceptions

Analysis of First Results from the Bank Lending Survey of the Eurosystem

By Hannah Sabine Hempell, Frankfurt/M.*

I. Introduction

Subdued loan growth marked the beginning of this decade in the euro area and still prevails for Germany.[1] While the euro area experienced somewhat of a turnaround in growth rates in the course of 2004, in Germany credit growth continued to be extraordinarily weak. This overall development went along with restrained GDP growth dampening the demand for credit of corporate customers as well as private customers. However, besides an undoubted impact from the demand side, the question to what extent supply side effects affected this development remains heavily discussed up to the demon "credit crunch" making the round every once in a while. Surveys among entrepreneurs regularly stated their complaints of increasing difficulties in the access to bank financing. This issue is especially crucial for primarily bank-based financial systems such as the euro area and Germany, in particular. Here, not only private households but also enterprises rely mainly on banks for their external financing. By contrast, financial markets only provide a limited amount of financing – predominantly to larger firms. Due to their substantially higher degree of opaqueness with respect to their corporate activities and financial status, small and medium-sized enterprises (SMEs) depend even more on banks as financial intermediaries.

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[1] See *Deutsche Bundesbank* (2002) for comprehensive discussion of the loan developments in Germany.

Given the importance of bank financing and in order to obtain information on the banks' lending business beyond the monetary statistics already available, since the beginning of 2003 the Eurosystem has conducted a regular quarterly bank lending survey (BLS) for the euro area.[2] This survey is the first to regularly collect information on the distinct supply-side determinants and demand-side determinants of changes in banks' loan extensions for the euro area. The data comprise determinants of changes in credit standards such as banks' cost of funding and balance-sheet constraints, competitive pressures, and the banks' risk perceptions. To limit their risk exposures, the relationship between banks and their (opaque) borrowers is characterized by close monitoring as well as various terms and conditions included in their loan agreements. Therefore, the survey also covers changes in margins, in collateral demanded, in limits to the credit volume and in the maturity of loans. Together, they are not only decisive parameters of banks' lending policy but also of the credit relationship between banks and their customers.

This relationship between banks and customers itself, however, is subject to structural transformations of the overall financial systems. Banking markets in the euro area are exposed to increasing pressures to consolidate and to prepare for regulatory changes in the run-up to Basle II as well as to rapid technological change in their distribution channels and processing of deposits and loans. At the same time they are confronted with growing competition from other financial market players.[3] These structural changes impact on both access to financing for households and enterprises and on overall financing conditions. Changes in availability and in terms and conditions of bank loans are, therefore, the consequence not only of cyclical but also structural developments. As can be seen in the following analysis, apart from dominant factors such as financing needs and risk considerations, competitive pressures or the lack thereof seem to play a significant role in lending business according to the respondents of the survey.

Especially in the US and more recently in Japan, the Federal Reserve System and the Bank of Japan have already gained a long time's experience with such regular surveys on banks' lending business. For aggregate US survey data, different studies have shown how they can improve fore-

[2] See *Berg* et al. (2005), *ECB* (2003), pp. 65, and *Deutsche Bundesbank* (2003), pp. 67.

[3] See e. g. *Corvoisier* and *Gropp* (2001, 2002) and for Germany e. g. *Deutsche Bundesbank* (2001), p. 58 ff., *Hempell* (2002), and *Fischer* and *Hempell* (2007).

casts on credit growth and economic developments as well as the understanding of long-term credit developments.[4] Here, in a study on the procyclicality of lending behavior by *Berger and Udell* (2004), these survey data have been successfully used – to our knowledge – for the first time on a micro data level. Also, first analyses combining German bank lending survey data and bank level data on interest rate margins and changes in loan aggregates give some promising indications for the explanatory power of these survey data for key bank business figures.[5]

The proceeding paper is organized as follows: the second section delineates the survey's institutional framework including some details on the questionnaire to reflect type and quality of the data. An overview given on the aggregate survey results of the initial two years allows first conclusions on the importance of both demand-side determinants and supply-side determinants for overall credit development. Using individual bank level data, the third part, analyzes the explanatory power of different determinants of changes in loan supply and in loan demand extracting and using common driving factors from the various determinants covered by the survey. To conclude, section four combines and interprets the results and pieces of evidence from the previous sections.

II. Data and Institutional Framework

1. Structure of the Bank Lending Survey and Data Coverage

The bank lending survey (BLS) of the Eurosystem is based on a questionnaire[6] containing a total of 18 general questions including several subquestions. They cover banks' lending business with enterprises and private households (housing and consumer loans). The majority of questions is backward looking focusing on developments during the previous three months. The survey comprises both the supply side and the demand side of banks' lending business. On the supply side, it seeks bankers' assessment of changes in credit standards, their determinants, and changes in credit terms and conditions; on the demand side, the survey concentrates on the bankers' perceptions of changes in credit demand and their determining factors.

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4 See e. g. *Lown, Morgan* and *Rohatgi* (2000), *Lown* and *Morgan* (2007).

5 See *Hempell* (2005) for first results.

6 See *ECB* or *Bundesbank* web site for the questionnaire (http://www.ecb.int; http://www.bundesbank.de/volkswirtschaft/vo_veroeffentlichungen.php).

In order to obtain an indicative sample of European banks to assess bank lending behavior in the euro area, the national central banks carefully chose a representative sample of banks on the national level, thereby, giving special attention to the specific structure of their respective national banking systems. Key criteria for selection were banks' market shares for the relevant banking products, i.e. loans to the private sector. As for more complex structures of some national banking systems – Germany being a prominent case, further selection criteria were the market shares of relevant banking categories (e.g. savings banks, cooperative banks, private commercial banks, etc.) in order to reflect differences in lending behavior across these banking categories. Furthermore, to ensure the coverage of lending behavior of large as well as smaller banks, special care was taken to also include a significant number of smaller banks in the sample. Overall 86 banks, including 17 German banks, take part in the regular quarterly survey of the Euro system.

The first survey round took place in January 2003 covering the fourth quarter of 2002; the following analysis comprises data from eight survey rounds or two years up to the third quarter of 2004. The survey is either conducted in the form of interviews or in a written procedure alternating from country to country in its precise procedural design. In Germany, exclusively senior bank managers – board members or senior staff reporting directly to them – answer the survey questionnaire by means of interviews.

The individual bank level data obtained through the survey are used for the empirical analysis in section 3 and form the basis for the aggregate indicators described below. For the euro area as a whole, they contain 683 anonymous individual bank observations of which 136 observations stem from German banks.[7] The information included reflect purely qualitative and subjective views of the interviewed high-level bankers, which they translate into an ordinal five-point scale ranging from "– –", "–", "o", "+", and "++".[8] (For further descriptive details see tab. 9 in the appendix.) These categorical variables for 55 questions and subquestions

[7] However, since some banks do not have (significant amounts) of either corporate or private household business, observations in the respective categories are below the number of observations quoted above. Additionally, there are a number of missing observations with respect to several subquestions when respondents did not find them applicable to their business or business decisions.

[8] "– –" (tightened/decreased considerably), "–" (tightened/decreased somewhat), "o" (remained basically unchanged), "+" (eased/increased somewhat), and "++" (eased/increased considerably).

of the questionnaire are used within this study. The data set, therefore, is made up of 55 ordinal categorical variables reflecting the qualitative assessment of bank lending business by 86 European banks selected as a representative coverage of the European banking market by the national experts of all Eurosystem central banks. The bank individual replies translated into a five-point scale form the data base for the micro data analysis performed in section III.

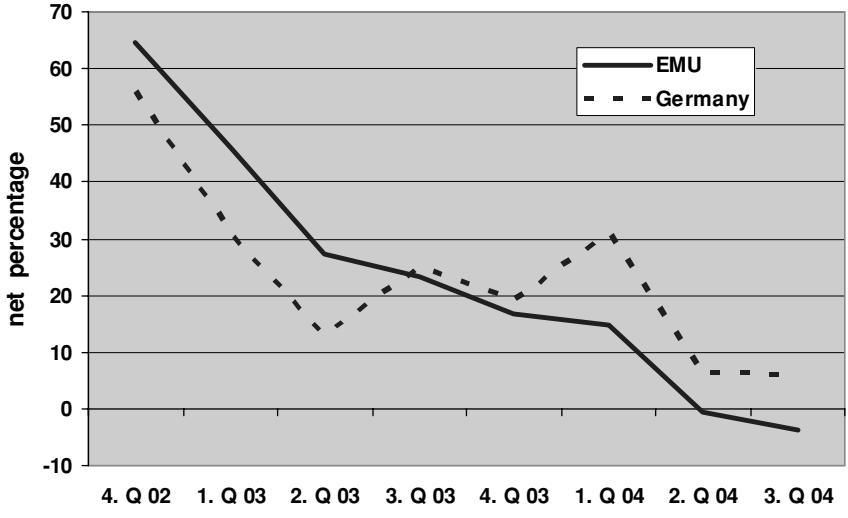
For the regular policy related analysis, the ECB aggregates these data for the euro area on the basis of country weights; here, the weight of the German results amounts to about one third. Analyses based on these aggregates then form part of the set of briefing material prepared for the monetary policy meeting of the ECB Governing Council. Furthermore, the results are published regularly in monthly reports, press releases, and websites[9] of the ECB and several of the participating central banks such as the Bundesbank.

Generally, the interpretation of the survey results is subject to a number of qualifications. Most importantly, the survey findings are of qualitative and subjective nature. In contrast to quantitative data such as precise figures on credit volume, they reflect the bankers' subjective appraisals of tendencies recorded on a five-point scale. Furthermore, in the survey only the changes in key parameters of lending business are identified whereas information on levels, e.g. the absolute degree of restrictiveness, cannot be directly derived from these data. Finally, the limited amount of observations over time results in a lack of experience in interpretation with respect to longer-term behavior, i.e. over an interest rate or business cycle.

2. Aggregate Overview

For the aggregate analysis, the results of the survey are summarized to a condensed figure, the so called "net percentage" which allows a quantitative assessment of the qualitative results obtained. For questions related to the supply side of lending, this figure is defined as the difference between the percentage share of responses in the restrictive range less the percentage share of the responses in the expansionary range. Accordingly, a positive value indicates a restrictive tendency while a negative

9 http://www.ecb.int/stats/money/lend/html/index.en.html#results and for Germany including downloadable excel files: http://www.bundesbank.de/volkswirtschaft/vo_veroeffentlichungen.php.



* *net percentage:* difference between the percentage share of replies in the restrictive range less the percentage share of the replies in the expansionary range.

*Figure 1: Changes in Credit Standards for Loans to Enterprises**

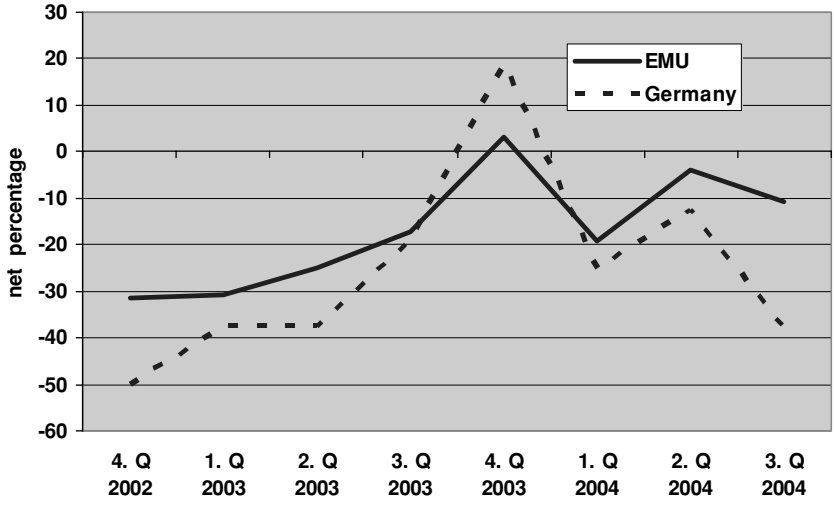
value reflects an expansionary tendency. For demand related questions the opposite applies with positive net percentage values representing rising demand and vice versa.

Looking at aggregate results of the BLS for the first two years, we can observe some general trends regarding changes in credit standards, terms and conditions, and in demand for corporate loans as well as for loans to private households.

For loans to enterprises, a decreasing tendency in the tightening of credit standards on the supply side (see fig. 1) and a decline in the weakening of demand (less clear in the case of Germany – see fig. 2) reflected the main general trends in the euro area for this period.

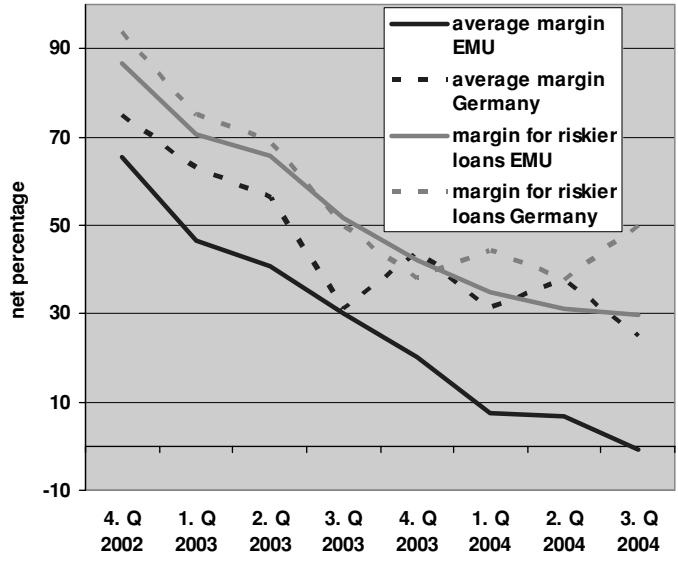
Changes in terms and conditions generally echoed the developments of credit standards, however, a trend towards more risk differentiated pricing persisted throughout the sample period (see fig. 3). More specifically, for Germany the participating bankers indicated an increase in margin spreads also for average loans.

Regarding loans to private households, after the tightening in the first two quarters of the survey credit standards for consumer loans remained



* *net percentage:* difference between the percentage share of replies in the expansionary range less the percentage share of the replies in the restrictive range.

Figure 2: Changes in Demand for Loans to Enterprises as Perceived by the Bankers



* *net percentage:* difference between the percentage share of replies in the restrictive range (widening of margins) less the percentage share of the replies in the expansionary range (narrowing of margins).

*Figure 3: Changes in Terms and Conditions for Loans to Enterprises**

largely unchanged whereas for housing loans this tendency has not been as clear cut (see fig. 4 in the appendix). With respect to demand for housing loans, the bankers experienced mostly (slight) increases; however, for Germany there was somewhat of a drop in 2004 which might among others reflect changes in tax subsidies. For consumer loans, generally demand as perceived by the bankers slightly increased in 2004 while for Germany the tendency remained weak (see fig. 6 in the appendix). Similar to pricing developments for corporate loans, a persistent trend towards more risk differentiated margins also prevailed for loans to private households – more pronounced even than for corporate loans if we follow the bankers' self-assessments (see fig. 5 in the appendix). Furthermore, a trend towards decreasing margins for average loans can be observed starting carefully in the second half of 2003. All in all these observed increases in risk differentiation might also be viewed in the context of banks' preparations for regulatory changes within the framework of Basle II as well as technological changes related to advances in information technology and banks' risk management.

III. Empirical Analysis

In order to analyze data obtained by the BLS in more detail, we use individual bank level data for a more comprehensive understanding of what actually drives banks' loan business from the bankers' perspective. The use of individual bank data allows us to benefit from yet another level of heterogeneity – apart from time – to gain more knowledge about why and how banks change their bank lending behavior. Given additionally the large amount of related (sub)questions, factor analysis is a suitable technique to empirically analyze and interpret replies to these partially correlated sets of subquestions; it offers the opportunity to take advantage of the full range of information provided by the survey by condensing it to key driving factors.

In the following, we first want to determine common factors of the determinants of changes in credit standards regarding the supply of loans to enterprises as well as to private households. Furthermore, common factors with respect to changes in terms and conditions and to the determinants of changes in the perceived demand for loans are of special interest in this context. These factors are extracted from a set of (partially correlated) answers to the respective survey questions on the micro-data level by factor analysis. Thereby, a larger set of determinants can be condensed to two or three basic unobserved principal factors. In a second

step, these factors obtained are used as regressors in ordered probit estimations explaining changes in credit standards or in the demand for loans as perceived by the bankers. Thereby, the importance and explanatory power of different factors for changes in loan business can be assessed.

1. Driving Factors and Their Explanatory Power

The BLS offers a range of potentially important determinants for changes in credit standards and demand for loans. From the answers of the 86 (17) banks regularly participating in the survey in the euro area (Germany) several qualitative categorical variables are obtained for each question, e. g. nine potential determinants of changes in credit standards for loans to enterprises. These nine determinants or variables generally are more or less correlated, which can induce severe problems of multicollinearity if used as a set of explanatory variables. But also from a purely descriptive point of view, the amount and interdependence of these variables does not always facilitate their economic interpretation.

With the help of factor analysis these variables are condensed to just a few common unobservable or latent, uncorrelated factors.[10] Each of these factors can be described as a linear combination of the original variables weighted with a set of scoring coefficients obtained by the respective factor loadings. Here, principal factor analysis was used to estimate factors and factor loadings, where the first principal factor accounts for the largest amount of variation in the data; additional factors explain a decreasing amount of variation. In order to facilitate interpretation, the factors are then rotated trying to minimize the number of original variables within each factor with a high loading.[11]

To obtain regressors (score variables) for a subsequent ordered probit analysis, we assign a weight/scoring coefficient to each original variable for each factor according to the proportion of its variance explained by the factor. These score variables then represent the different factors extracted from the various data subsets from comprehensive questions covering a set of determinants, e. g. for changes in credit standards. They are then included as explanatory variables in the respective ordered probit estimation equation. With an ordered probit estimation,[12] here, the prob-

[10] See *Handl* (2002), pp. 217.
[11] Here the varimax method was used for rotation.
[12] See *Long* and *Freese* (2003), pp. 155.

ability of observing an outcome k for a question related to changes in credit standards or changes in the demand for loans is estimated depending on the parameter values of two or more (m) explanatory score variables (*factors*):[13]

$$\Pr(change = k|factor) = \Pr(\kappa_{k-1} < \sum_{j=1}^{m} \beta_j factor_j + u \leq \kappa_k) \text{ with } \quad factor_j = \sum_{i=1}^{n} c_{i,j} x_{i,j}$$

where k represents a point on the five-point scale of answers (e.g. for changes in credit standards) and $factor_j$ is one of the extracted m principal factors from a set of variables (subquestions); it is calculated as the sum of these different variables weighted by their respective scoring coefficients, $c_{i,j}$, based on the estimated factor loadings.

From the outcome of the resulting estimations, we expect more pronounced indications as to which determinants account for changes in credit supply and credit demand from the bankers' perspective. Additionally, main tendencies in how banks translate changing credit standards into modifications in their credit terms and conditions may become evident.

2. *Determinants of Changes in Credit Standards*

For loans to enterprises, changes in credit standards according to the bankers' replies display three common factors following the factor analysis described in tab. 1. Taking the allocation of high factor loadings into consideration (highlighted as shaded areas), these can be interpreted as risk considerations ("risk"), competitive pressures ("competition"), and banks' own balance sheet constraints ("bank constraints"). "Risk" covering the general economic as well as the industry or firm specific outlook and to a lesser extent the risk on collateral demanded. "Competition" containing the answers referring to competition from other banks, nonbanks, and market financing.[14] "Bank constraints" cover banks' cost of capital, their own access to market financing and the impact of their liquidity position. For the euro area as a whole, these three factors can be

[13] In our regression we name these factors e.g. "risk", "bank constraints", "competition", or "financing needs".

[14] For Germany answers to the latter two included a large number of missing values, i.e. they were regarded as irrelevant by the respondents, and were therefore dropped to not further reduce the amount of observations.

Table 1

Results of Factor Analysis: Determinants of Changes in Credit Standards for Loans to Enterprises*

	euro area						Germany			
	factor 1		factor 2		factor 3		factor 1		factor 2	
interpretation determinants covered by the questionnaire	"risk"		"competition"		"bank constraints"		"risk"		"bank constraints"	
	factor loadings	scoring coefficients	factor loadings	scoring coefficients	factor loadings	scoring coefficients	factor loadings	scoring coefficients	factor loadings	scoring coefficients
bank's cost of capital	0,33	0,05	-0,09	-0,06	0,44	0,19	0,19	0,03	0,35	0,11
bank's access to market financing	0,12	-0,03	0,03	0,00	0,68	0,41	0,15	-0,04	0,74	0,43
bank's liquidity	0,12	-0,04	0,07	0,02	0,66	0,38	0,10	-0,05	0,75	0,43
competition from other banks	0,24	0,04	0,36	0,17	-0,02	-0,04	0,00	-0,02	0,03	0,02
competition from non-banks	-0,05	-0,02	0,64	0,38	0,06	0,02				
competition from market financing	0,08	0,00	0,67	0,41	0,02	-0,01				
economic outlook	0,82	0,45	-0,01	-0,05	0,12	-0,04	0,78	0,41	0,21	0,03
industr or firm specific outlook	0,80	0,39	0,04	0,00	0,09	-0,06	0,78	0,36	0,04	-0,09
risk on collateral	0,56	0,14	0,12	0,05	0,12	0,01	0,68	0,26	0,08	-0,03
selection criteria										
Eigenvalues		2,71		1,68		1,45		2,07		0,96
test statistic										
Bartlett's test of sphericity		chi^2	1339,61		df	36	chi^2	228,03	df	21

* Based on rotated factors. - Data from answers to question 2 of the BLS questionnaire.

extracted; for Germany only two factors – "risk" and "bank constraints", however, based on a reduced set of variables (see footnote 14).

Looking at the ordered probit estimation results in tab. 10 of the appendix, their explanatory power for the changes in credit standards as stated by the participating bankers is rather high for both the euro area and Germany alone. In general, risk considerations had the highest impact on changes in credit standards for loans to enterprises during these two years. However, banks' own balance sheet constraints and – to a lesser extent – competition were also important determinants for banks in their decision as to if or how to change their credit standards.

Table 2

Results of Factor Analysis: Determinants of Changes in Credit Standards for Private Household Mortgage Loans*

	euro area			
interpretation	**factor 1 "risk"**		**factor 2 "competition"**	
determinants covered by the questionnaire	factor loadings	scoring coefficients	factor loadings	scoring coefficients
bank's cost of funds	0,22	0,12	0,07	0,03
competition from other banks	0,14	0,06	0,51	0,38
competition from non-banks	-0,59	-0,06	0,50	0,36
economic outlook	0,62	0,42	0,06	0,01
housing market prospects	0,56	0,36	0,00	-0,02
selection criteria				
Eigenvalues		0,80		0,48
test statistic				
Bartlett's test of sphericity	chi^2	248,42	df	10

* Based on rotated factors. - Data from answers to question 9 of the BLS questionnaire.

Similar results regarding the driving factors of changes in credit standards can be found for loans to private households. Here again, risk considerations and competition could be extracted and interpreted as important common factors underlying banks' loan supply behavior. Contrary to credit standards for loans to enterprises, however, additional significant tightening of credit standards here was – especially for consumer

loans – more or less confined to the first two quarters of the survey, while for loans to enterprises a significant net tightening of credit standards was observable up to the first quarter of 2004 (see figure 1, p. 6). Accordingly, the actual impact of these factors – especially "competition" – to banks' loan supply behavior to private households de facto was largely of opposite direction, i. e. contributed to an easing of credit standards.

In more detail, as described in tab. 2, for changes in credit standards regarding mortgage loans the "risk"-factor again contained the general economic outlook and as a more specific risk variable "housing market prospects" ("banks' cost of funds" indirectly related to their risk taking entered here with an intermediate factor loading – highlighted as slightly shaded areas).[15]

For consumer loans (see tab. 3), we obtain similar results. The "risk" factor here mainly covers the variables "economic outlook", "creditworthiness of customers", and "risk on the collateral demanded". However, as for mortgage loans "banks' own cost of funds" enters with an intermediate factor loading (highlighted as slightly shaded areas). "Competition" interpreted as a factor, covering competition from other banks and from non-banks, is especially clearly pronounced here as compared to mortgage loans or loans to enterprises. This is likely to reflect among others the increasing interest of European (German) banks in consumer loan business during the last few years going along with increasing competitive pressures perceived by banks.

Again, the explanatory power of the extracted factors for changes in credit standards is rather high for consumer loans as well as for mortgage loans (see ordered probit estimation results in tab. 10 of the appendix). In general, risk considerations had the highest impact on changes in credit standards for loans on the European level, while for Germany alone the dominance of risk considerations compared to competitive pressures did not seem to be as accentuated; however, here the quality of the results is limited due to the substantially lower amount of observations for Germany as compared to the entire euro area.

[15] For Germany alone, the extraction of principal factors for this set of variables was not feasible due to the specifics of their correlation structure.

Table 3

Results of Factor Analysis: Determinants of Changes in Credit Standards for Private Household Consumer Loans*

	euro area				Germany			
interpretation	**factor 1 "risk"**		**factor 2 "competition"**		**factor 1 "competition"**		**factor 2 "risk"**	
determinants covered in the questionnaire	factor loadings	scoring coefficients	factor loadings	scoring coefficients	factor loadings	scoring coefficients	factor loadings	scoring coefficients
bank's cost of funds	0,38	0,12	0,09	0,02	0,21	0,02	0,46	0,14
competition from other banks	0,18	0,00	0,58	0,40	0,89	0,50	0,12	-0,01
competition from non-banks	0,05	-0,03	0,57	0,39	0,88	0,46	0,07	-0,10
economic outlook	0,71	0,33	0,08	-0,02	0,13	-0,04	0,80	0,38
creditworthiness of consumers	0,73	0,37	0,08	-0,03	0,09	-0,05	0,83	0,44
risk on collateral	0,64	0,26	0,13	0,03	0,13	0,01	0,51	0,15
selection criteria								
Eigenvalues		1,75		0,57		2,24		1,21
test statistic								
Bartlett's test of sphericity	chi^2	648,56	df	15	chi^2	248,01	df	15

* Based on rotated factors. - Data from answers to question 11 of the BLS questionnaire.

3. Changes in Banks' Terms and Conditions

Three questions of the survey address the issue of how changes in credit standards are translated into changes in banks' terms and conditions (for loans to enterprises, for mortgage loans, and for consumer loans). Within these questions, changes in margins and other conditions are considered. With the help of factor analysis we try to filter out a few main drivers among the different subcomponents of these changes in conditions.

While for loans to enterprises the correlation structure of the subcomponents did not allow us to extract more than one general factor including all subcomponents with different weights (factor loadings), for loans to private households it was somewhat easier to outline two sensible factors (see tab. 4 and tab.5).

These factors were interpreted as "securing/other" and "price": while the first contained subcomponents mainly related to changes of banks' risk exposures (collateral, maturity – for mortgage loans additionally the "loan-to-value" ratio), the second reflected changes in margins (average loan margin, margin for riskier loans). Including these factors in ordered probit estimations explaining the respective changes in credit standards yields rather high explanatory power of these constructed score variables, particularly so for housing loans (see ordered probit estimation results in tab. 10 of the appendix).

4. Determinants of Changes in the Demand for Loans as Perceived by the Bankers

As for changes in credit standards, the survey likewise provides information on the determinants of changes in demand for loans as perceived by the surveyed bankers. Here again, a whole range of more or less correlated determinants is included in the respective questions. In order to understand which main factors are viewed by bankers as the determinants of changes in demand for loans, we again use factor analysis to extract the main perceived common factors.

The views expressed by the surveyed bankers on loan demand by enterprises can be summarized in two common factors "financing needs" and "alternative finance" (see tab. 6). "Financing needs" covers determinants such as fixed investments, inventories and working capital, and corporate restructuring while under "alternative finance" we subsume

Table 4

Results of Factor Analysis: Changes in Credit Terms and Conditions for Private Household Mortgage Loans*

	euro area				Germany			
	factor 1		**factor 2**		**factor 1**		**factor 2**	
interpretation conditions covered by the questionnaire	**"securing/other"**		**"price"**		**"security/other"**		**"price"**	
	factor loadings	scoring coefficients	factor loadings	scoring coefficients	factor loadings	scoring coefficients	factor loadings	scoring coefficients
average loan margin	0,12	-0,05	0,51	0,34	0,01	-0,07	0,60	0,37
margin (riskier loans)	0,31	0,03	0,56	0,40	0,33	-0,01	0,66	0,51
collateral	0,62	0,32	0,22	0,02	0,70	0,33	0,22	0,01
"loan-to-value" ratio	0,63	0,33	0,22	0,02	0,77	0,40	0,14	-0,06
maturity	0,47	0,21	0,09	-0,04	0,52	0,17	0,09	-0,01
non-interest charges	0,46	0,19	0,19	0,03	0,60	0,20	0,12	-0,02
selection criteria								
Eigenvalues		1,74		0,31		2,11		0,59
test statistic								
Bartlett's test of sphericity	chi^2	663,64	df	15	chi^2	198,91	df	15

* based on rotated factors. - Data from answers to question 10 of the BLS questionnaire.

Table 5

Results of Factor Analysis: Changes in Credit Terms and Conditions for Private Household Consumer Loans*

interpretation	euro area			
	factor 1 "securing/other"		factor 2 "price"	
	factor loadings	scoring coefficients	factor loadings	scoring coefficients
average loan margin	0,26	0,00	0,50	0,30
margin (riskier loans)	0,33	0,02	0,54	0,35
collateral	0,55	0,26	0,37	0,13
maturity	0,60	0,34	0,24	-0,01
non-interest charges	0,55	0,28	0,25	0,01
selection criteria				
Eigenvalues		1,77		0,16
test statistic				
Bartlett's test of sphericity	chi^2	596,28	df	10

* Based on rotated factors. - Data from answers to question 12 of the BLS questionnaire.

internal financing and loans from other banks (the high factor loading of debt restructuring within this latter factor only fits very indirectly to this factor interpretation, as it mainly reflects the demand for changes in the maturity structure of existing loans – converting short-term to long-term maturities). "Loans from other banks" here now reflects the impact of competitive pressures via the demand side; competition already proved to be rather important for the explanation of changes in credit standards as described in section 3.2.

Using these two factors ("financing needs" and "alternative finance") as regressors in ordered probit estimates explaining the bankers' perceptions of changes in demand for commercial loans (question 4 of the survey), we find "financing needs" to be the most important factor; whereas "alternative finance" did not turn out to be significant for the entire euro area sample but only for Germany (see ordered probit estimation results in tab. 10 of the appendix).

For determinants of demand for loans by private households, the bankers' views can likewise be summarized in two factors interpreted as "financing needs" and "alternative finance". As for Germany the correlation structure of the data did not allow for a sensible factor analysis on this data subset, we focus on the results for the euro area as a whole.

Table 6

Results of Factor Analysis: Determinants of Changes in Demand for Loans to Enterprises as Perceived by the Surveyed Bankers*

	euro area				Germany			
	factor 1		factor 2		factor 1		factor 2	
interpretation determinants covered by the questionnaire	**"financing needs"**		**"alternative finance"**		**"alternative financ"**		**"financing needs"**	
	factor loadings	scoring coefficients	factor loadings	scoring coefficients	factor loadings	scoring coefficients	factor loadings	scoring coefficients
fixed investments	0,49	0,36	0,02	-0,03	-0,03	-0,01	0,39	0,32
inventories or working captial	0,33	0,22	0,01	-0,02	0,01	0,01	0,35	0,28
corporate restructuring	0,36	0,25	0,33	0,23				
debt restructuring	0,07	0,02	0,45	0,33	0,55	0,38	0,09	0,09
internal financing	0,08	0,03	0,29	0,19	0,24	0,14	0,01	0,01
loans from other banks	-0,13	-0,11	0,31	0,22	0,55	0,37	-0,11	-0,10
selection criteria								
Eigenvalues		0,65		0,35		0,66		0,29
test statistic								
Bartlett's test of sphericity	chi^2	160,9	df	15	chi^2	31,54	df	10

* Based on rotated factors. - Data from answers to question 5 of the BLS questionnaire.

Here, for mortgage loans "financing needs" includes high factor loadings for "housing market prospects", "consumer confidence", and "non-housing related consumption", while "alternative finance" comprises "household savings", "loans from other banks", and "other financial resources" (see tab. 7). Interpreting the corresponding results of ordered probit estimations of changes in demand for mortgage loans explained by these two factors, we again find that even though both factor variables are highly significant "financing needs" has the highest explanatory power (see ordered probit estimation results in tab. 10 of the appendix).

Table 7

Results of Factor Analysis: Determinants of Changes in Demand for Private Household Mortgage Loans as Perceived by the Surveyed Bankers*

	euro area			
	factor 1		**factor 2**	
interpretation	**"financing needs"**		**"alternative finance"**	
	factor loadings	scoring coefficients	factor loadings	scoring coefficients
housing market prospects	0,63	0,39	0,12	0,01
consumer confidence	0,53	0,27	0,13	0,03
non-housing related consumption	0,50	0,26	-0,02	-0,09
household savings	0,33	0,12	0,38	0,27
loans from other banks	0,20	0,06	0,23	0,15
other financial sources	0,05	-0,03	0,48	0,37
selection criteria				
Eigenvalues		1,22		0,31
test statistic				
Bartlett's test of sphericity	chi^2	372,55	df	15

* Based on rotated factors. - Data from answers to question 14 of the BLS questionnaire.

A similar picture can be obtained when applying this analysis to the determinants of changes in demand for consumer loans (see tab. 8). Again we can extract two factors interpreted as above. "Financing needs" here comprises "spending on durable consumer goods", "consumer confidence", and "household savings".[16] "Alternative finance" in-

[16] "securities purchases" was dropped from the analysis as there have been too many missing values (see data descriptives in tab. 9 of the appendix).

Table 8

Results of Factor Analysis: Determinants of Changes in Demand for Private Household Consumer Loans as Perceived by the Surveyed Bankers*

interpretation	euro area			
	factor 1 "financing needs"		factor 2 "alternative finance"	
	factor loadings	scoring coefficients	factor loadings	scoring coefficients
spending on durable consumer goods	0,62	0,36	0,12	0,04
consumer confidence	0,63	0,38	0,02	-0,07
household savings	0,45	0,21	0,18	0,10
loans from other banks	0,16	0,03	0,42	0,31
other financial sources	0,07	-0,01	0,46	0,35
selection criteria				
Eigenvalues		1,12		0,33
test statistic				
Bartlett's test of sphericity	chi^2	324,45	df	10

* Based on rotated factors. - Data from answers to question 15 of the BLS questionnaire.

cludes "loans from other banks" and "other financial resources". In the corresponding ordered probit estimation we find a high dominance of the factor "financing needs" for the euro area as a whole. Here again, the loans from other banks indirectly reflect competitive pressures from other banks.

IV. Conclusions

Tying together results of the first eight survey rounds, bankers' perceptions of lending business give clear signs for demand related *and* supply related effects impacting on loan developments in the course of 2002 to 2004. However, indications for a "credit crunch" as often proclaimed have not been revealed by this analysis. Apart from cyclical factors, according to the respondents also structural changes had a significant impact on developments in lending business. These finding are supported by both aggregate survey results and more detailed factor analysis of potential determinants of changes in loan supply and perceived loan demand on the micro data level.

The distinction between cyclical and structural characteristics for this very period remains nonetheless somewhat unclear. Changes in competitive pressures might offhand be viewed as being predominantly structural and changes in financing needs of customers as largely cyclical. Risk perceptions as well as banks' balance-sheet constraints, by contrast, might have been influenced not only by unfavorable cyclical conditions but also to a considerable extent by structural changes such as the preparation for regulatory changes within the framework of Basle II or advances in information technology and in banks' risk management catalyzed by the former. However, from the bank lending survey for this interpretation we cannot rely on more but anecdotic evidence by some respondents' remarks during interviews pointing towards this direction.

In detail, for the demand side we found main driving factors extracted from the data to be the extent of "financing needs" and the availability of "alternative finance". For firms, financing needs related to fixed investments, working capital and inventories, as well as corporate restructuring; for private housing loans they were linked to housing market prospects, consumer confidence, and non-housing related consumption (so far, however, the latter has not proved to be of special relevance in Germany); with respect to consumer loans financing needs comprised spending on durable consumer goods, consumer confidence, and household savings. The second driving factor – "alternative finance" – for firms' loan demand covered debt restructuring, internal financing, and loans from other banks but was only significant for Germany; for housing and consumer loans, other financial sources and loans from other banks as well as household savings in the case of housing loans made up this second factor. For both loans to private households and to enterprises the availability of loans from other banks reflected the competitive pressure (or the lack thereof) as an additional important structural determinant of loan demand albeit financial needs being clearly the most important driver.

Also changes in credit standards, i. e. the supply side, were influenced by cyclical *and* structural factors. Within our analysis risk perceptions, changes in competition, as well as banks' cost of funds and balance-sheet constraints proved to be highly significant driving factors. More precisely, for changes in credit standards with respect to firms "risk" played the most important role reflecting the economic and firm-specific outlook as well as the risk on collateral. In Germany, the relative importance of "bank constraints" was relatively higher than in the euro area

as a whole. That is, changes in banks' costs of funds, their access to market financing and their liquidity were additional important factors for a tightening in credit standards for loans to enterprises. Also for the change of credit standards with respect to private housing and consumer loans "risk" – here comprising economic outlook and housing market prospects or consumer confidence, respectively – was the dominant driver. Changes in competitive pressures had an additional impact on credit standards for all three categories.

Tightening in credit standards was mainly reflected in the banks' pricing and securing of loans. As already observable from the aggregate analysis, a rising risk sensitivity of banks seems to be one of the most important supply side characteristics which is echoed in increasingly risk differentiated margins. This again is likely to be due to changes in banks' risk management catalyzed not only by disadvantageous cyclical factors but also by technological advances and preparatory work in the run up to Basle II. Thus, the results on the one side indicate more efficient allocation of capital with respect to risk differentiation. On the other side, such developments are likely to go along with some financing constraints for riskier borrowers increasing the importance of borrowers' transparency as well as high quality relationships between banks and borrowers to minimize informational asymmetries and thereby the borrowers' "risky" opaqueness.

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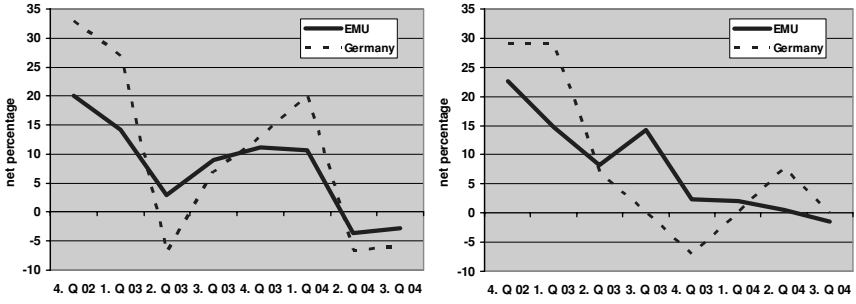
Appendix

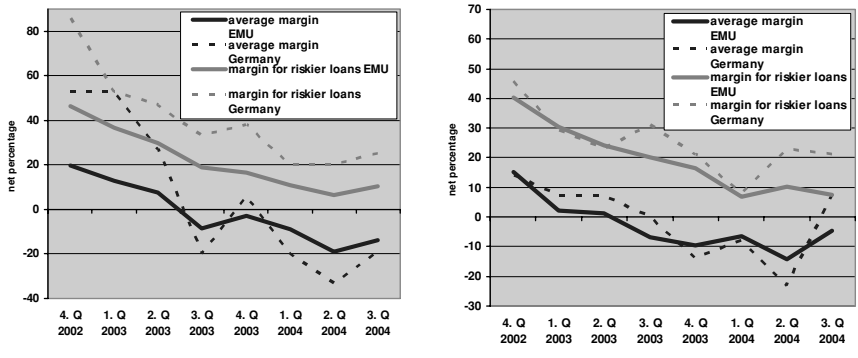
(a) housing loans (b) consumer loans



* *net percentage:* difference between the percentage share of replies in the restrictive range less the percentage share of the replies in the expansionary range.

Figure 4: Changes in Credit Standards for Loans to Private Households

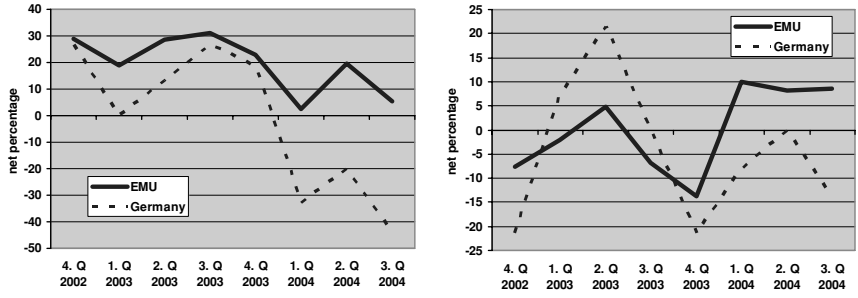
(a) housing loans (b) consumer loans



* *net percentage:* difference between the percentage share of replies in the restrictive range (widening of margins) less the percentage share of the replies in the expansionary range (narrowing of margins).

Figure 5: Changes in Terms and Conditions for Loans to Private Households

(a) housing loans (b) consumer loans



* *net percentage:* difference between the percentage share of replies in the expansionary range less the percentage share of the replies in the restrictive range.

*Figure 6: Changes in Demand for Loans to Private Households**

Table 9

Descriptives on the Bank Lending Survey Micro Data Sets (4th quarter 2002–3rd quarter 2004)

		euro area							Germany						
	(sub)questions	quest. no.	- -	-	o	+	+ +	# obs.	- -	-	o	+	+ +	# obs.
	loans to enterprises														
	credit standards (overall)	1.1	8	160	458	22	2	650	1	29	98	-	-	128
determinants	bank's cost of capital	2.1	13	84	525	8	-	630	1	24	103	-	-	128
determinants	bank's access to market financing	2.2	8	38	545	22	-	613	6	13	96	5	-	120
determinants	bank's liquidity	2.3	5	24	569	17	1	616	4	3	116	4	-	127
determinants	competition from other banks	2.4	-	20	501	100	4	625	-	8	97	9	-	114
determinants	competition from non-banks	2.5	1	6	564	19	-	590	-	2	92	3	-	97
determinants	competition from market financing	2.6	6	6	558	26	-	596	-	1	98	3	-	102
determinants	economic outlook	2.7	44	202	366	40	1	653	8	29	85	6	-	128
determinants	industry or firm specific outlook	2.8	43	231	351	27	-	652	8	34	80	6	-	128
determinants	risk on collateral	2.9	8	129	495	14	-	646	2	30	94	2	-	128
	demand (overall)	4.1	9	164	387	88	5	653	2	47	62	15	2	128
determinants	fixed investments	5.1	35	194	350	54	3	636	13	43	61	5	-	122
determinants	inventories or working captial	5.2	1	97	422	95	2	617	-	25	72	14	-	111
determinants	corporate restructuring	5.3	25	80	403	94	1	603	1	11	82	12	-	106
determinants	debt restructuring	5.4	4	28	399	184	8	623	1	5	79	33	2	120
determinants	internal financing	5.5	3	63	490	40	-	596	-	14	95	12	-	121
determinants	loans from other banks	5.6	-	4	513	38	7	604	-	9	84	27	7	127
	housing loans (private households)														
	credit standards	8.1	6	76	509	46	1	638	2	18	95	7	1	123
determinants	bank's cost of funds	9.1	-	20	543	8	-	571	-	7	108	2	-	117
determinants	competition from other banks	9.2	-	9	494	93	3	599	-	3	92	9	1	105
determinants	competition from non-banks	9.3	-	6	556	13	-	575	-	4	92	1	-	97
determinants	economic outlook	9.4	12	127	469	20	-	628	1	21	92	3	-	117
determinants	housing market prospects	9.5	8	121	468	31	-	628	1	15	94	7	-	117

	average loan margin	10.1		1	74	466	93		1	635		1	24	80	18	-		123
terms and conditions	margin (riskier loans)	10.2		14	124	478	13		1	630		9	39	74		-		122
	collateral	10.3	-		57	557	15	-		629	-		16	105	1	-		122
	"loan-to-value" ratio	10.4		4	94	489	42		1	630		1	16	104	2	-		123
	maturity	10.5		3	18	562	49		3	635		1	2	119	1	-		123
	non-interest charges	10.6	-		43	570	14		2	629	-		13	104	3	-		120
	demand	13.1		14	84	303	189		47	637		9	29	49	27		9	123
determinants	housing market prospects	14.1		4	81	389	144		11	629	-		23	85	10		2	120
	consumer confidence	14.2		9	125	430	65	-		629		5	42	72	2	-		121
	non-housing related consumption	14.3	-		57	533	9		1	600			12	101	1	-		114
	household savings	14.4		1	39	528	36		1	605		1	8	106	4	-		119
	loans from other banks	14.5		4	32	540	24		3	603		1	15	93	7		2	118
	other financial sources	14.6	-		9	555	17		2	583	-		4	99	3		1	107
										consumer loans														
terms and conditions	**credit standards**	8.2		3	79	508	32	-		622	-		15	90	6	-		111
	bank's cost of funds	11.1	-		14	539	6	-		559	-		3	99	1	-		103
	competition from other banks	11.2	-		10	524	63	-		597	-		3	94	3	-		100
determinants	competition from non-banks	11.3		2	2	557	26	-		587		2	1	91	1	-		95
	economic outlook	11.4		6	110	485	8	-		609			18	91	1	-		110
	creditworthiness of consumers	11.5		8	114	476	12	-		610		2	23	83	3	-		111
	risk on collateral	11.6		2	67	509	4	-		582	-		6	97	1	-		104
terms and conditions	average loan margin	12.1		2	45	495	74		1	617		1	14	80	16	-		111
	margin (riskier loans)	12.2		7	121	466	16	-		610	-		27	81		-		108
	collateral	12.3		4	44	522	18		1	589	-			106	3	-		109
	maturity	12.4		2	36	548	22		1	609		2	5	95			1	103
	non-interest charges	12.5	-		26	562	13	-		601	-		1	109	-	-		110
	demand	13.2		13	111	366	113		15	618		5	29	48	24		5	111
determinants	spending on durable consumer goods	15.1		6	116	379	100		7	608		3	24	65	16		1	109
	consumer confidence	15.2		17	128	425	37		2	609		3	27	79	-	-		109
	security purchases	15.3		21	65	438	7	-		531		1	12	77	1			91
	household savings	15.4		1	57	516	18		3	595			12	92	4			108
	loans from other banks	15.5	-		21	539	26		2	588			11	86	9		2	108
	other financial sources	15.6	-		11	541	11	-		563				86				86

Table 10

Ordered Probit Estimation Results*

Dependent variable	regressors	Coefficient	z-value	P>|z|	chi2	Prob > chi2	(Pseudo) R2	# obs.	data
				Loans to enterprises					
credit standards	**"risk"**	**1.134**	10.61	**.000*** **	162.80	.0000	.348	565	euro area
	"competition"	**.238**	3.22	**.001*** **					
	"bank constraints"	**.407**	5.10	**.000*** **					
credit standards	**"risk"**	**.613**	2.79	**.005*** **	11.77	.0028	.236	113	Germany
	"bank constraints"	**.585**	2.32	**.020** **					
demand	**"financing needs"**	**1.178**	10.46	**.000*** **	114.09	.0000	.168	558	euro area
	"alternative finance"	**.202**	1.29	**.197**					
demand	**"financing needs"**	**2.072**	5.66	**.000*** **	44.61	.0000	.295	110	Germany
	"alternative finance"	**.726**	4.12	**.000*** **					

Housing loans (private households)									
credit standards	**"risk"**	**1.094**	9.54	**.000*** **	113.22	.0000	.306	532	euro area
	"competition"	**.694**	6.68	**.000*** **					
credit standards	**"securing/other"**	**.645**	5.04	**.000*** **	66.93	.0000	.230	620	euro area
	"price"	**.625**	5.27	**.000*** **					
credit standards	**"securing/other"**	**.527**	3.50	**.000*** **	41.49	.0000	.168	118	Germany
	"price"	**.562**	5.38	**.000*** **					
demand	**"financing needs"**	**.957**	9.44	**.000*** **	138.87	.0000	.179	573	euro area
	"alternative finance"	**.425**	4.56	**.000*** **					
Consumer loans									
credit standards	**"risk"**	**.911**	8.58	**.000*** **	86.63	.0000	.304	517	euro area
	"competition"	**.416**	3.97	**.000*** **					
credit standards	**"risk"**	**.482**	2.29	**.022** **	11.71	.0029	.149	91	Germany
	"competition"	**.352**	2.92	**.004*** **					
credit standards	**"securing/other"**	**.422**	3.57	**.000*** **	76.83	.0000	.155	574	euro area
	"price"	**.540**	4.07	**.000*** **					
demand	**"financing needs"**	**1.237**	12.41	**.000*** **	183.59	.0000	.255	561	euro area
	"alternative finance"	**.360**	3.67	**.000*** **					

* Pooled regressions with standard errors robust to potential bank-specific dependence of the observations.

Summary

Credit Constraints in the Euro Area? – Bankers' Perceptions Analysis of First Results from the Bank Lending Survey of the Eurosystem

Subdued loan growth marked the beginning of this decade in the euro area and still prevails for Germany going along with the unavoidable regular emergence of the demon "credit crunch" – not only – in the press. New information on potential credit constraints are offered by the quarterly bank lending survey (BLS) of the euro system. From the micro data of this survey, we extract common driving factors impacting on changes in credit standards and in the demand for loans. Our findings do not support the aforementioned demon, however, we do find some indications for credit constraints. (JEL C20, E51, G21)

Zusammenfassung

Kreditrestriktionen im Eurogebiet? – Perspektiven der Banker Analyse erster Ergebnisse des Bank Lending Survey des Eurosystems

Schwaches Kreditwachstum kennzeichnete den Beginn dieses Jahrzehnts im Eurogebiet, vor allem aber weiterhin die Lage in Deutschland, und ging einher mit dem unvermeidbaren, regelmäßigen Auftauchen des Dämons „Kreditklemme" – nicht nur in der Presse. Neue Informationen über potenzielle Kreditrestriktionen bietet der vierteljährliche Bank Lending Survey (BLS) des Eurosystems. Aus den Einzeldaten dieser Umfrage extrahieren wir gemeinsame, treibende Faktoren, die die Veränderung der Kreditstandards und der Nachfrage nach Krediten beeinflussen. Unsere Ergebnisse deuten nicht auf den zuvor erwähnten Dämon, jedoch finden wir gewisse Hinweise auf Kreditrestriktionen.