The Interest Rate Pass-Through in Austria – Effects of the Financial Crisis

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Lending rates are a key element in the transmission of monetary impulses to the real economy, even more so in bank-based financial systems such as the Austrian one. This article examines whether the turbulence in the financial markets and the – according to banks – resulting difficulties in raising funds in money and capital markets has led to a change in the pass-through of money market interest rates to retail interest rates. This study finds that there has been a statistically significant temporary change in the relationship between market and lending rates since July 2007 for some loan categories. However, contrary to expectations, lending rates (for business and housing loans with rate fixation periods of one to five years) were increased less than the historical correlation would have suggested. One possible explanation for this is the prevalence of relationship banking in Austria, which results in banks protecting their customers from too much volatility in interest rates. Overall, however, we do not ascertain any significant deviation from the historical pattern.

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In order for monetary policy to effectively influence aggregate demand and price developments, changes in key interest rates must be transmitted to the economy. The mechanism through which monetary policy decisions are passed on is called the transmission mechanism. The first element in this chain of cause and effect links the key interest rate to a wide range of money market interest rates. Subsequently, changes in money market rates are transmitted to those interest rates that determine economic agents' spending and investment. Since the financial system of the euro area (and in particular of Austria) has been traditionally dominated by banks (Allen and Gale, 2000; ECB 2002, 2007), the relevant interest rates are above all the lending rates of banks. Therefore, it is important for central banks to know how changes in the key interest rate are transmitted to bank interest rates in order to be able to estimate the effects of monetary policy decisions on the economy.

The crisis gripping global financial markets since July/August 2007 potentially represents a shock to the transmission mechanism.[2] Problems in the interbank market and the results of the bank lending survey (see Waschiczek in this issue), in which banks indicate that it has become more difficult to raise funds in money and capital markets, can be interpreted as an indication of such a shock. Therefore, this article presents the financing structure of Austrian banks as well as recent trends in financing costs and subsequently analyzes how the lending rates of banks have changed since the beginning of the

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[2] *The crisis began in the U.S. real estate mortgage market, where the first signs of trouble could be observed in spring 2007. It then spread to Europe at the end of July 2007 with the announcement of major losses by the German bank IKB. On August 9, 2007, the ECB implemented the first extraordinary liquidity measures (BIS Quarterly Report 3/2007; OeNB Financial Stability Reports 14 and 15). For the following analysis of a potential change in the behavior of banks and in the interest rate pass-through, the beginning of the turbulence is set at July 2007.*

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financial crisis and whether a change can be ascertained in the pass-through.

1 Financing Structure of Banks and Determinants of Lending Rates

In their core function as financial intermediaries, banks broker between creditors and debtors. In addition to financial and tangible assets, there are above all loans on the asset side of bank balance sheets. Obligations to depositors, as well as debt instruments and bonds issued by the bank are presented on the liability side.

The categories of liabilities differ in the costs and – generally speaking – the risk that providers of capital will withdraw these funds from the bank in the future; i.e. withdraw the deposit or not renew a maturing bond. If bank liabilities are presented in a pyramid by their short-term availability (chart 1), the base is comprised of capital that is at the bank's disposal for an unlimited period of time – consisting of subscribed shares and reserves. Financing via bonds with long maturities is also very stable. Securities issued with shorter maturities must be renewed often and are therefore less certain to be available from the bank's perspective. Customer deposits may in principle be withdrawn at any time, but are in fact quite stable. The risk for banks consists of a sudden loss of confidence and large withdrawals. In Austria, the recently increased deposit guarantees should, however, prevent such behavior. Government guarantees – along with the unattractiveness and uncertainty associated with alternative forms of investment – have even led to shifts toward deposits since last year. The most flexible component of liabilities is the raising of funds in the money market, with which short-term fluctuations in assets or other liabilities can be compensated.

Of course, in addition to the costs of raising capital, other factors also play a role in the structure of lending rates (De Bondt, 2005). These include, for instance, credit risk premiums and other risk premiums, the interest rate risk, the regulation of and competition in various market segments, implicit and explicit agreements between banks and their customers or the administrative costs of changing interest rates. Some of these factors, such as risk premiums, are subject to cyclical fluctuations, whereas others are determined structurally and change slowly if at all.

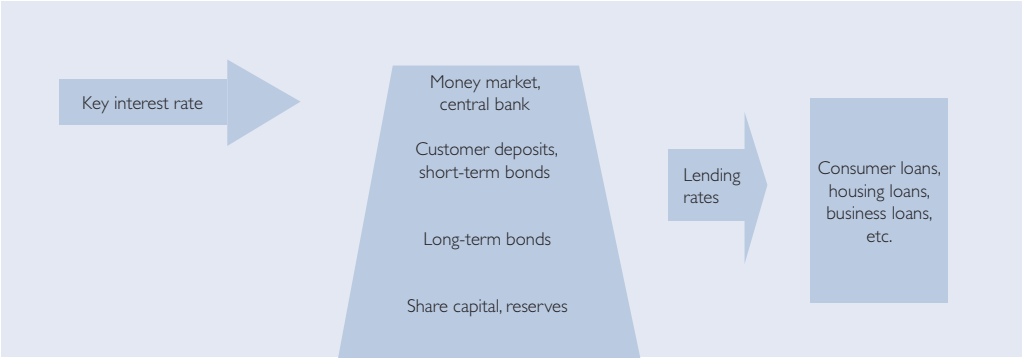
Assuming this, and given a relatively stable structure of equity, securitized liabilities, and deposits, the costs of financing in the money market represent banks' effective marginal costs, i.e. the basis of calculation when deciding on a new loan. In this case, it does not seem to be necessary to differentiate between sources of financing to be able to forecast lending rates, since they can be estimated based solely on money market rates.

This, however, only applies as long as the structural relationships remain stable, as is the case in periods of calm. In times of crisis such as now this is not ensured. In recent surveys such as the bank lending survey, banks have repeatedly pointed to difficulties in raising funds in both capital and money markets. Assuming that banks aim for a certain proportionality between the components (i.e. based on maturities) when managing their liabilities, diverging cost developments may result in marginal costs no longer being represented by money market rates alone. Therefore, the costs of other sources of financing may influence banks' pricing policy in the retail business.

In order to analyze this question, section 2 takes a look at the composi-

Chart 1

Bank Liabilities by Short-Term Availability and the Transmission Mechanism



Source: OeNB.

tion of the liability side of the balance sheet of Austrian banks and the cost developments in its individual components. Section 3 examines whether the interest rate pass-through to retail interest rates has changed since the outbreak of the crisis in 2007.

2 Refinancing Costs of Austrian Banks

2.1 Origin of Funds

One look at the aggregate, unconsolidated balance sheet of the Austrian banking sector in chart 2 shows that at 33%, customer deposits represented the relatively largest share of liabilities on average in the last three years. Issued securities were in second place with 25.6%, and capital and reserves amounted to 7.7%. Interbank liabilities constituted 29% of the liabilities side on average in the last three years. The relative size of interbank liabilities, however, depends not only on the decision of banks regarding their desired financing structure, but also on structural factors, in particular whether parts of banks and bank groups draw up separate or consolidated balance sheets.[3]

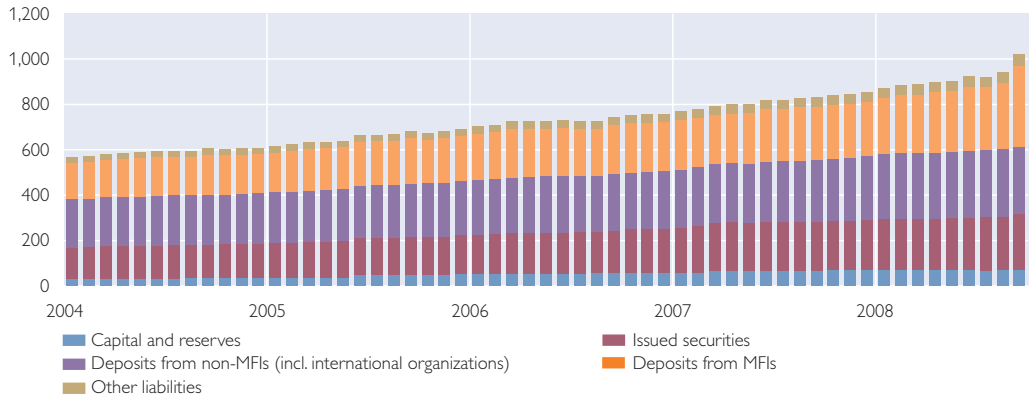
The relative significance of individual components appears to be very stable over time. Even the outbreak of the financial crisis in summer 2007 did not result in significant shifts. Nevertheless, a breakdown by monthly inflows and outflows reveals interesting short-term trends. Chart 3 presents the changes in the individual components year-on-year. As MFI deposits do not represent additional funds for financing the real economy at the level of the entire banking sector, they are not included. Overall it can be seen that liabilities increased somewhat more slowly recently than in 2007, but growth remained at a high level comparable to 2005 and 2006. The considerable jumps recorded in mid-2005 and the beginning of 2007 can be attributed to large capital increases. The relative level of importance of deposits and bond issuance reversed after the outbreak of the crisis in summer 2007. While the issuance of securities declined and reached a low in spring 2008, deposits increased markedly, in particular time deposits with maturities of less than one year, which were highly attractive as a result of the

[3] *For instance, the strong increase in MFI deposits in September 2008 can be attributed to institutional changes at one large bank.*

Chart 2

Liabilities by Instrument

EUR billion *Last value: September*



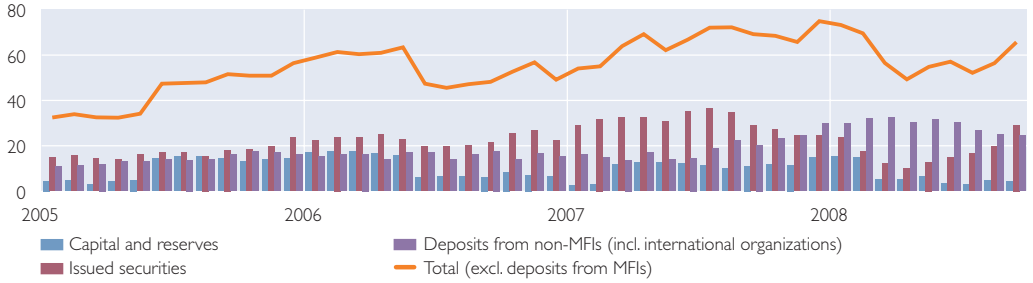
Source: OeNB.

Chart 3

Liabilities by Instrument

Monthly change (annual rate)

EUR billion *Last value: September*



Source: OeNB.

interest rate structure with high interest rates in this term range. Beginning in April 2008, however, securities issuance picked up notably, so that the annual increase in the fall of 2008 was once again at the level of 2005 and 2006. Despite the financial turbulence, financing via the capital market continued to be possible, at least until September 2008, up until data are available. In October 2008, financial market conditions worsened significantly once again; it remains to be seen how the most recent developments will feed through to the refinancing of banks.

2.2 Refinancing Costs of Austrian Banks

Drawing on the information on the liabilities side of bank balance sheets, we can now attempt to calculate a synthetic interest rate for the refinancing costs of Austrian banks. The idea is as follows: How much would Austrian banks have to pay if they increased their liabilities while maintaining the relative proportionality between deposits, debt securities and equity of their previous balance sheets? The synthetic interest rate should therefore not reflect the costs that banks in fact pay on average

for their liabilities, but rather the marginal costs of expanding their business. This interest rate is referred to below as average refinancing costs.

In fact, alternative methods of calculation are conceivable. The average refinancing costs would not be representative if the banks wanted to significantly alter the structure of their balance sheets in order to profit from shifts in the relative costs of individual components of liabilities.[4] However, if one considers that the various components differ not only in their costs, but also in other dimensions and are not perfectly substitutable, larger shifts are possible only to a limited extent. The weighting of the costs of individual types of liabilities with their share in total liabilities should therefore better reflect the medium-term marginal costs of liabilities in the banking sector.

In order to calculate the average refinancing costs, interest rates have to be assigned to the individual liabilities items. Table 1 lists the interest rates that are associated with the individual balance sheet items; special attention is paid to finding appropriate interest rates for the respective instruments and maturities. The most difficult part of this exercise is assessing the costs for additional equity, since this requires an estimate of future profits. The small number of listed banks in Austria also makes calculating an interest rate applicable to all banks difficult. The costs of raising capital certainly increased considerably in 2007 on the back of the large drop in the prices of bank shares. But since capital and reserves only constitute a small portion of liabilities (7.7% of the total unconsolidated assets), changes in the costs of equity should only have a small influence on the synthetic interest rate. Equity is therefore excluded from the following analysis. Finally, deposits from MFIs

Table 1

Main Balance Sheet Items and Assigned Interest Rates

Balance sheet item	Applied interest rate
Deposits from MFIs	Money market interest rates with corresponding maturities
payable on demand	EONIA
up to 1 year	6-month-EURIBOR
1 to 2 years	12-month-EURIBOR
over 2 years	50% 12-month-EURIBOR, 50% secondary market yield for banks
Repos	3-month-EUREPO
Deposits from non-MFIs[1]	Retail interest rates
payable on demand up to 1 year 1 to 2 years over 2 years	retail interest rates for households/non-financial corporations with corresponding agreed maturities weighted by amounts outstanding for Austria
Repos	Repos
Issued securities	Secondary market yield for banks
Capital, reserves and other liabilities	×

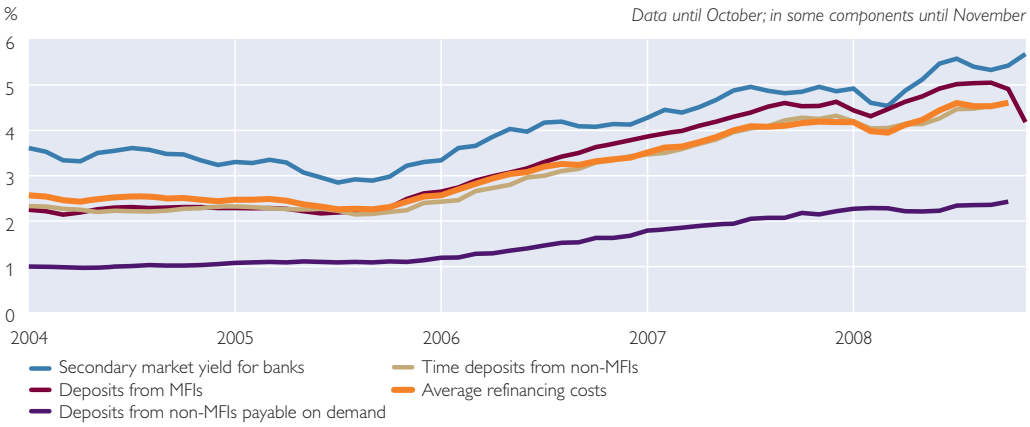
Source: OeNB.

[1] *The amount of deposits redeemable at notice is insignificant.*

[4] *In this case, new loans/issuances could be applied as weights. Nevertheless, the question of how the large volumes should be handled in the renewal of short-term transactions is raised here. In addition, the new issuance business is highly volatile.*

Chart 4

Refinancing Costs of Banks



Source: OeNB.

are also assigned an interest rate, which is presented in chart 4, but not included in the calculation of average refinancing costs, since net deposits from MFIs do not represent a liability for the sector as a whole.[5]

As can be seen in chart 4, the average refinancing costs of banks (without the interbank market) increased from around 2.5% (2005) to around 4% (2007). Following a short stabilization at the beginning of 2008, the costs increased further in the second quarter and are currently around 4.6%. A closer look shows that costs for all subcomponents have risen since the end of 2005. The components move together overall, but there are some differences in the pace of change. The increase since April 2008 can above all be attributed to the strong rise in the secondary market yield for bank bonds.

If the average refinancing costs are compared with the costs of financing via MFI deposits, it can be seen that the latter have become more expensive relative to the average refinancing costs since mid-2006. This relationship is probably set to reverse. Initial data for November 2008 indicate strong decreases in the money market – in November 2008, the estimated costs of deposits from MFIs were around 80 basis points below the values recorded in the summer months. For the components based not on financial market data, but rather on surveys regarding retail interest rates, the time series end in October 2008.

3 Pass-Through of Interest Rates in the Austrian Credit Market

In this section we address the question of how changes in financing costs are transmitted to the interest rates that are relevant for aggregate demand, assuming – as described in section 1 – that in periods of calm, financing via the money market represents the marginal costs of granting an additional loan. Based on the correlation between money market and lending rates, we subsequently analyze whether it also applies after the outbreak of the crisis in July 2007. But first, the interest rates that are relevant for aggregate demand, i.e. lending rates, shall be examined in detail.

[5] *Although they are obviously relevant at the level of individual institutions.*

3.1 Development of Lending Rates of Austrian Banks

The interest rate statistics of the Oesterreichische Nationalbank (OeNB) differentiate between loans to households and non-financial corporations; household loan data are collected broken down by loan purpose and rate fixation period, loans to enterprises are broken down by rate fixation period for small loans (under EUR 1 million) and large loans (over EUR 1 million). A representative selection from this multitude of different interest rates will be presented here. Therefore, this article concentrates on those types of lending rates that are applied in the majority of loan contracts. Over the average of the past six years, these interest rate categories represent around 90% of the loan amount extended in the respective loan category.

Charts 5 and 6 present the movement of six selected interest rate categories between 1996 and 2008; the interest rate on other loans (chart 5) is first available beginning in 2003. The interest rates presented show that – with the exception of housing loans – the Austrian lending landscape is dominated by loan contracts with a rate fixation period of less than one year. Within housing loans, loans with a rate fixation period of less than one year account for 55% and loans with rate fixation periods between one and five years constitute around 40%. For this reason, both types of housing loans are included in this study in order to represent more than 90% of the volume in this category, too.

The values listed and analyzed here represent interest rates on new loans, i.e. interest rates that are fixed for a specified period at the conclusion of the loan contract. As already described, lending rates are influenced by a variety of factors, above all the marginal cost of granting loans, which we will particularly concentrate on below.

3.2 Pass-Through from Market Interest Rates to Lending Rates

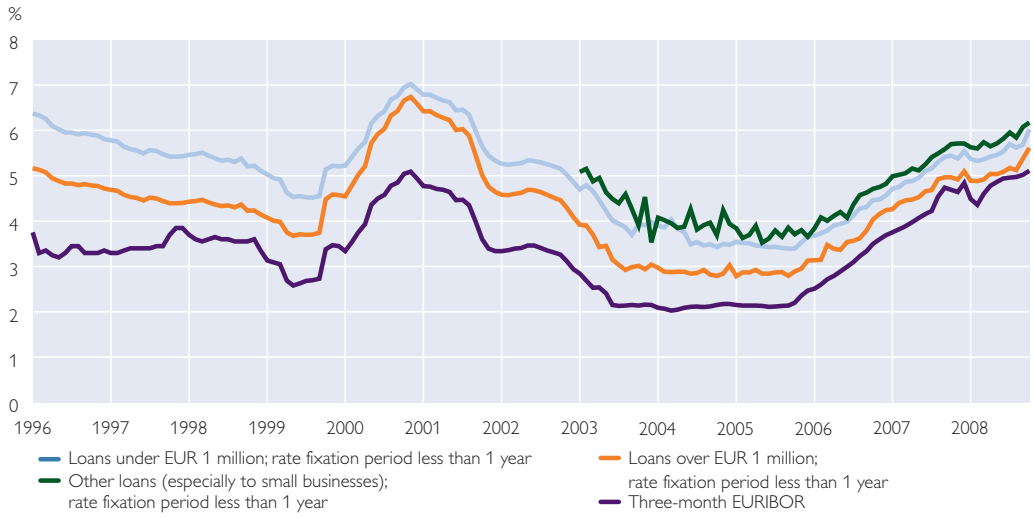
As is common in the literature, see e.g. De Bondt (2005), money and capital market interest rates with comparable terms are used to explain bank lending rates in order to avoid distortions caused by different terms. The marginal cost of providing loans with a rate fixation period of less than one year is approximated by the three-month EURIBOR. For loans with longer rate fixation periods, interest rates with correspondingly longer terms must be applied. De Bondt et al. (2005) argue that not only money market rates, but also capital market rates play a role in lending rate decisions. For this reason, the costs for loans with a maturity between one and five years are approximated by a simple average of the three-month EURIBOR and the 10-year benchmark yield for Austrian government bonds. In addition to the lending rates with a rate fixation of less than one year, chart 5 shows the three-month EURIBOR to illustrate the path of lending rates. Furthermore, chart 6 includes the previously mentioned bond interest rates, since they explain some of the movement of housing loans with a rate fixation period of one to five years.

The correlation between market interest rates and lending rates is going to be analyzed in detail below.[6] We follow an approach found frequently in empirical literature (see e.g. Moazzami, 1999; Mojon, 2000, Toolsema et al.,

[6] *For simplification, money market interest rates and/or capital market interest rates are hereinafter referred to as market rates.*

Chart 5

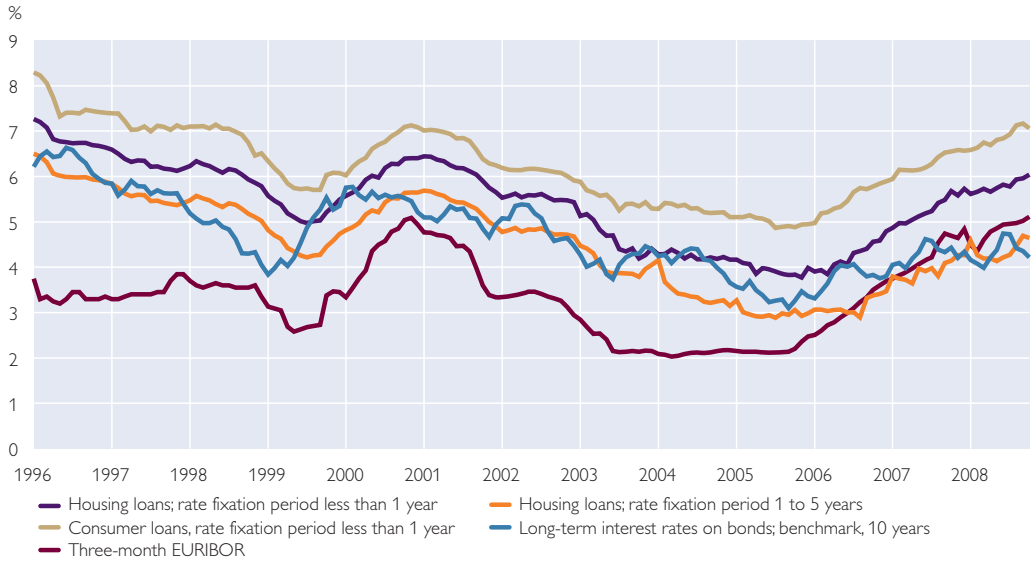
Interest Rates on Loans to Non-financial Corporations and Three-Month EURIBOR



Source: OeNB, Thomson Financial

Chart 6

Interest Rates on Consumer and Housing Loans, Long-Term Interest Rates and Three-Month EURIBOR



Source: OeNB, Thomson Financial.

2001; De Bondt, 2005); we estimate the correlation between market rates (mr_t) and lending rates (kr_t) using an error correction model, assuming the following relationship:

$$\Delta kr_t = \alpha_1 + \alpha_2 \Delta mr_t + \\ + \beta_1 (kr_{t-1} - \beta_2 mr_{t-1}) + \varepsilon_t \qquad (1)$$

Equation 1 expresses that the change in lending rates can be attributed to two factors. First, they react to changes in market rates, and second, to deviations from the long-term relationship between market and lending rates.

The coefficient α_2 in equation 1 represents the pass-through of changes in

the market rate to the lending rate within the same month (immediate pass-through). Furthermore, β_2 is the estimator for the long-term pass-through; it specifies how much of a change in the market rate will be transmitted to lending rates in the long run. Using data for banks from the euro area, De Bondt (2005) estimates that the pass-through e.g. for consumer loans amounts to between 70% and 90% after two years. The long-term pass-through is largely completed after three years. Finally, β_1 is the adjustment coefficient that indicates how much a deviation from the long-term relationship is reduced each month. In order to achieve a return to the long-term relationship, β_1 must be negative.

Table 2 shows the estimated pass-through of market rates to the six selected Austrian lending rates, with column 3 indicating the long-term pass-through (β_2). Column 4 includes the results of a formal statistical test that examines whether the long-term pass-through is complete (null hypothesis: $\beta_2 = 1$). Our findings suggest that in four out of six cases, the pass-through of market rates to lending rates is complete. In the remaining two loan categories, the pass-through is either incomplete (other loans) or higher than 100% (housing loans with a rate fixation period between one and five years).

There can be many reasons why a pass-through is incomplete, as it is the case in the other loans category. For instance, it can result from an implicit agreement between the bank and the customer as a consequence of long-term customer relationships (Berger and Udell, 1992; Allen and Gale, 2004), i.e. banks want to offer their long-standing customers relatively stable interest rates in order to insulate them from volatile market rates. In addition, adjustment costs (Hannan and Berger, 1991; Hofmann and Mizen, 2004) such as labor costs or calculation costs have to be taken into account. Furthermore, an incomplete pass-through may be due to asymmetric information and moral hazard considerations. For instance, banks may have no motivation to raise their interest rates much since customers that accept higher lending rates are likely to have a higher default risk. It is possible that this is particularly true for small businesses, which dominate the category other loans.

In the second case of an incomplete pass-through, i.e. the transmission of more than 100% of interest rate changes in the category housing loans with long rate fixation periods, a range of factors in addition to the changes in market rates may play a role. For instance, a change in the risk assessment and therefore also the risk premium over the course of the interest rate cycle could explain this excess transmission.

As often found in the literature (e.g. Cottarelli and Kourelis, 1994; Borio and Fritz, 1995; Moazzami, 1999), the results of this study also suggest that, despite a complete long-term pass-through in the majority of cases, lending rates are highly rigid in the short-term. Column 2 in table 2 shows the immediate pass-through, α_2, which varies considerably depending on the loan category, but is significantly lower than one in each case. Whereas the immediate pass-through for other loans and housing loans with long rate fixation periods does not significantly deviate from zero, it amounts to 30% and 40%, respectively for consumer loans and housing loans with short rate fixation periods, and is considerably higher for business loans (60% to 80%). Burgstaller (2008), who also examines the transmission of interest rates at

Table 2

Interest Rate Pass-Through in the Austrian Banking Sector for Selected Loan Categories (1996 to 2008)

Interest rates on	Immediate pass-through α_2	Long-term pass-through β_2	Complete pass-through? $\beta_2 = 1$	Adjustment coefficient β_1	Cointegration relationship? $\beta_1 = 0$
Loans to non-financial corporations under EUR 1 million, rate fixation period less than 1 year	0.63*** (0.05)	1.31*** (0.25)	yes	−0.04*** (0.01)	yes
Loans to non-financial corporations over EUR 1 million, rate fixation period less than 1 year	0.79*** (0.05)	1.28*** (0.23)	yes	−0.04** (0.02)	no
Other loans, rate fixation period less than 1 year	−0.03 (0.27)	0.74*** (0.06)	no	−0.43*** (0.09)	yes
Consumer loans, rate fixation period less than 1 year	0.37*** (0.05)	0.95*** (0.14)	yes	−0.06*** (0.01)	yes
Housing loans, rate fixation period less than 1 year	0.27*** (0.05)	1.18*** (0.19)	yes	−0.05*** (0.01)	yes
Housing loans, rate fixation period 1 to 5 years	0.10 (0.07)	1.36*** (0.12)	no	−0.11*** (0.12)	yes

Source: OeNB.

*Note: Other loans include above all loans to small businesses. ***, (**) and [*] represent the significance levels of 1%, (5%) and [10%], with which the null hypothesis that the respective coefficient equals zero is rejected. The estimates' standard error is indicated in parentheses. The critical values of Kremers et al. (1992) and Boswijk (1994) are applied in the test for the existence of a cointegration relationship (last column).*

Austrian banks, also comes to the conclusion that the short-term pass-through is significantly below one.[7]

Finally, column 5 of table 2 contains the adjustment coefficient, β_1, that exhibits the right sign in all cases and is significantly smaller than zero in each case. As in De Bondt (2005), the null hypothesis $\beta_1 = 0$ is also applied as a criterion for a cointegration relationship between lending rates and the respective market rates. For this test, the critical values of Kremers et al. (1992) and Boswijk (1994) are applied. As column 6 of table 2 shows, the null hypothesis can be rejected in nearly every case, which means that the series are cointegrated and the previously described estimated results are not distorted. Nevertheless, there is an exception in the relationship between lending rates on larger business loans and market rates, whose cointegration relationship is in question. For this reason, these specific estimated results should be interpreted with caution.

3.3 Effect of the Financial Crisis on Lending Rates

These results can now be used to analyze the question introduced at the beginning of this article: whether the behavior of banks in determining their lending rates has changed since the financial crisis began in July 2007. The first step is to identify a structural break in the relationship between market rates and lending rates in July 2007 that can be used as indication of a change in behavior. Table 3 shows the results of Chow tests for a structural break, with the last column indicating whether

[7] *However, in contrast to the results described here, Burgstaller (2008) finds the long-term pass-through to be incomplete. The differing results can be explained on the one hand by different methods of estimation and on the other hand by divergent time periods.*

there is a structural break. In three out of six cases, a structural break can be localized in July 2007 (in both types of business loans and in housing loans with long rate fixation periods). The results from table 3 suggest a change at least in certain loan categories and therefore call for further analysis.

Below, the relationship described in equation 1 is re-estimated for all six loan categories; this time, however, not over the entire period of 1996 to 2008, but only until June 2007 in order to disregard the data since the financial crisis began. This method results in a relationship between market rates and lending rates such as existed for 11½ years.[8] This historical basis is then used to forecast the developments in the second half of 2007 up to and including October 2008. This forecast can be compared with the actual movement of lending rates to find out whether the path of lending rates since mid-2007 has followed the historical pattern or whether the behavior of banks in establishing their lending rates has changed.

The results of this comparison are presented in chart 7; they suggest that – as announced in table 3 – the most recent developments of lending rates can be divided into two groups. The first group consists of those loan categories whose developments reflect the historical pattern: other loans, consumer loans and housing loans with short rate fixation periods. This is not the case with the second group consisting of small and large loans to non-financial corporations as well as housing loans with long rate fixation periods. In these loan categories, interest rates were not raised as much as the historical relationship would suggest. This resulted e.g. in spring 2008 in fictional savings of around 75 basis points for borrowers. This gap has begun to close in recent months, however; lending rates appear to be returning to their long-term relationships.

The lower increase over the course of 2008 appears surprising at first glance; after all, when embarking on this analysis we would have expected that lending rates would rise more sharply on the back of the global financial turbulence. A possible reason for the lower increase is that the refinancing

Table 3

Results of Chow Tests for Structural Breaks; Break: July 2007

Interest rates on	Log-likelihood ratio	Wald statistic	Structural break?
Loans to non-financial corporations under EUR 1 million, rate fixation period less than 1 year	11.80**	11.62**	yes
Loans to non-financial corporations loans over EUR 1 million, rate fixation period less than 1 year	11.83**	11.65**	yes
Other loans, rate fixation period less than 1 year	3.98	3.62	no
Consumer loans, rate fixation period less than 1 year	5.07	4.88	no
Housing loans, rate fixation period less than 1 year	5.02	4.83	no
Housing loans, rate fixation period 1 to 5 years	17.45***	17.52***	yes

Source: OeNB.

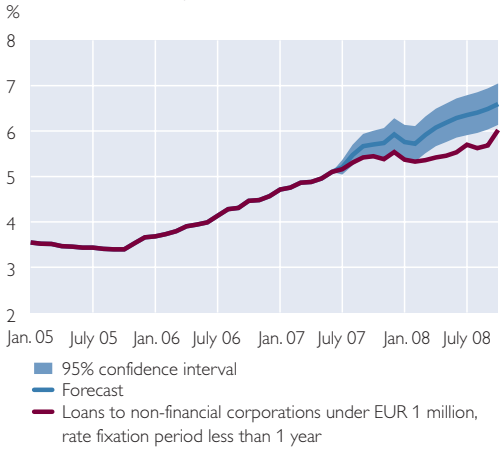
*Note: Other loans include above all loans to small businesses. ***, (**) and [*] represent the significance levels of 1%, (5%) and [10%], with which the null hypothesis of no structural break in July 2007 is rejected.*

[8] *The sample begins in January 1996 and ends in June 2007.*

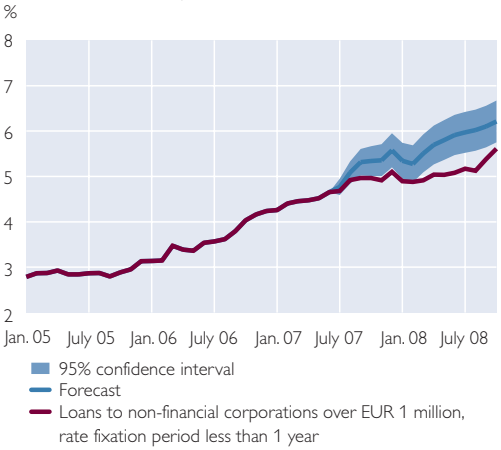
Chart 7

Comparison of the Estimated Pass-Through with Actual Interest Rate Developments

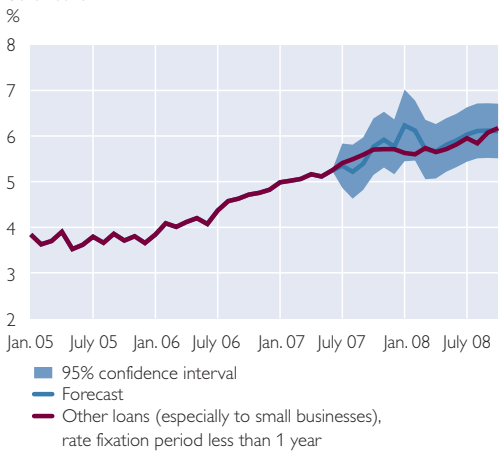
Loans to non-financial corporations under EUR 1 million



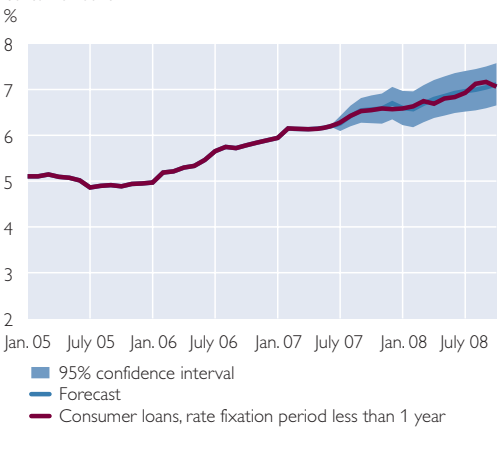
Loans to non-financial corporations over EUR 1 million



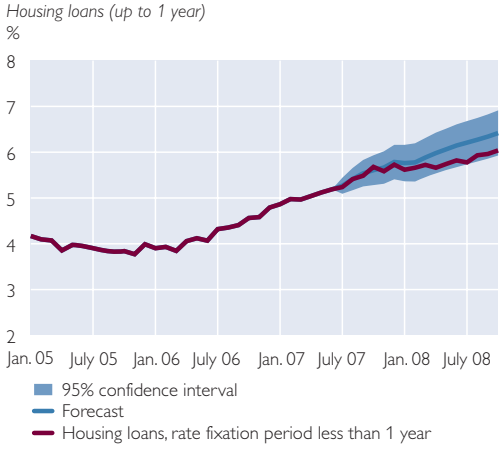
Other loans



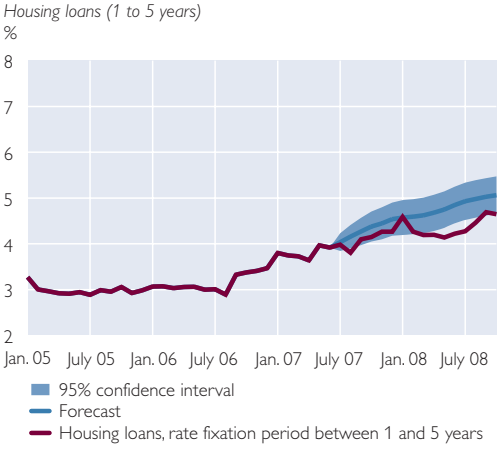
Consumer loans



Housing loans (up to 1 year)



Housing loans (1 to 5 years)



Source: OeNB.

costs of banks via deposits – as presented in section 2 – were lower than the costs of other sources of financing.

As chart 3 shows, the expansion of bank financing in early 2008 was indeed dominated above all by customer deposits – bond issues and capital increases played a relatively small role. It is possible that banks were therefore able to permit some borrowers to benefit temporarily from the relatively favorable conditions in the deposit business since spring 2008. Accordingly, the normalization towards the pre-crisis long-term relationship in recent months could be attributable to the declining significance of deposits – a comparably cheap source of funds – in the refinancing mix.

De Bondt et al. (2005) also presume that deposit rates play a role in banks' lending rate decisions. However, while they reject the hypothesis of Granger causality between interest rates on deposits and loans for all interest rates in the euro area, Austria appears to be an exception in this relationship. De Bondt et al. (2005) infer that in Austria deposit rates in fact play a role in establishing the price of loans. In past months, however, this interest rate advantage does not appear to have been passed on to all borrowers, but rather only in some loan categories. It is possible that there are implicit contracts (Berger and Udell, 1992; Allen and Gale, 2004) between banks and borrowers of business loans and long-term housing loans that prevent banks from transmitting fluctuations in the money market in their entirety. Whereas the error correction model reflects this behavior in principle, it is conceivable that in the case of an extraordinary shock, such as the current financial crisis, banks attempt to serve even more as shock absorbers.

4 Conclusions

According to recent results of the bank lending survey for Austria, banks say that it has become more difficult to raise funds in the money and capital markets. The initial hypothesis of this study was that the turbulence affecting global financial markets since July 2007 may have made financing more expensive for Austrian banks and, as a consequence, pushed up retail interest rates.

We find no evidence that lending rates in Austria have been higher since the turbulence began than would be justified by the pass-through of market rates. There appears to have been no transmission of increased costs, such as e.g. the costs of issuing bank bonds. Quite the contrary, there are some loan categories in which lending rates temporarily remained below the expected path. One possible explanation for this is the prevalence of relationship banking in Austria, which leads to a smoothing of interest rates for borrowers on the basis of implicit contracts. In addition, the results of this study suggest that banks differentiate between customer groups. Whereas the pass-through has remained the same as in the past for some borrowers, market rate changes are transmitted only partially in the categories business loans and housing loans with long rate fixation periods; in other words, the borrowers of the latter were insulated to a certain degree from the increase in interest rates in the money market.

Overall, we fi nd that the pass-through of market rates to lending rates has become temporarily weaker (in particular in loans to non-financial corporations) since the outbreak of the financial crisis in the summer of 2007. A major deviation from the historical pattern was not evident, however.

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