

Künne, Christian; Westermann, Frank

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An analysis of aggregate lending in Japan

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AN ANALYSIS OF AGGREGATE LENDING IN JAPAN

Christian Künne and Frank Westermann

Working Paper 75
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INSTITUT FÜR EMPIRISCHE WIRTSCHAFTSFORSCHUNG
University of Osnabrueck
Rolandstrasse 8
49069 Osnabrück
Germany

An analysis of aggregate lending in Japan

By Christian Künne and Frank Westermann¹

Fachgebiet Internationale Wirtschaftspolitik

Institut für Empirische Wirtschaftsforschung

Universität Osnabrück

Abstract

Aggregate bank lending has stagnated since 1990 in Japan. This observation has generated a debate on whether the supply side of the credit market had an effect on the economy in its recent slowdown. At this point, the evidence is ambiguous. The hypothesis is primarily challenged by the low level of interest rates. However, in this paper we analyse indicators that also point towards a credit crunch explanation: the development of commercial paper, as a substitute for bank lending, and survey data on the firms' evaluation of the lending attitude of banks. We find that while aggregate lending has stagnated, there was a continued high demand for commercial paper. Using the Short-term Economic Survey of Enterprises in Japan (Tankan), we also document that small firms felt more credit constrained than larger firms until recently in Japan. This difference has been reduced, and has lost statistical significance, however, in the recent recovery since 2003. Finally, we point out that there exists a striking similarity between the recent developments in Germany and Japan in the 1990ies.

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Introduction

After the Japanese banking crisis in 1997/1998, aggregate lending has been stagnating or even falling in levels (see figure 1). In a growing economy, this is an unusual phenomenon and it has generated a debate on whether aggregate growth masks deeper sectoral asymmetries in the economic development of the country. In particular, the question has been raised whether small bank dependent firms suffer from the slowdown in aggregate lending, while the larger firms still have the option to utilize alternative forms of financing in the capital market.

The evidence at this point is ambiguous. It is primarily challenged by the low level of interest rates. Furthermore, no evidence of substitution effects towards trade credit has been found in the literature. Most researchers have therefore concluded that the real economy was not severely affected by the financial turbulence and have rejected the above hypothesis. While we also do not have a conclusive proof of the existence, we offer in this paper two alternative indicators that we feel have been overlooked in the discussion and that suggest that the *credit crunch* hypothesis, cannot easily be ruled out.

We start by documenting the time path of the aggregate credit volume in the aftermath of the banking crisis. Although one cannot discern supply from demand side effects from this aggregate time series, it is remarkable, that this number has been falling on average over the past 10 years, while GDP (even in nominal terms, despite deflation) has experienced positive growth. Tornell and Westermann (2005) argue that such a disconnection between credit and real output is characteristic of an economy, in which different sectors or firm types have different access to credit markets. It could for instance be the case, that mostly the larger firms, that have access to a variety of financial instruments as well as international capital markets, continue to invest and grow, and are responsible for the aggregate growth of the economy, while the smaller bank dependent firms experience a sustained credit crunch.

As a first indicator that is consistent with this hypothesis, we show that the commercial paper market has been active in issuing new paper (in net terms) throughout the

past decade, with a peak of new commercial paper issuance during the banking crisis years 1997 and 1998. Secondly, we aim to investigate the difference between large and small firms more directly. Using a panel data set from the Japanese TANKAN survey, we find that there has been a significantly different response to the question on the firm's evaluation of the banks' lending attitude between small and large firms in the years following the banking crisis. More recently, however, this difference has been substantially reduced.

In the latter sections of this paper, we perform several robustness tests to this finding. Using instrumental variables, different estimators and different sets of control variables, we find that the main variable of interest – the dummy variable that captures the size of the firms – remains significant until 2003 throughout the different empirical specifications.

Aggregate credit volume

As shown in Figure 1, the aggregate credit volume has been stagnating since the beginning of the banking crisis in 1997, and was falling thereafter until the end of 2004. Since then there has been a moderate recovery. This behaviour is remarkable, as in a growing economy, both GDP and aggregate credit usually grow (or fall) together. Despite other economic problems, including deflation and growing public debt, Japan experienced on average over these ten years positive real GDP growth of 1.2%. Even nominal growth still reached a moderate 0.3%. Aggregate credit, by contrast, was falling by 1.2% per year. Over the course of ten years, this accumulated to substantial differences that we aim to explain in this paper.

Figure 1: Loans (nominal)



Source: Bank of Japan

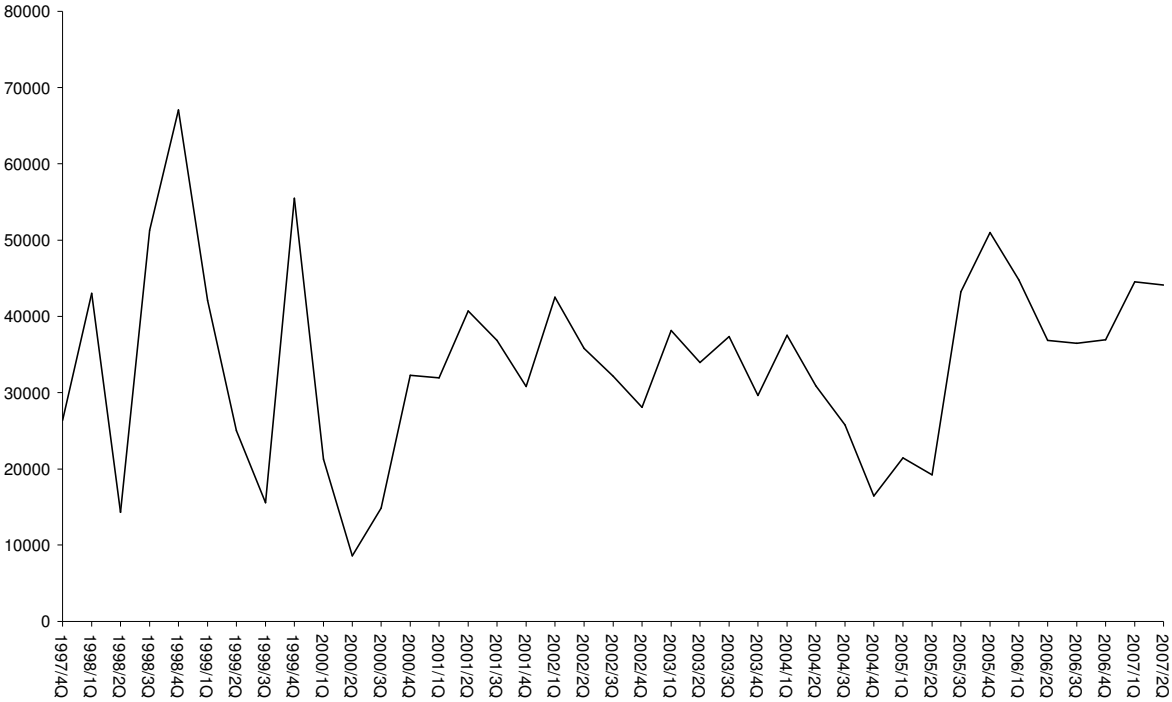
The observation of falling credit itself is not sufficient, however, to conclude that there has been a credit crunch. It is impossible to discern the supply of and the demand for credit from this graph. In particular, in a low interest rate environment, it is possible, that the lack of *demand* for credit is responsible for the decline in aggregate lending. In the academic literature, and in the public debate, this latter view is predominant. In the remainder of the paper, we try to challenge this hypothesis. We look at different indicators that are typically used in the literature to uncover supply side effects: the behaviour of close substitutes of aggregate lending and firm level survey results.

The external financing mix

More informative than the volume of aggregate lending is the development of an important substitute for bank credit: short-term commercial paper. This indicator is used in a paper by Kashyap, Stein und Wilcox (AER 1993) for the United States, who find that after

contractionary monetary policy of the Fed, firms substitute commercial paper for bank credit. In their paper, this is taken as evidence of the credit channel of monetary policy.

Figure 2: Commercial Paper (net issuance, denominated in Yen)



Source: Bank of Japan

Under the assumption that the decline in aggregate credit is due to changes in the *demand* for credit, one would expect that all substitutes of bank credit should display a similar behaviour. The amount of commercial paper held and issued by firms should therefore also decline. Conversely, if *supply* factors also play a role, it should increase due to a substitution effect.²

² Note that this also holds, if the interest rate for bank credit does not increase: From a banks perspective, this could be optimal if it aims to increase the share of good risks in its portfolio. At a higher interest rate, only the bad risks might be willing to take on credit. Given the recent downgrading of the banks, the incentives to avoid such a separating equilibrium are clear. If interest rates do not increase, effect on the volume must be even more pronounced. As the change in credit is exactly zero since the beginning of the credit crunch, this view can be justified.

As Fig. 2 shows, there was no clear decline in commercial paper issuance in Japan while aggregate credit was falling. On the contrary, during the period of the suspected credit crunch commercial paper issuance was an actively used alternative instrument of financing for large firm, and particularly high in the years of the banking crisis 1997/1998. This first observation points to the view that there might at least *also* have been a supply side change that affected some firms in their credit situation.³

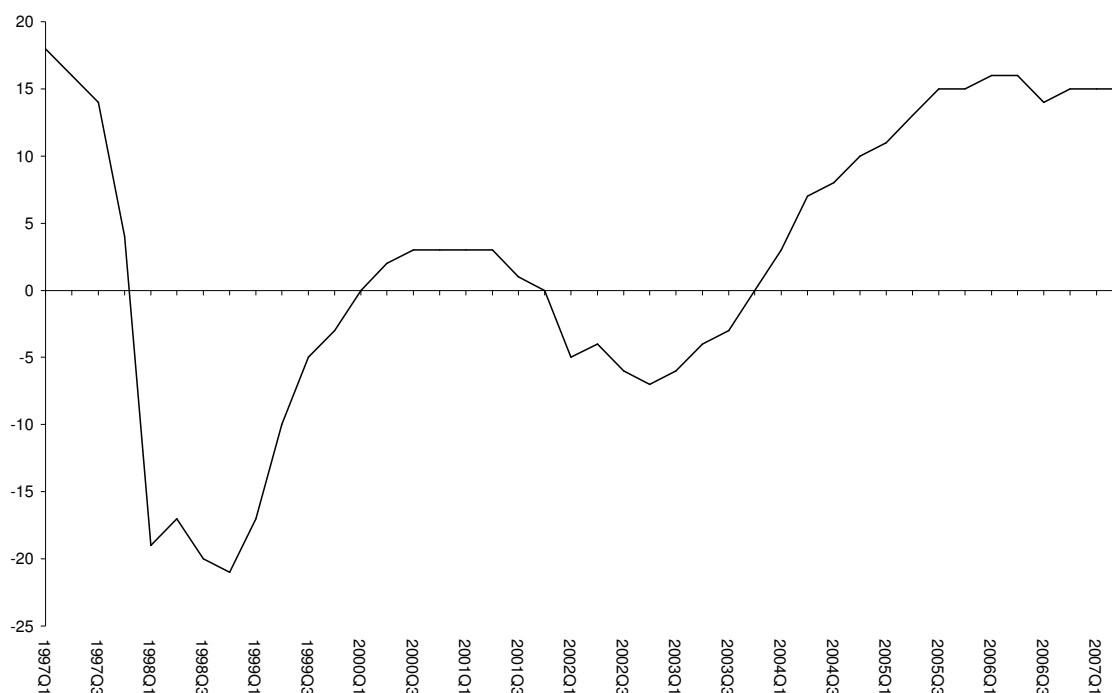
Fukuda, S., M. Kasuya and K. Akashi (2006) investigate the substitution effect with regard to trade credit, another major alternative form of financing. In a comprehensive econometric analysis, they did not find evidence of substitution effects in the years 1997 and 1998. While this indicates, that smaller firms did not seek this form of alternative financing, it does not rule out that the substitution effect could have occurred in other form, such as a substitution towards commercial paper by the larger firms. The time path of commercial paper above might therefore be an explanation for their empirical finding. While for the existence of a substitution effect, it seems to be sufficient to point out one alternative source, the claim of the absence of such effects, in our view, would require an analysis of all forms of substitutes, including commercial paper. This view is acknowledged in Taketa and Udell (2006), who otherwise confirm the results and share the view of Fukuda et al. (2006).

³ When comparing the two graphs, note that the aggregate credit volume is a stock variable, while the net issuance of commercial paper is a flow variable. As the net flows have always been positive, the stock of commercial paper must have been increasing monotonously over the period.

Firm level data from the TANKAN Survey

An alternative way to assess the presence of a credit crunch and to distinguish supply-side from demand-side effects is to directly ask the firms about their perception of the banks' lending attitude. Figure 3 shows the results of the TANKAN-Survey in Japan, which has asked firms about the perceived lending attitude of banks over the last 30 years. This question can be answered on a scale from -100 (severe) to 100 (accommodating). Cargill, Hutchison and Ito (2000) as well as Hutchison (2000) use this indicator to point to the possibility that even today Japanese firms are affected by credit crunch.

Figure 3: Lending attitude of all enterprises



Note: In the TANKAN and ifo surveys ,banks' attitude to lend is evaluated by the firms on a scale of "accommodating" to „severe”.

Source: Bank of Japan.

Figure 3 shows that in the beginning of the banking crisis (first quarter of 1997), the average evaluation of firms regarding the lending attitude of banks was quite positive. After the beginning of the crisis, this index fell sharply to its lowest point in the last decade. After

reaching its lowest value in the fourth quarter of 1998, it recovered steadily, with the exception of another downturn from 2001 to 2003. In the most recent recovery that started 2003/2004, the evaluation of the banks' lending attitude by the firm has been mostly *accommodating*.

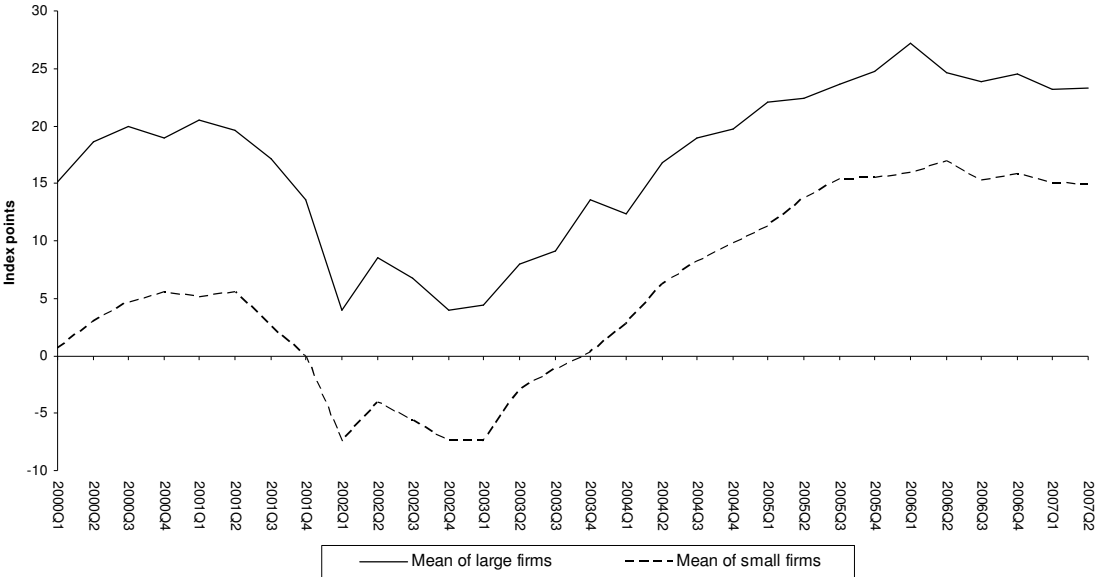
A probit analysis of the perceived lending attitude

In this section, we take an attempt to analyse in more depth the response of the Japanese firms. We will investigate the time path of the answers over the last 7 years. During these years the data are available at a disaggregate level and allow us to distinguish between subgroups of large and small firms. This disaggregated view may help to shed light on the question of whether the negative evaluation of the lending attitude of Japanese banks and the slowdown of aggregate lending reflects a supply or demand side problem.

Panel A of Figure 4 shows that on average, small firms have evaluated the lending attitude of the banks more negatively than large firms. This observation could be an indicator that large firms, that have access to other forms of financing than bank credit, are less credit constrained than small firms. This is consistent with the findings of Arikawa and Miyajima (2006), Tornell and Westermann (2002) and Gertler and Gilchrist (1994). However, it is not clear, if this also reflects an unusual situation of a "credit crunch", as the difference in the access to financial alternative also exists in normal times. In the following, we therefore investigate whether the difference between large and small firms has been changing over time. Panel B shows that the difference between the two groups has indeed been declining over the last decade. The difference in the responses has been reduced by more than half over the sample period.

In the Tankan Survey, we have sectoral information for 27 Sectors (2000:1 – 2003:4) or 30 sectors (2004:1 – 2007:2) and three size groups (large, medium and small). In the absence of truly individual firm specific data, we treat each of the size and sector units, as firm-level observations. This leads to a cross section of 81 or 90 observations and a time series dimension of seven years of quarterly data.

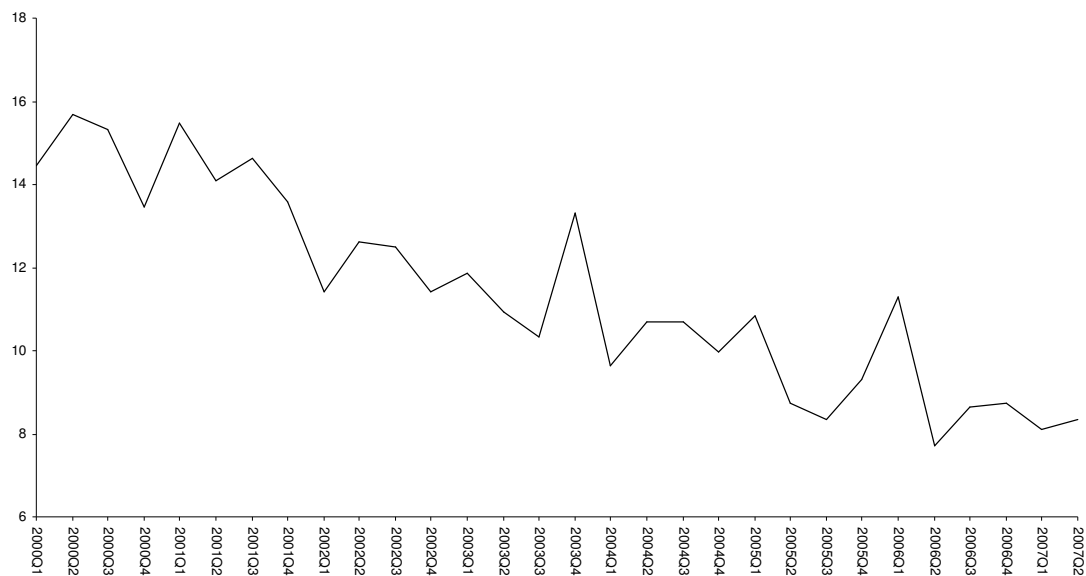
Figure 4, Panel A: Large and small firms lending attitude over time



In order to estimate the relationship between the response to the lending question and the size of firms more formally, we estimate the following regression:

$$y_i = \beta_0 + \beta_1 \text{LARGE}_i + \beta_2 \text{CURRENT}_i + \beta_3 \text{EXPECT}_i + \beta_3 \text{D_EXPORT}_i + \varepsilon_i, \quad (1)$$

Figure 4, Panel B: Difference in large and small firms lending attitude over time



Source:

This difference between large and small firms, in their evaluation of bank lending attitudes, also prevails when controlling for several firm characteristics. We estimate the following equations as a binary probit regression, where y , the response in the questionnaire takes the value of 1 if the firm evaluates the credit situation as severe and 0 if it evaluates the situation as either accommodating or not so severe.

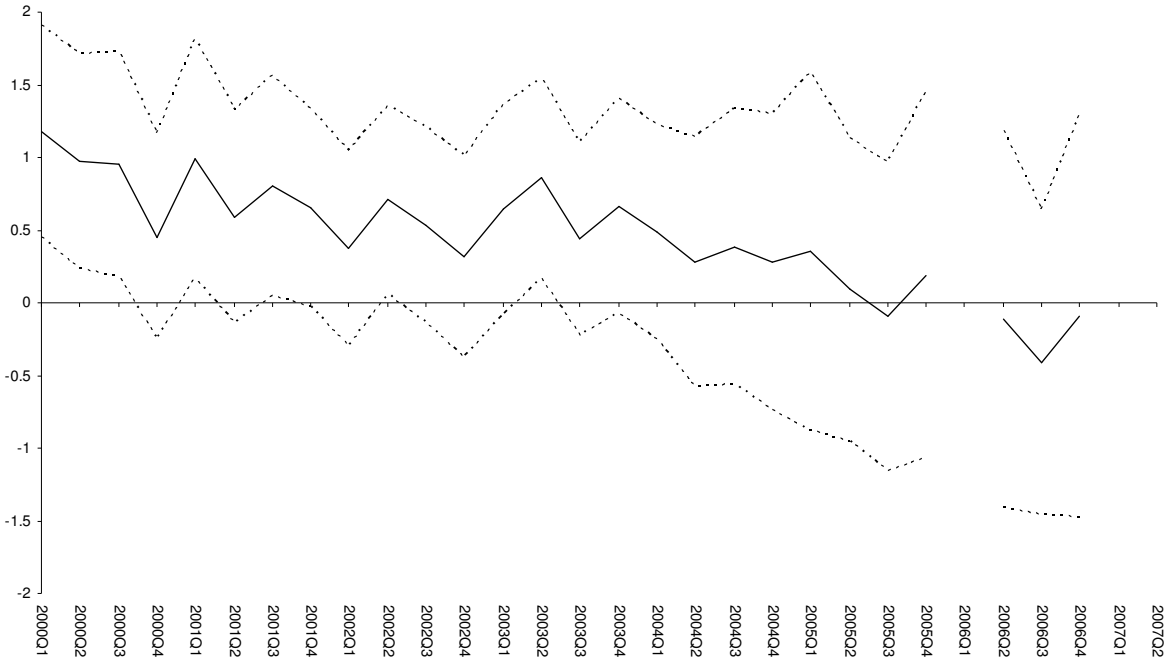
where $LARGE$ is a dummy that takes a value of 1 if the firm is large and 0 when it is small.

$CURRENT$ denotes the firm's evaluation of the current economic situation. $EXPECT$ denotes the business expectations and $EXPORT$ is a dummy that takes a value of 1 if the firm is an exporter and zero otherwise.

Figure 5 displays the results for the dummy variable *large* in a rolling regression from the first quarter of 2000 to the second quarter of 2007. We find that after controlling for other variables the *size of the firms* has a statistically significant negative impact of the firm's evaluation of the banks' lending attitude in the beginning of the sample period.

It is remarkable that in the end of the sample period, the statistical significance of the differences in the responses of small and large firms disappears. The second quarter of 2003, is the last sample that is significant at the 5% level. It follows that significant differences between large and small firms in responding to this question do not arise in normal times. The measurable difference in the beginning of the sample could therefore be consistent with the view that small firms suffered from a supply side restriction on lending. Being able to falsify the hypothesis that small firms *always* respond differently than large firms to the lending question makes the observed difference in the beginning of the sample, a noteworthy indicator of a credit crunch. It is indeed a reasonable indicator despite all reasons to be cautious about the general statement of a credit crunch that have been raised throughout the paper. The rolling regression provides a second piece of evidence that is consistent with the view that small firms suffer in times of tight credit market conditions more than large firms.

Figure 5: Dummy “Large” over time



Note: Probit estimations for 2006:1, 2007:1 and 2007:2 are impossible with the cut-off-point 0, because of perfect binary response. All large firms have a positive lending attitude. The 2006:3 estimation is without the Dummy Export, because of perfect binary response. All firms with negative lending attitude are non-exporters.

Robustness tests

In this section we perform several robustness tests of the main result reported above – the significance of the difference between large and small firms in the beginning of the sample that disappear in the end of the sample.

As a start, we investigate, whether the result is driven by our estimation technique. Table 1 reports the result of the regression (with a special focus on the variable “Large/Dummy”). In regressions 1.1 and 1.6, we use a logit and in 1.2. and 1.7 a probit estimator. Here the original answers of the firms are transformed to a 0-1 Dummy variable where 1 denotes a positive evaluation of the lending attitude of the banks. In regressions 1.3 and 1.8, we follow a 2-step procedure: in a first step, we explain in a preliminary regression the variables *CURRENT* and *EXPECT* with their one-period-lagged values. The fitted values of the variables are then used in the probit estimation.

In the final regressions, we use the original continuous nature of the responses from -100 to +100 and run first a regular OLS regression. Secondly, we apply a two step least squares approach, where we use lagged values as instruments.

While the point estimates vary across these different estimation techniques, the significance of the size dummy in the beginning of the period, and the insignificance of the dummy in the end of the period remains unchanged.

Table 1: Robustness: Different methods of estimation

Estimation period	2000:2					2006:4				
	Logit [1.1]	Probit [1.2]	2S-Probit [1.3]	OLS [1.4]	2SLS [1.5]	Logit [1.6]	Probit [1.7]	2S-Probit [1.8]	OLS [1.9]	2SLS [1.10]
C	0,869 (0.534)	0,459 (0.295)	0,525 * (0.314)	8,925 *** (2.696)	10,397 *** (2.528)	1,615 *** (0.600)	0,948 *** (0.331)	0,621 ** (0.296)	7,181 *** (1.999)	5,402 ** (2.576)
Dummy Large	1,729 ** (0.696)	0,973 *** (0.370)	0,953 ** (0.377)	12,494 *** (3.250)	11,888 *** (4.036)	-0,064 (1.316)	-0,093 (0.691)	-0,010 (0.658)	3,513 (2.790)	4,354 (2.800)
Actual Business Condition	0,091 ** (0.036)	0,056 *** (0.019)	0,042 * (0.023)	0,490 *** (0.172)	0,705 ** (0.372)	-0,060 (0.053)	-0,037 (0.030)	0,016 (0.041)	0,749 *** (0.178)	1,165 *** (0.426)
Expectation	-0,033 (0.036)	-0,022 (0.018)	0,010 (0.020)	-0,065 (0.169)	-0,186 (0.371)	0,155 ** (0.069)	0,090 ** (0.039)	0,030 (0.042)	-0,340 * (0.192)	-0,756 * (0.427)
Dummy Export	0,326 (0.583)	0,268 (0.339)	0,492 (0.356)	1,763 (3.076)	2,413 (3.021)	2,473 ** (1.184)	1,396 ** (0.637)	1,375 ** (0.623)	6,465 ** (2.488)	5,910 * (2.993)
McFadden/adj. R-squared	0,289	0,288	0,311	0,411	0,391	0,359	0,367	0,326	0,458	0,423
Observations	81	81	81	81	81	90	90	90	90	90

* significant at 10%; ** significant at 5%; *** significant at 1%

Note: The coefficients of binary estimations and linear are different in interpretation. The critical values based on z-statistic by binary estimation, t-statistic by linear.

Interesting in this set of regressions are also the other control variables. While the actual business situation is significant (at least in the OLS regressions) in both periods, the expectations are only significant in the later period in some regressions. This by itself can be interpreted as evidence of tight credit conditions. The insignificance of the expectations for the access to credit implies that potential investment projects that have a high expected future return might not find financing in the current situation.

Table 2: Robustness: Estimation output for an increasing set of variables

Dependent variable: Lending Attitude (binary)

Estimation: Probit

(Standard errors are presented below the corresponding coefficient)

Estimation period	2000:2					2006:4			
	[2.1]	[2.2]	[2.3]	[2.4]	[2.5]	[2.6]	[2.7]	[2.8]	
C	0,000 (0.171)	0,574 *** (0.241)	0,593 ** (0.242)	0,459 (0.295)	0,967 *** (0.193)	0,848 *** (0.210)	1,219 *** (0.294)	0,948 *** (0.331)	
Dummy Large	1,044 *** (0.341)	0,932 ** (0.365)	0,973 *** (0.369)	0,973 *** (0.370)	0,866 * (0.482)	0,300 (0.531)	0,044 (0.583)	-0,093 (0.691)	
Actual Business Condition		0,035 *** (0.009)	0,053 *** (0.019)	0,056 *** (0.019)		0,033 ** (0.013)	-0,030 (0.029)	-0,037 (0.030)	
Expectation			-0,019 (0.018)	-0,022 (0.018)			0,079 ** (0.035)	0,090 ** (0.039)	
Dummy Export				0,268 (0.339)				1,396 ** (0.637)	
McFadden R-squared	0,095	0,271	0,282	0,288	0,060	0,179	0,261	0,367	
Observations	81	81	81	81	90	90	90	90	

* significant at 10%; ** significant at 5%; *** significant at 1%

As a second robustness test, we further investigate the potential interaction of control variables. We add them step by step to the regression and find, that there is little change in the coefficients, which suggests that the simultaneity among the variables is not very high. Furthermore, this setup allows to trace the marginal R squared for each variable. Out of the total R squared of 0.288, the size dummy variable is responsible for about 0.095 in the earlier period, but only about 0.060 in the later period (although the fit improved overall to 0.367 in the later period). The most important determinant of the response to the question is the actual business condition in the earlier period. In the later period, the expectations and the export dummy are of roughly equal importance.

Table 3: Robustness: D_LARGE for different cut-off-points

Dependent variable: Lending Attitude (binary)

Estimation: Probit

(Standard errors are presented below the corresponding coefficient)

Estimation period	2000:2				2006:4			
	0	10	20	30	0	10	20	30
Cut-off-point	[3.1]	[3.2]	[3.3]	[3.4]	[3.5]	[3.6]	[3.7]	[3.8]
Dummy Large	0,973 *** (0.370)	1,054 *** (0.345)	0,795 ** (0.346)	0,714 * (0.419)	-0,093 (0.691)	0,750 * (0.443)	0,215 (0.351)	0,389 (0.376)
Observations	81	81	81	81	90	90	90	90

* significant at 10%; ** significant at 5%; *** significant at 1%

In regression table 3, we furthermore investigate the robustness of the result with respect to different cut-off points of the 0-1 dummy. While the baseline regression attributes a 1 to all firms with a response larger than 0, table 3 contrasts the finding to the cut-off point of 10, 20 and 30. Although this reduces the coefficient in magnitude, most of the regressions remain significant at the 5% level, except the last regression (cut-off of 30) that is significant at the 10% level only. In the later period, all coefficients are insignificant except for the cut-off value of 10, where the coefficient is also significant at the 10% level.

Recent developments in Germany are reminiscent of Japan in the 1990s

The recent macroeconomic developments in Germany are reminiscent of Japan in the early 1990s. Most strikingly, Germany also experienced a sustained slowdown in aggregate lending since the first quarter of 2001. The similarities in the two countries include several aspects of the historically special situation, with respect to macroeconomic performance, when the slowdown in lending started and to the regulatory characteristics of the banking system. In both cases, a lending boom ended in a stock market crash – in Japan in 1989, in Germany 2001 – while banks aimed to achieve the Basel I and Basel II accords, respectively. Japanese as well as German Banks hold substantial amounts of equity in other firms. As Ito (1998) pointed out, changes in stock prices – in contrast to most other OECD countries – therefore directly translate into fluctuations in the banks' balance sheets. In the Basel I agreement, the revaluation gains from these equity holdings are considered "Tier 2 Capital", relevant for the risk adjusted capital asset ratio (up to 45% in Japan and 35% in Germany). Vice versa, a reduction in its value therefore contributes to pressure on maintaining the capital ratios. Hence, when new capital is difficult to raise, a substantial decline in the stock market can therefore more easily lead to a tightening of lending, and to a credit crunch situation in both countries.

Ito, Hutchison and Westermann (2006) document the remarkable similarity in the time path of key macro variables in the two countries. The aggregate credit volume, the development of stock prices and those of new equity issues in both countries, before and after the beginning of the suspected credit crunch, are very similar. The authors also take a look at substitution effects in the mix of firms' external financing, and finally at direct surveys from the Ifo Institute as well as the Japanese TANKAN survey. Both indicate that in the aftermath of the stock market decline, there was a negative impact on the firms ability to borrow from banks - in Germany, starting in the first quarter of 2001 and in Japan, starting in the fourth quarter of

1991. The present paper extends this analysis for Japan at the disaggregated level as well as for the more recent time period after the banking crisis in 1997/1998.

Concluding remark

The aim of this paper was to challenge the view that supply side factors did not play a role in the slowdown of aggregate lending in Japan. While we cannot claim a “proof” that a *credit crunch* has taken place, we do, however, provide two standard indicators that have been overlooked in the discussion, that are consistent with a credit crunch explanation.

The agenda for further research includes setting up a theoretical framework that takes into account the institutional characteristics that are special to Germany and Japan. Both countries have banking systems that allow a close integration between the banks and the firms. A full general equilibrium analysis may lead to policy recommendations beyond the conclusions offered in this paper.

Generally, the findings in this paper contribute to a growing literature that concludes that aggregate measures, such as gross domestic product or income are not sufficient to analyse policy questions in a modern macroeconomic setup. Differences between large and small firms, exporters and non-exporters or sectors with different technology need to be taken into account when conducting stabilization policy.

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Appendix: *The Data in the regression analysis*

The data are taken from the short-term of economic survey of enterprises in Japan (TANKAN), published by the Bank of Japan, quarterly represented in the period 2000:1 to 2007:2. The 2000:1 – 2003:4 period includes 27 industries and three different firm sizes: large, middle and small firms. In the absence of the underlying firm data, this allows us to construct 81 observations for the first 16 quarters. For the 2004:1 – 2007:2 period three exist 30 industries, together 90 observations for 14 quarters.^{4,5}

The main variable of interest in our paper is the lending attitude of financial institutions (Lending Attitude). *Lending Attitude* is constructed as a diffusion index that ranges from “Accommodative” to “Severe” in the range of -100 to 100 for each industry. For the probit and logit regression method *Lending Attitude* is transformed into a binary variable with the cut-off-point 0, i.e. *Lending Attitude* (binary) takes the value of 1 for index points larger than 0, and 0 otherwise.

The independent variables are *Actual Business Condition*, *Expectation* and the two dummy variables *Large* and *Export*. *Actual Business Condition* and *Expectation* are constructed as a diffusion index that ranges from “Favorable” to “Unfavorable” on a scale from -100 to 100 for each industry. The variable *Expectation* is equal to the business condition forecast in the next quarter in the TANKAN survey.

Dummy *Large* follows the TANKAN organization for firm size categories. The value is 1 for large firms and 0 for middle and small firms.

The dummy variable *Export* is calculated using the values for sales and exports in the TANKAN survey. We assign a dummy variable value of 1 for industries with a sales-to-exports ratio larger than 1% and 0 otherwise. Unlike the other variables in regression the

⁴ In 2004 the TANKAN survey was partly reorganized. For details see the explanation of the TANKAN, online <http://www.boj.or.jp/en/type/exp/stat/tk/extk.htm>.

⁵ This structural break is relevant for the analysis as in the lagged cross-section estimations, the information is missing for the 2004:1 quarter.

dummy *Export* is based on biannual data.⁶ Due to the structural break and missing information for values of sales and exports, the 2003:4 value of the dummy *Export* is partly calculated with forecasted values.⁷ The 2007:2 values are based entirely on forecasting values.

Table A1: Definitions and sources of variables used in the regression analysis

Variable	Definition and Construction	Source
Lending Attitude	Diffusion Index of "Accommodative" minus "Severe" for the lending attitude of financial institutions. The index (-100 to 100) is built for each industry as a whole.	The Comprahansive Data Set of the TANKAN Survey for the years 2000 - 2007 (last available release of the year), Table A9.
Lending Attitude (binary)	Transformation of the variable Lending Attitude into a binary variable, 1 for values higher than the cut-off-point, 0 otherwise. The cut-off-point is 0.	Author's calculation.
Actual Business Condition	Diffusion Index of "Favorable" minus "Unfavorable". The index (-100 to 100) is built for each industry as a whole.	The Comprahansive Data Set of the TANKAN Survey for the years 2000 - 2007 (last available release of the year), Table A1.
Expectation	Diffusion Index of "Favorable" minus "Unfavorable" for the business condition forecast in the next quarter. The index (-100 to 100) is built for each industry as a whole.	The Comprahansive Data Set of the TANKAN Survey for the years 2000 - 2007 (last available release of the year), Table A1.
Dummy Large	Dummy variable for the firm size. 1 for large firms (following the TANKAN organization), 0 otherwise.	Author's calculation using the TANKAN organization in firm size.
Dummy Export	Dummy variable for export firms. 1 for exporters, 0 otherwise. The variabel is defined as 1 for industries more than 1% exports-to-sales ratio. Contrary to other variables the dummy export based on half-year data.	Author's calculation using the export and sales values of The Comprahansive Data Set of the TANKAN Survey for the years 2000 - 2007 (last available release of the year), Tables A36 and A38 in the surveys of 2000 - 2003, Tables A39 and A41 in the surveys o

⁶ Exactly: half-fiscal year data (April to March). The data is assigned in the according quarter.

⁷ In particular 7 of 27: Shipbuilding and Heavy machinery, Other transportation machinery, Other manufacturing, Transportation, Communications, Services, Other non-manufacturing.