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Abhandlungen

What Drives the Interest Rate Margin Decline in EU Banking – The Case of Small Local Banks

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I. Introduction

All across the EU-25 many banking markets have seen a reduction in their interest rate margins (see e.g. *ECB* (2006) for Euro area banks). In fact a look at the BvD Bankscope Database reveals that 20 out of 25 EU member states (with the exception of the Czech Republic, Greece, Hungary, Slovakia and the UK) saw a decreasing interest margin[1] since 1999.

From a social welfare perspective, lower margins are indicative of a competitive banking sector imposing lower costs on financial intermediation of an economy. Given the importance of banks as an intermediary between lenders and borrowers within the EU, changes in bank margins are an important ingredient in the competitiveness of European economies. Intense competition may however also put the benefits of bank intermediation itself at threat. *Berlin/Mester* (1998) e.g. warn that tight competition could endanger traditional relationship lending. By weakening loan rate smoothing, this could consequentially lead to a higher exposure of banks' borrowers to cyclical turns, increase liquidation costs and may foster credit rationing.[2] Furthermore, as pointed out by *Saunders/Schumacher* (2000), low margins may also threaten banking sector

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[1] The interest rate margin is defined as net interest income over total assets.

[2] The effect of competition on relationship lending has been shown to depend on the question whether competition comes from other banks or capital markets. *Boot/Thakor* (2000) e.g. demonstrate that it is the latter source of competition that makes investing into relationship banking no longer worthwhile. See also *Elsas* (2005) and *Degryse/Ongena* (2007) in this respect.

stability, because they might induce bank managers to expand other potentially more risky business activities in order to increase profitability.[3]

In this respect a number of papers recently focussed on the determinants of banks' interest rate margins in different countries. As the reduction of the costs of financial intermediation is often cited as an implicit goal of the European Commission's Financial Services and Action Plan (FSAP), determining the driving forces behind margins in the EU can be used as an indication to which policy mix is most suited to achieve this goal. Knowledge about the dynamics of interest rate margins also gives insights into potential future developments of banks' interest margins and may provide useful inputs to bank strategies by indicating ways for banks to shore up their interest rate margins.

In this paper, we investigate the major determinants of banks' interest rate margins by studying a sample of small local banks in an EU banking market, namely Austria. The choice of this dataset of course raises two questions: Why study *small local* banks and why study *Austrian* small local banks?

In fact, as documented for the US market by *Angbazo* (1997) the dynamics of local banks' margins can be rather different from larger regional or super-regional banks. Margin dynamics of local banks may differ for a number of reasons. Small banks for example seem to be exposed to weaker competition (see *Bikker/Haaf* (2002)). In this respect *Bassett/Brady* (2002) argue, that local banks' higher market power is seriously challenged by growing competition introduced by technological changes, most notably by internet banking. The effect of competition on small banks' margins may thus well have idiosyncratic dynamics. In addition, small local banks are more challenged by increasing disintermediation than larger banks are, as they rely more heavily on customer deposits on the liability side and on customer loans on the asset side of their balance sheet (see e.g. *Bassett/Brady* (2002)). Furthermore, small banks typically lend a larger portion of their assets to small and medium sized businesses than larger banks do (see *Bonaccorsi di Patti/Gobbi* (2001) or *Jayaratne/Wolken* (1999)). As a large portion of small business loans can be considered relationship loans (see *Ergungor* (2005)), small banks' margins are more dependent on the characteristics of relationship lending.

[3] See e.g. *Perotti/Suarez* (2002) for a discussion on the nexus between bank stability and bank competition.

Another reason that makes small local banks different from the usual BvD Bankscope based microeconomic dataset is the fact that by consolidating the results of numerous individual branches into one banking institution one foregoes important information concerning the dynamics of interest rate margins and its determinants: Individual branches might experience very different evolutions in their interest rate margins because of different branch characteristics such as size, risk taking as well as a different environment they operate in etc. This information is however lost when looking at the overall bank instead of at its individual branches. Local banks therefore provide a nice way to approximate individual branch data, as they typically have a lower number of heterogeneous branches than regional or super-regional banks have.

In this respect, Austria with its high significance of stand-alone cooperative and savings banks provides us with a unique sample of a large number of comparatively small local banks (895 to be precise). Our dataset of local banks includes banks, that in terms of their size would be considered branches in most other countries with the median bank size measured by total assets ranging from € 53 million in 1997 to € 94 million in 2005. The average number of banking offices per bank in our sample is no more than five in any year. This characteristic of the Austrian banking system assuages the aforementioned "averaging problem". Furthermore, Austria is a typical example for a market with rapidly decreasing interest rate margins. In fact, the median interest rate margin of Austrian banks has decreased by more than a third over the last ten years. Additionally, the Austrian banking system can still be characterized as a typical universal banking system with a strong emphasis on the German-style "Hausbank"-principle (see e.g. *Elsas* (2005)). Local banks in Austria furthermore hold a comparatively large portion of their assets in customer loans and of their liabilities in deposits and have been particularly exposed to disintermediation (see *Ittner/Schwaiger* (2006)). Our sample of small Austrian local banks is therefore an ideal market to study both the effect of disintermediation and relationship lending on interest margins. If e.g. relationship banking indeed increases margins (see e.g. *Boot* (2000) and *Thakor* (2000)), reduced margins could also be the consequence of a decrease in the importance of relationship banking in the past years.

Regarding the determinants of banks' interest rate margin, the literature has so far documented a number of factors. Macroeconomically, the state of the business cycle (see e.g. *Bikker/Hu* (2002)), the term structure/volatility of market interest rates (see e.g. *Ho/Saunders* (1981)), or the influence of judicial efficiency (*Laeven/Majnoni* (2005)), were shown to be important. In terms of micro, i.e. bank specific or industry specific, factors, operating costs (see e.g. *Demirgüc-Kunt/Huizinga* (1998)), interest rate risk exposure (see *Ho/Saunders* (1981)), default risk exposure (see *Angbazo* (1997)), bank size (see e.g. *Athanasoglou* et al. (2005)), market structure/competition (see e.g. *Goddard* et al. (2004)), or risk aversion (see e.g. *Maudos/Fernández de Guevara* (2004)) matter.

This paper complements prior empirical work on interest rate margins of European banks that have focussed on cross country samples of comparatively larger banks (see e.g. *Saunders/Schumacher* (2000) or *Maudos/Fernández de Guevara* (2004)). To the best of our knowledge, there is no study on interest rate margins capturing the characteristics of small local banks in the EU banking market.

Based on the modelling approach by *Maudos/Fernández de Guevara* (2004), we find support of previous findings in the literature that local banks' interest margins are mainly driven by operating costs and competition, whereas the effect of interest rate and credit risk are less pronounced. In addition to that local banks' margins mirror the effects of disintermediation. There seems to be a sizeable trade-off between interest rate margins and non-interest revenues. In contrast to earlier results for US local banks (e.g. *Eurgungor* (2005)) relationship banking positively affects margins.

The remainder of the paper is structured as follows: The ensuing second Chapter outlines the underlying theoretical model, Chapter III specifies the empirical application, Chapter IV presents our results, Chapter V discusses the robustness of results and the sixth Chapter concludes.

II. Determinants of Bank Interest Rate Margins

We employ a dealership model in the line of *Ho/Saunders* (1981) to investigate the determinants of banks' interest rate margins. The original *Ho/Saunders* (1981) model views banks as risk-averse intermediaries between lenders and borrowers. In this process, banks are exposed to competitive pressures and interest rate risk which determine their interest rate margins. The original model has been extended to include different kinds of loans/deposits (see *Allen* (1988)) and the volatility of money market interest rates (see *McShane/Sharpe* (1985)), credit risk (see *Angbazo* (1997)) and operating costs (see *Maudos/Fernández de Guevara* (2004)).

From a modelling perspective, we apply the *Maudos/Fernández de Guevara* (2004) model of interest rate margins. Intuitively their model works in the following way: Banks are risk-averse agents that take deposits and grant loans, both of which arrive randomly, with the probability of arrival depending on the margin the bank charges and the elasticity of demand for loans/the supply of deposits. The random character of deposit supplies and loan demands exposes them to interest rate risk. Suppose a deposit is taken by a bank and invested in the money market for lack of concurrent loan demand. In this case the bank faces a reinvestment risk due to the stochastic nature of its investment return. On the other hand, if an incoming loan demand is refinanced on the money market, the bank faces a refinancing risk due to the stochastic nature of its refinancing costs. Given that the return on this loan is uncertain since it is uncertain in advance whether the loan is going to be repaid or not, the bank also faces credit risk – in addition to the interest rate risk mentioned above. A risk-averse agent therefore will demand a higher margin for higher credit risks. *Maudos/Fernández de Guevara* (2004) argue that the intermediation role of banks is furthermore reflected in its operating costs since even in the absence of market power and any kind of risk, banks will have to cover their operating costs, which are a function of the deposits taken and the loans granted. Thus banks operating at higher cost levels will need to charge higher margins.[4] The model further predicts the interest rate margin to be an increasing function of the average size of a bank's operations because more risk is concentrated in a single customer.

To sum up, the theoretical model of *Maudos/Fernández de Guevara* (2004) lists the following determinants of a bank's interest rate margin and their predicted directions of influence:

- The degree of *risk aversion* of a bank: The higher the risk aversion the higher the interest margin.
- The *competitive structure* of the banking market. The lower competition the higher the margins.
- *Interest rate risks*. The more volatile the money market rates the higher reinvestment and refinancing risk resulting in higher margins in case of a risk-averse agent.

[4] As in a perfectly competitive environment the prices are set by the market, simply resulting in exit of banks with high expenses, some doubts on this argument may be justified. Higher operating costs may however also generate product differentiation due to higher service and/or higher marketing expenses and therefore enable a bank to charge higher interests rates for loans and offer lower interest rates for deposits.

– *Credit risks*. The higher credit risks the higher the interest rate margin.
– The *interaction* between credit and interest rate risks as higher interest rate risk will ceteris paribus increase default probabilities of loans.
– The bank's *operating costs*. The higher the operating costs the higher the margin a bank has to or is enabled to charge.
– The *average size* of a bank's operation. The higher the average size of operations the higher the risk concentrated in single customers and the higher the margin a risk-averse agent demands.

The margin explained by these factors is referred to as the "pure" or model based interest rate margin in the literature. From an empirical point of view, a number of other drivers reflecting market imperfections, bank specific components or macroeconomic influences might divert empirical interest rate margins from these "pure" margins. The *payment of implicit interest* in the form of loan or deposit related commissions obviously have to be considered in this context (see *Saunders/Schumacher* (2000)). Given a large dispersion in the relative size of banks and the degree of bank efficiency, it would not be surprising to see that *economies of scale* (see *Athanasoglou* et al. (2005)) or the *quality of management* (see *Angbazo* (1997)) have an effect on empirical margins. In the same way, the different extent to which banks make use of *relationship banking* in a market has been identified as a potential driving force behind bank margins (see e.g. *Ergungor* (2005)). *Stiroh* (2004) furthermore documents an interplay between non-interest and interest revenues that could hinge on *income diversification*. Last but not least, changing *general economic conditions* (see *Bikker/Hu* (2002)) could also wield an influence in this respect. In an empirical model of bank margins, these factors have to be captured too[5].

Thus, the observed interest rate margin of bank i at time t, IRM_{it}, is given by:

$$IRM_{it} = f[PIM_{it}(\bullet), X_{it}, Y_t]$$

where PIM_{it} is the pure interest rate margin, X_{it} is a vector of bank specific control variables, and Y_t is a vector of industry-specific and macro-control variables.

[5] The distinction between an empirically observed interest rate margin and a pure margin that induces the need for control variables is common to dealership models in the line of *Ho/Saunders* (1981). In this respect see also *Angbazo* (1997), *Saunders/Schumacher* (2000) or *Maudos/Fernández de Guevara* (2004).

III. Empirical Approach

1. Data

Our original dataset consists of year-end data of all 895 local banks in Austria between 1997 and 2005. Due to missing data for some banks' variables the final (unbalanced) panel consists of 796 banks with altogether 6,752 observations. The median bank size by total assets in our panel is € 53 million in 1997 and € 94 million in 2005, with the 5 %/95 % quantile ranging from € 12 million/€ 342 million in 1997 to € 22 million/€ 662 million in 2005. Given these figures, our data comprises banks, which by an international comparison appear very small in size.

We draw on a unique data set based on the regulatory reporting by each bank to the Oesterreichische Nationalbank (OeNB) in accordance with the Austrian banking act[6]. This dataset has three major advantages compared to data used in similar studies: Firstly all small banks of the respective market are included as opposed to the samples most other studies use that exclude many smaller banks. Secondly all these banks are subject to the same accounting and regulatory regime, therefore avoiding the potentially distorting influence of differing standards in this respect. Thirdly the reporting data are far more detailed throughout the sample than in commercial databases including, e. g. information on loan related fees, single loan size information or the number of banking relationships per debtor. Daily interest rate data are derived from Thomson Financial Datastream, annual GDP data on Austria is again provided by the OeNB.

2. Empirical Model

In order to capture the persistence of company profits over time found in many other studies (e. g. *Athanasoglou* et al. (2005), *Goddard* et al. (2005), *Crespo Cuaresma* et al. (2006)) due to e. g. impediments to competition or informational opacity, we perform a dynamic panel data approach, using the one-step GMM-estimator introduced by *Arellano*/*Bond* (1991). This results in an empirical specification taking the form

[6] Balance sheet data stem from the monthly balance sheet report, profit and loss data are derived from the quarterly profit and loss report.

$$IRM_{it} = const + \delta IRM_{it-1} + \sum_{k=1}^{K} \alpha_k \, PIM_{kit} + \sum_{l=1}^{L} \beta_l \, X_{lit} + \sum_{m=1}^{M} \gamma_m Y_{mt} + u_{it}$$

and $u_{it} = \mu_i + \nu_{it}$,

where δ is the coefficient of the lagged dependent variable, α_k are the K coefficients of the variables determining the pure interest margin PIM_{it}, β_l are the L coefficients of the bank-specific control variables, and γ_m are the M coefficients of the industry-specific and macro-control variables, that are constant over all banks in a given year. u_{it} consists of the individual effect μ_i and the residual term ν_{it}.[7]

Empirically, the *interest rate margin* is net interest income in relation to total assets. The determinants of the pure interest rate margin discussed above are proxied empirically by the following variables:

- The *degree of risk aversion* is captured by the regulatory capital ratio. The higher the ratio, the greater the distance to regulatory minimum standards and the higher is a bank's risk aversion. As numerous banks in our sample are cooperative or savings banks, there may be an endogeneity problem with respect to the regulatory capital variable. As cooperative/savings banks may experience some difficulty in tapping the capital market to raise equity, capital levels could be driven by plowed back earnings.[8] We thus treat risk aversion as endogenous within the Arellano/Bond specification, as this captures the notion that past profitability may impact future levels of equity capital.
- The *competitive structure* of the market is captured by a Lerner index for the banking market in a given year.[9] For robustness purposes we

[7] Given the presence of large differences in the size of individual banks, heteroskedasticity could be a problem in our sample. We control for this by using a robust estimator of the variance-covariance matrix of the parameter estimates. Furthermore, to make sure non-stationarity does not affect our data, we performed a panel data unit root test according to *Maddala/Wu* (1999), resulting in the rejection of the null-hypothesis of non-stationarity. The respective test statistics can be obtained from the authors upon request.

[8] This is mainly relevant for Tier I capital. Regulatory capital consists of both Tier I and Tier II capital. As Tier II capital, although linked to Tier I capital, can readily be issued by both cooperative and savings banks, this aspect is somewhat alleviated.

[9] The Lerner Index is calculated according to *Angelini/Ceterolli* (2003), for a more detailed description the reader is referred to the Appendix. To control for potential endogeneity of the competition variable, we treat the Lerner Index as a predetermined variable in the *Arellano/Bond* (1991) estimates.

also use a Herfindahl-Hirschman index based on total assets of all Austrian banks.[10]

– *Interest rate risks* are captured by the standard deviation of daily short-term money market rates over a year, our choice being the 3-Month-Euribor (Vibor before 1999). Alternatively we check for the robustness of our results using the standard deviation of 10-year government bond yields and the slope of the term structure (the difference between a year's average of 10-year government bond yields and 3-Month-Euribor), as interest rate risk proxies.

– *Credit risks* are captured by the ratio of risk-weighted assets to total assets or (again as robustness exercise) by the ratio of loan loss provisions to customer loans.

– *The interaction of credit risks and interest risks* is covered by introducing an interaction term between the respective interest rate risk and credit risk specifications.

– *The operating costs* are simply operating expenses in relation to total assets.

– *The average size of operations* is captured by dividing the sum of all customer loans with the number of customer loans.

In order to capture empirical deviations from pure margins we account for the following factors: *Payment of implicit interest rates* are calculated by dividing fee income on credit operations by total assets, *quality of management* is proxied by the cost-income ratio, e*conomies of scale* are captured by a bank's market share in a given year, the *importance of non-interest revenues* is calculated by the ratio of non-interest revenues

[10] Herfindahl-Hirschman indices (*HHI*) for each year are computed as

$$HHI = \left[\sum_{i=1}^{N} \left(\frac{X_i}{\sum_{j=1}^{N} X_j} \right)^2 - \frac{1}{N} \right] \Big/ \left[1 - \frac{1}{N} \right]$$

where $X_1, ..., X_N$ denote the total assets of all N Austrian banks existing at time t. These indices take on values between 0 (representing perfect "granularity") and 1 (total concentration). In the same way as the Lerner index, the *HHI* is also enters our model as a predetermined variable. We calculate the *HHI* on the basis of all banks in order to incorporate competition of large banks as well. We would have preferred to apply a more granular *HHI* to capture local competition more accurately. However, we do not have data on the market share of large "pan-Austrian" banks, which are not evenly spread across Austria. In addition a consistent definition of the relevant local market is very hard to find.

(excluding fee income on credit operations) to total assets and, as a robustness check, the share of non-interest revenues (again excluding fee income on credit operations) in total revenues. The change in *economic conditions* is proxied by the deviation of Austria's real GDP growth rate in a given year from its average over the sample period.

In order to obtain a proxy for the *degree of relationship banking,* we use a number of variables intended to reflect different aspects of relationship lending. In our base model, the sum of customer loans with a volume below € 500,000 (below € 360,000 before 2002) in relation to total customer loans is used as a proxy for relationship lending.[11] The underlying rationale for this choice is the argument that informational opacity decreases with company size, i.e. small businesses would be considered as especially opaque. In our setting, we take loan size as a proxy for company size, thus the kind of information asymmetries typically encountered with relationship loans will likely decrease with the size of a loan (see also *Ergungor* (2005) in this respect). Of course, this indicator, despite drawing on a unique database, is relatively crude – we are aware of the fact that not all small loans are relationship loans and not all relationship loans are small. However, we follow the argument that the larger the company the lower is the resulting information asymmetry – not least due to more sophisticated and documented management systems – resulting either in capital market financing or transaction based bank lending. As a robustness check, we also take the ratio of total customer loans to total assets as a proxy for relationship banking in order to check whether our results are influenced by the specific size limit our database imposes on the analysis. Due to the small size of the banks in our sample and the ensuing implicit limits in the maximum amount to be allocated to a single loan (the regulatory provisions in Austria fix this as a percentage of equity, namely 10%), this measure should not include too many very large loans either. In order to check the extent of relationship lending with larger loans, i.e. in our case loans exceeding € 350,000[12], we compute an alternative measure for relationship banking based on the average number of bank relationships the customers of an individual bank have. We thereby calculate for each bank customer the number of bank relationships in each year, defined as the number of banks extend-

[11] Defining the degree of relationship banking as the sum of small customer loans in relation to *total assets* (instead of total customer loans) leaves our results materially unchanged.

[12] The regulatory reporting regime in Austria gives us access to single loan data for loans exceeding the threshold of € 350,000.

ing a loan of more than € 350,000 to the respective customer and then take the average over all customers of a given bank.

Relationship lending is often associated with the idea of intertemporal smoothing, i.e. banks mitigate the effect of changes in interest rates and/or credit risk on the terms of relationship loans (see e.g. *Berlin/Mester* (1998)). In our setting we also try to check for this effect of relationship lending on margins by introducing a model with two interaction terms of relationship lending, one with interest rate risk, the other with credit risk. We would expect these interaction terms to have negative signs – ceteris paribus, given a change in interest or credit risk, banks with a large relationship banking portfolio should dampen the effect of this change on margins more than banks with a low relationship banking intensity in their assets.

Since foreign currency lending is a unique feature in Austrian banking that gained particular importance in our observation period – the share foreign-currency loans (FCL) in overall lending to nonbanks tripled since 1997 to roughly 20% at present – we also control for the *influence of foreign-currency loans* by using the share of foreign-currency loans to all loans granted to customers for each bank.

Table 1 shows the evolution over time of the left hand and all right hand side variables in our sample for the years 1997 to 2005, with medians used for bank specific variables. All variables above the dotted line are part of our reference model, all variables below were used as a robustness exercise. The interest rate margin (*IRM*) shows a decreasing trend ranging from just over 2.9% in 1997 to 2.0% in 2005. During the same period, competition in the Austrian banking system increased markedly, with the Lerner index (*LERNER*) of the banking system decreasing from 48% to 40%. Along with rising competition, operating costs (*OPC*) decreased steadily from 2.7% in 1997 to 2.2% in 2005. In terms of interest rate risk, the one-year standard deviation of the 3-Month-Euribor (*STD3M*) increases until 2000 and decreases thereafter. The slope-term (*SLOPTERM*) follows a similar pattern, the standard deviation of the 10-year bond yield (*STD10Y*) however moves in the opposite direction of the 3-Month-Euribor for most of the years. In contrast to interest rate risk, credit risk, measured by the risk-weighted assets ratio (*RWATOTASS*), increased during the sample period, a pattern by and large followed by the loan loss provisions ratio (*LLPR*). The average size of operations (*ASO*) increased steadily from € 18,000 to € 28,000, so does banks' regulatory capital ratio (*RAV*). As already hinted above, the share

Table 1

Descriptive Statistics

Symbol	Definition	1997	1998	1999	2000	2001	2002	2003	2004	2005
IRM %	Net interest income to total assets	2.932	2.740	2.539	2.796	2.607	2.441	2.259	2.148	2.029
LERNER %	Lerner index of market power	48.396	50.657	47.341	51.948	53.926	47.891	42.354	39.280	40.028
OPC %	Operating costs to total assets	2.692	2.653	2.549	2.565	2.511	2.456	2.380	2.300	2.181
RAV %	Regulatory capital ratio	12.870	12.885	12.716	12.629	12.700	12.825	13.072	14.548	15.185
RWATOTASS %	Risk-weighted assets to total assets	57.855	58.236	57.993	59.163	58.918	58.620	57.784	58.865	59.724
STD3M	Standard deviation of 3-month-Euribor	0.192	0.084	0.331	0.585	0.530	0.148	0.248	0.046	0.111
CIR %	Cost-income ratio	68.916	70.639	70.163	64.722	67.706	68.237	70.223	70.958	69.094
SIZE %	Market share	0.012	0.012	0.012	0.012	0.013	0.014	0.014	0.014	0.013
FCL %	Share of foreign-currency loans to customers	0.596	3.032	5.808	8.189	9.801	10.986	11.725	12.962	13.703
CROSSIRR3RWA	Interaction between RWA and STD3M	0.111	0.049	0.192	0.346	0.312	0.087	0.143	0.269	0.067
NONINTREV %	Non-interest revenues (excl. fees from credit operations) to total assets	0.932	0.966	1.005	1.093	1.012	1.028	1.005	0.965	1.027
IIP %	Fee income on credit operations to total assets	0.021	0.019	0.019	0.019	0.020	0.022	0.024	0.023	0.022
RLBLOANS %	Share of lower-volume loans	46.984	47.092	46.928	46.764	45.742	47.965	46.576	46.059	45.228
GDP_TREND %	Difference between a year's GDP growth rate and its mean over all years	-0.285	1.515	1.215	1.315	-1.285	-1.085	-0.685	0.315	-0.185
ASO thsd. Euro	Average size of customer loans	17,856	19,290	20,567	21,702	23,041	24,980	25,822	26,995	28,070

SLOPE %	Difference between 10-year government bond yield and 3-month-Euribor	2.173	1.118	1.725	1.158	0.800	1.634	1.796	1.982	0.652
CROSSIRRSRWA	Interaction between RWA and SLOPE	0.013	0.007	0.012	0.007	0.005	0.010	0.011	0.012	0.004
STD10Y	Standard deviation of 10-year govt. bond yield	0.145	0.378	0.591	0.151	0.200	0.320	0.262	0.213	0.233
CROSSIRR10RWA	Interaction between RWA and STD10Y	0.001	0.002	0.004	0.001	0.001	0.002	0.002	0.001	0.001
LLPR %	Loan loss provisions ratio	3.571	3.761	3.829	3.983	4.342	4.427	4.485	4.413	4.525
CROSSIRR3	Interaction between LLPR and STD3M	0.007	0.003	0.013	0.023	0.023	0.007	0.011	0.002	0.005
NONINTREV2 %	Non-interest revenues (excl. fees from credit operations) to total revenues	23.577	25.634	28.481	27.709	27.828	29.588	29.910	29.706	32.835
RLBLOANS2 %	Customer loans to total assets	58.101	58.917	59.599	60.449	59.026	58.013	56.299	55.645	55.015
HHI	Herfindahl Index based on total assets	0.033	0.038	0.036	0.039	0.036	0.045	0.041	0.040	0.043
NRREL	Average number of banking relationships of a bank's customers	2,463	2,332	2,250	2,339	2,410	2,414	2,500	2,552	2,530
IRSM	Interaction between STD3M and RLBLOANS	0.0009	0.0004	0.0015	0.0027	0.0024	0.0007	0.0012	0.0002	0.0005
CRSM	Interaction between RWATOTASS and RLBLOANS	0.2874	0.2909	0.2920	0.2946	0.2848	0.2922	0.2871	0.2851	0.2821

Source: OeNB, Thomson Financial

of foreign currency loans (*FCL*) rises sharply over the last decade. During this time period, non-interest revenue (*NONINTREV*) also significantly gained in importance for the median bank accounting for 34 % of all revenues, which is an increase of 41 % in the sample period (*NONINTREV2*). The importance of relationship-banking loans (*RLBLOANS*) however decreases slightly, especially since 2002. This is also mirrored in the increase of the average number of banking relationships (*NRREL*). Finally, *IRSM* represents the interaction term of interest rate risk and relationship lending and *CRSM* the interaction term of credit risk and relationship lending.

IV. Results

Table 2 shows the estimation results for our reference model. Econometrically, the null hypothesis of second-order autocorrelation in the first-differenced residuals can be rejected at common inference levels. The Sargan test confirms the null hypothesis that the over-identifying restrictions are valid. It should be noted that we use *Arellano/Bond* (1991) two-step estimates for obtaining the Sargan test statistic, as the distribution of the Sargan test statistic is unknown for the heteroskedasticity-consistent one-step estimator we employ and a Sargan test based on the one-step estimator (based on homoscedastic errors) would overreject the null hypothesis. This is in line with *Arellano/Bond* (1991) who recommend using the one-step estimates for inference on coefficients, whereas the two-step Sargan test is typically used for inference on model specification (see also *Beck/Levine* (2004) or *Maechler/McDill* (2006)).[13]

To begin with, the coefficient of the lagged dependent variable has a significant positive sign and a value of roughly 0.3 indicating some degree of market imperfections. The presence of market imperfections is also borne out by our estimates for the Lerner index (see Table 2) and the fact that the operating cost coefficient takes on significantly positive values.

Relating our results to the predictions of the theoretical margin model, competition, operating costs, credit and interest rate risk are significant and display the expected positive signs, i. e. the lower competition, the higher average operating costs, credit and interest rate risk, the higher is

[13] Two-step estimates have the disadvantage of downward biased standard errors of coefficients and are thus not recommended for inference on coefficients.

Table 2[14]

Determinants of Interest Margins of Local Banks in Austria, 1997–2005, Reference Model

	Dependent variable: net interest margin (IRM)		
	Coefficient	Standard error	p-Value
IRM_{t-1}	0.2728 ***	0.0923	0.003
LERNER	0.0225 ***	0.0046	0.000
OPC	0.6399 ***	0.1359	0.000
RAV	−0.0069	0.0055	0.207
RWATOTASS	0.0032 **	0.0016	0.042
STD3M	0.2252 *	0.1310	0.086
CROSSIRR3RWA	−0.1738	0.1794	0.333
ASO	0.5484	0.4237	0.196
CIR	−0.0161 **	0.0079	0.043
SIZE	−0.2338	0.5229	0.655
FCL	−0.0001	0.0011	0.925
NONINTREV	−0.3702 ***	0.1161	0.001
IIP	−0.0287	0.2368	0.903
RLBLOANS	0.0050 ***	0.0013	0.000
GDP-TREND	0.0744 ***	0.0181	0.000
C	0.0003 ***	0.0001	0.005
no. of observations	5,160		
no. of groups	796		
Sargan Test p-value[a]	0.1308		
test autocorr. resid. (2) p-value	0.2180		

***, **, * indicate significance at 1 %, 5 %, 10 % level

[a] p-value based on Sargan test statistic of the two-step *Arellano/Bond* (1991) GMM estimator

the interest rate margin of a bank. Looking at the sensitivities of interest margins towards these variables, the impact of competition and operating costs on margins is relatively high, whereas changes in credit risk do not affect margins to a great extent.[15] E.g. a 10 % increase in competition

[14] Due to taking first difference and the inclusion of the lagged dependent variable 2 years, i. e. 1,592 out of the original 6,752 observations are lost.

[15] Note that all sensitivities are calculated on a 10 % change based on median values for all variables.

or a 10% decrease in the ratio of operating costs to total assets leads to a reduction in margins of 9.0 and 14.0 basis points in the following year respectively. This corresponds to a long run effect of 12.4 and 19.2 basis points. A 10% increase in credit risk however only leads to a 1.9 basis point mark-up in interest rate margins, with interest rate risk having an even smaller effect on margins.

In terms of our control variables, margins also significantly decrease with higher shares of non-interest revenues. A 10% increase in the ratio of non-interest revenues over total assets leads to a downward shift in interest rate margins by 3.8 basis points in the following year and a 5.3 basis point mark-up in the long run. One reason for this could be cross-selling possibilities of small local banks. Since investment funds and pension products soar in popularity in Austria over the observation period (see e.g. *Ittner/Schwaiger* (2006)), the increasing possibility to cross-sell investment or insurance products to loan holders could justify lower margins for banks. Alternatively, the literature also offers income diversification as an argument why risk-averse banks may decrease their margins as they are able to spread risks across several sources of revenues (see e.g. *Stiroh* (2004) or *Elsas* et al. (2006)).

Besides non-interest revenues, the extent of relationship banking also wields a significant positive influence on interest rate margins of small local banks, although the impact itself is not large. Our results show that an increase in the share of relationship banking loans to total loans by 10% increases a bank's interest rate margin by 2.3 basis points in the subsequent period and by roughly 3.1 basis points in the long term. For small local banks, relationship banking thus enables banks to charge higher margins. The rather small effect could be due to both the issue of adverse selection – banks may be reluctant to charge high interest rates to new customers in order to avoid adverse selection problems – as well as problems in raising interest rates significantly in the course of the relationship. The positive sign of the relationship banking coefficient however is surprising given earlier results on the topic for the US market e.g. by *Ergungor* (2005), who finds no effect of relationship banking on bank interest rate margins. One reason behind this contradiction between the US and an EU market could be the difference in the importance of the so called "hold up" problem in relationship banking. This problem refers to the fact that the proprietary information about borrowers a relationship bank acquires could give the bank some "monopoly power". In this way, banks could charge higher interest rates as the lending relationship endures which compensates the bank for initially lower interest rates given to new customers in order to avoid the aforementioned adverse selection problems (see also *Boot* (2000)). Whereas US data shows an improvement in contract terms for customers over the relationship (*Petersen/Rajan (*1994, 1995)), in the European context, *Degryse/Van Cayseele* (2000) find the opposite – contract terms deteriorate as the relationship goes on (see also *Boot* (2000)).[16]

Furthermore our results show that good management of banks reduces interest margins, i. e. more efficient banks are apparently able to operate with lower margins than their badly managed counterparts. GDP growth also has a significant positive impact, although the effect in terms of sensitivity is very small. Size and implicit interest payments do not have a significant effect on interest margins.

Returning to the question of reasons for the sharp decline of interest rate margins of Austrian local banks over the last decade, we need to isolate the most important driving forces. To this end, we can e. g. combine the changes in the median levels of our model variables (see Table 1) with the estimated coefficients of the reference model. The three most important reasons for the decline in margins over the last decade have thus been the fall in operating costs, the increase in competition and the increase in the share of non-interest revenues. Although the coefficient on the Lerner index is small, the change of the latter over the last 10 years makes it an important driver of margin reductions. Although its impact is much smaller, the reduction in relationship banking should however not go unmentioned in this respect either.

Generally speaking our results therefore indicate that interest rate margins of local banks are driven more by bank or industry specific variables such as operating costs, competition or non interest revenues than by macro variables such as the volatility of interest rates or changes in

[16] A caveat for these results is of course the definition of the relationship banking variable. The positive signs could for instance also be due to the lower bargaining power small debtors have vis-à-vis their bank. Two observations however indicate that pricing power of customers is not so much of a problem in the Austrian banking market. On the one hand, Austria has the third highest branch density in the Euro area (see *ECB* (2006)), thus enabling a relatively easy switching. On the other hand, Austria has the lowest average lending rate for newly extended Euro-loans as well as the highest average deposit rate for newly accepted Euro deposits in the Euro area (see *OeNB* (2006)), which underlines the above argument that rent extraction from the side of banks is smaller an issue in Austrian banking than in other Euro area countries.

Table 3

Determinants of Interest Margins of Local Banks in Austria, 1997–2005, Robustness Checks

	Dependent variable: net interest margin (IRM)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
IRM_{t-1}	0.2716 ***	0.2339 ***	0.2675 ***	0.3285 ***	0.2429 ***	0.1515 ***	0.3679 ***	0.2369 ***
LERNER	0.0378 ***	0.0198 ***	0.0228 ***	0.0236 ***	0.0220 ***	0.0041 ***		0.0237 **
OPC	0.6189 ***	0.6424 ***	0.6478 ***	0.4224 ***	0.6100 ***	1.2323 ***	0.6344 ***	0.5838 ***
RAV	−0.0055	−0.0085	−0.0066	−0.0127 ***	−0.0073	−0.0005	−0.0016	−0.0027
RWATOTASS	0.0056 ***	0.0036 ***		0.0033 *	−0.0027 **	0.0014 **	0.0039 **	−0.0012
ASO	0.4727	0.5450	0.5406	0.6220	0.4236	-2.9612 **	0.2222	0.4474
CIR	−0.0158 **	−0.0163 **	−0.0162 **	−0.0092 *	−0.0153 **	−0.0450 ***	−0.0163 *	−0.0150 **
SIZE	−0.4479	−0.5925	−0.3092	1.1414	−0.1847	−0.1690	−0.3476	−0.0565
FCL	−0.0011	0.0012	−0.0001	0.0016	−0.0004	0.0006	0.0006	−0.0014
NONINTREV	−0.3722 ***	−0.3709 ***	−0.3743 ***		−0.3472 ***	−0.7634 ***	−0.3784 ***	−0.3442 ***
IIP	−0.0279	−0.0110	0.0077	0.2316	0.0692	−0.9482 ***	−0.1619	−0.0468
RLBLOANS	0.0034 ***	0.0034 ***	0.0053 ***	0.0044 ***			0.0007	0.0199 ***
GDP-TREND	0.0987 ***	0.0607 ***	0.0744 ***	0.0863 ***	0.0680 ***	0.0283 ***	0.0426 ***	0.0716 ***
C	0.0006 ***	0.0001	0.0004 ***	0.0004 ***	0.0004 ***	0.0002 ***	0.0004 *	−0.0004 ***
SLOPETERM	0.1767 ***							
CROSSIRRSRWA	−0.1572 **							

STD10Y		0.0513						
CROSSIRR10RWA		−0.3856 **						
LLPR			−0.0117 ***					
STD3M			0.0728 **	0.2320	0.2222 *	0.1061	0.4904 ***	0.1713
CROSSIRR3			0.9428 *					
NONINTREV2				−0.0142 ***				
RLBLOANS2					0.0138 ***			
NRREL						−0.0002 **		
CROSSIRR3RWA				−0.1834	−0.2687	−0.0963	−0.0944 ***	−0.0636
HHI							0.1793 ***	
IRSM								−0.0591
CRSM								−0.0028
no. of observations	5,160	5,160	5,160	5,160	5,160	3,771	5,160	5,160
no. of groups	796	796	796	796	796	539	796	796
SarganTest p-value[a]	0.2242	0.4181	0.1171	0.1694	0.0790	0.2938	0.0924	0.2315
test autocorr. resid. (2) p-value	0.7368	0.7406	0.2319	0.2946	0.2487	0.9532	0.6303	0.4217

***, **, * indicate significance at 1%, 5%, 10% level

[a] p-value based on Sargan test statistic of the two-step *Arellano/Bond* (1991) GMM estimator

GDP growth. In terms of policy implications, bank margins thus seem to be influenced easier by structural measures on the industry level than by a policy of macroeconomic smoothing. The European Commission's Financial Services and Action Plan (FSAP) especially intended to increase competition in retail banking markets therefore seems to be an appropriate means to lower the cost of financial intermediation in the case of small local banks.

V. Robustness

In order to check for the robustness of our base model we both used alternative variable definitions as well as different estimation methodologies.

To begin with, we used alternative variable definitions (models (1) to (8) in Table 3) to see whether the results outlined in the base model were influenced by specific variable definitions. From an econometric perspective, the null hypothesis of second-order autocorrelation in the first-differenced residuals can be rejected at common inference levels in all our models. The Sargan test underpins our model specification in all but two cases where the null hypothesis of valid over-identifying restrictions can be rejected (however only at the 10 % level).

Models (1) and (2) use different definitions for interest rate risk – the slope of the term structure and the standard deviation of 10-year government bond yields respectively. Model (3) uses loan loss provisions instead of risk weighted assets to total assets as a proxy for credit risk. Model (4) uses the share of non-interest revenues (excluding fee income on credit operations) in total revenues instead of the ratio of non-interest revenues (excluding fee income on credit operations) to total assets. Models (5) and (6) use different measures for relationship banking, namely the share of total customer loans to total assets as well as the average number of bank relationships of the customers of each bank. Model (7) introduces an alternative competition variable, namely the Herfindahl-Hirschman Index for the Austrian banking systems instead of the Lerner Index. Finally, the 8th robustness model checks for the presence of intertemporal smoothing with relationship customers.

The results of our reference model are by and large confirmed by these robustness checks with two noteworthy exceptions. The first one concerns interest rate risk. Interest rate risk when measured in terms of

10-year interest rate volatility does not significantly affect margins, the slope of the yield curve as a measure of interest rate risk however is highly significant. Small local banks' interest margins therefore seem to be more affected by changes in the profitability of a ride on the yield curve than by interest rate volatility. The margin sensitivity towards changes in the slope of the yield curve is rather small – a 10% increase in the slope leads to an immediate margin increase by 1.2 basis points and a long run margin increase by 1.6 basis points. In this respect it should however also be considered, that changes in the slope of the term structure can change from highly positive to even negative values within a relatively short period of time, as recent history has shown.

The second exception is credit risk. When including the share of loan loss provisions as proxy for credit risk, credit risk gets a significant negative coefficient. This finding however is in line with presumption that loan loss provisions are affected by a number of other factors besides credit risks, especially earnings management, which makes them a sometimes misleading measure of credit risk.

All other variable changes confirm the initial reference model. Non-interest revenues remain an important margin driver – if the share of non-interest revenues in all revenues e.g. increases by 10%, margins would fall by 4.7 basis points in the next year and 6.4 basis points in the long run. Competition also continues to have a negative effect on margins when measured in terms of the Herfindahl-Hirschman Index, although it has to be considered that a Sargan test rejects the validity of overidentifying restrictions with this model, albeit only at the 10% level. The same applies to model (5), where the share of total customer loans to total assets is used to proxy relationship lending. The two proxies for relationship lending in model (5) and (6) however also remain significant, with the coefficient on the average number of bank relationships having a rather small impact, whereas the ratio of customer loans to total assets has a comparatively large effect on margins. With respect to the presence of intertemporal smoothing with relationship lending (model (8)), coefficients have the expected negative sign, i.e. banks with a high share of relationship lending in their portfolio tend to assuage fluctuations in interest and credit risk. The respective coefficients are however not significant. One reason for this might be the fact that we cannot single out relationship loans from "arms length" lending within a bank, but can only analyse an average interest rate margin for all loans. The averaging going along with an approach on the bank rather than the individual customer level could of course make a smoothing effect considerably more difficult to detect.[17]

A second set of robustness checks we performed uses different estimation methodologies. In addition to our dynamic panel data model we estimated a fixed effects model including a lagged dependent variable, which however results in biased and inconsistent parameter estimates due to the *Nickell* (1981) bias. Given the time dimension $T = 9$ of our sample and the fact that this bias decreases with T, the FE results should however enable us to gain further confidence in the robustness of our initial estimation results.[18] Additionally, our results could be affected by the presence of cross sectional dependence of errors. These could be due to unobserved common factors driving interest rate margins. However, as *Sarafidis* et al. (2006) have shown, the bias decreases both with increasing T and N. For our input data, their simulation exercise has shown that the problem of cross sectional dependence is of minor importance.[19] None the less, we wanted to corroborate our results by explicitly addressing the issue of cross sectional error dependence though the inclusion of common time effects in the dynamic panel data model (see *Sarafidis/Robertson* (2006)). In fact, both the common time trend dynamic estimation and the FE- estimation confirm – to the extent of being comparable – our benchmark model (see Appendix).[20]

[17] Our results are furthermore in line with *Berlin/Mester* (1998) who show for a sample of US banks that intertemporal smoothing of credit and interest rate risk does not seem to be part of efficient contracting for small banks, whereas interest rate risk smoothing proved to be efficient for larger banks.

[18] Note that a fixed effects (FE) model was chosen instead of a random effects (RE) model due to the results of a Hausmann test providing evidence for the use of a FE model. The FE model was preferred to a first differences (FD) model because of the fact that an estimation in first differences resulted in negative serial correlation in idiosyncratic errors, in case of which the FE estimator is more efficient than an FD estimator (see *Wooldridge* (2003)). Standard errors of the FE model were calculated according to *Driscoll/Kraay* (1998) and are robust to both heteroskedasticity and cross sectional dependence.

[19] Their simulation exercise has shown that for a lagged coefficient of 0.2, $T = 10$ and $N = 400$, the bias is in the range of 0.03 % to 0.22 %.

[20] The major difference in the FE model occurs in the average size-variable and the implicit interest payment variable, which now are both significant at the 1 % level. As this deviation corresponds to the predictions of the theoretical model, it should not be worrying. Furthermore, the significance of the credit risk variable changes slightly. As for the *Arellano/Bond* model including common time effects, these time effects naturally correlate strongly with macro variables such as GDP growth, the Lerner index or the standard deviation of interest rates – these variables are dropped due to collinearity.

All in all, the robustness checks performed therefore underpin our confidence in our estimation results.

Putting these results into the context of the empirical literature on the determinants of interest rate margins shows that both the sign and magnitude of the drivers of the pure interest rate margins are – to the extent of being comparable – in line with *Angbanzo* (1997), *Saunders/Schumacher* (2000), or *Maudos/Fernández de Guevara* (2004). Especially the comparatively large impact of competition and operating costs on margins is similar to earlier findings of *Maudos/Fernández de Guevara* (2004). Contradicting earlier empirical results, small local banks are however not very sensitive to interest rate volatility – neither of short run nor of long run rates – in their margin policy. However, there is evidence, that small local banks ride the yield curve to shore up their margins. In addition to earlier results in the literature, our results indicate that small local banks use relationship lending to increase their margins and trade-off interest income with non-interest income to a sizeable extent.

VI. Conclusions

Throughout the EU bank interest rate margins have been on the decline over the last decade, leading to a significant reduction in the cost of financial intermediation. In the case of small local banks, bank margins are mainly driven by operating costs, competition and non-interest revenues, whereas interest rate risk and credit risk play a comparatively minor role. Relationship banking and the general economic conditions do have a smaller, but still significant influence.

Over the last decade, the two major drivers behind lower margins have been a decrease in operating costs together with increased competition. Although small local banks have been facing less competition than their larger counterparts, a combination of increasing competition and better cost management seems to be a key element for further margin reductions.

Growing importance of non-interest revenue is the third important driver of small local banks' reduction in interest rate margins. This reflects the important role of disintermediation on core banking activities – especially on their deposit side – but also provides indications of cross-selling potentials for non-interest bearing banking products. Alternatively, income diversification may enable banks to operate with lower interest rate margins due to reduced risks in their overall revenue structure.

As small banks typically lend a larger portion of their assets to small and medium sized businesses, small banks' margins furthermore significantly depend on the extent of relationship lending, although the impact of relationship banking on margins is comparatively small. The decrease of relationship loans over the last decade has thus contributed to the decline in margins.

The future evolution of small local banks' margins will to a large extent depend on the development of industry specific factors rather than macro-variables such as interest rate volatility or the evolution of GDP. In particular, the further evolution in small local banks' margins hinges on the effect of the European Commission's Financial Services and Action Plan (FSAP) in increasing competition in retail banking markets.

Some degree of monopoly power may however even be necessary to reap the benefits of financial intermediation. Relationship lending being a case in point: Increased competition might undermine relationship lending and potentially expose borrowers to problems of credit rationing as well as to turns in economic cycles and interest rate levels.

Furthermore, a potential tradeoff between bank competition and bank stability has to be considered in this respect too: Although lower margins mean lower costs of financial intermediation, from the policy point of view it should not be neglected that a depressed profitability due to a continuous margin decline may well lead to risk shifting phenomena – our results on small local banks riding the yield curve is a case in point in this respect. In order to prevent a negative impact of declining margins on bank stability, it will be important for banks to compensate declining margins by sufficient non-interest revenues.

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Appendix

Lerner Index

The Lerner index is the relative markup of price over marginal costs, i.e. the difference between price and marginal costs in relation to price. In order to obtain the Lerner index the following system was estimated simultaneously[21] for each year from 1997 to 2005 (losing 1996 due to lagged variables used as instruments).

[21] Because of the endogeneity of the cost and quantity variables, c_i and p_i, instrumental variables in a framework of a 3-stage-least-squares estimation were used.

$$\ln c_i = k_0 + s_1 \ln x_i + \frac{s_2}{2} (\ln x_i)^2 + \sum_{j=1}^{3} k_j \ln \omega_{ij} + \sum_{j=1}^{3} s_{j+2} \ln x_i \ln \omega_{ij} + k_4 \ln \omega_{i1} \ln \omega_{i2}$$

$$+ k_5 \ln \omega_{i1} \ln \omega_{i3} + k_6 \ln \omega_{i2} \ln \omega_{i3} + \sum_{j=7}^{9} k_j (\ln \omega_{ij})^2$$

$$p_i = s_0 + \frac{c_i}{x_i} \left(s_1 + s_2 \ln x_i + \sum_{j=1}^{3} s_{j+2} \ln \omega_{ij} \right),$$

where c_i are total costs, x_i are total assets, ω_{i1} are the costs of funding (interest expenses in relation to deposits), ω_{i2} are the costs of labour (personnel expenses in relation to the number of employees) and ω_{i3} are the costs of physical capital (operating expenses net of personnel costs in relation to total assets) of bank i. The first equation thereby is the translog cost function used to obtain marginal costs, the second equation the first order condition of profit maximization used to obtain the markup over price (captured by s_0). p_i is the sum of interest revenues and fee based income in relation to total assets. The average degree of competition in a given year is calculated by dividing the estimation of s_0 by the average p over all banks in a year.

Robustness Estimates

Table 4

Arellano Bond Estimates with Common Time Effects

	Dependent variable: net interest margin (IRM)		
	Coefficient		Std. Err.
IRM_{t-1}	0.3139	***	0.0952
OPC	0.5838	***	0.1395
RAV	−0.0010		0.0024
RWATOTASS	0.0023		0.0015
ASO	0.3352		0.3641
CIR	−0.0152	**	0.0076
SIZE	−0.1790		0.5098
FCL	−0.0014		0.0011
NONINTREV	−0.3579	***	0.1123
IIP	−0.0972		0.2356
RLBLOANS	0.0041	***	0.0014
CROSSIRR3RWA	−0.1192		0.1823
Year 4	0.0029	***	0.0005
Year 5	0.0012	***	0.0004
Year 6	0.0007		0.0010
Year 7	0.0005		0.0012
Year 8	0.0005		0.0017
Year 9	0.0006		0.0018
_cons	−0.0003		0.0003
no. of observations	5,160		
no. of groups	796		
Sargan Test p-value[a]	0.4117		
test autocorr. resid. (2) p-value	0.6554		

***, **, * indicate significance at 1%, 5%, 10% level

[a] p-value based on Sargan test statistic of the two-step *Arellano/Bond* (1991) GMM estimator

Note: Remaining years dropped due to the specification of the equation.

Table 5

FE Estimates with *Driscoll/Kraay* (1998) Standard Errors

	Dependent variable: net interest margin (IRM)		
	Coefficient		Std. Err.
IRM_{t-1}	0.2457	***	0.0732
LERNER	0.0128	***	0.0039
OPC	0.5641	***	0.1142
RAV	−0.0037		0.0031
RWATOTASS	0.0042		0.0027
STD3M	0.3307	*	0.1934
CROSSIRR3	−0.2408		0.2068
ASO	0.4968	***	0.1282
CIR	−0.0152	***	0.0053
SIZE	−0.3882		0.2954
FCL	−0.0004		0.0007
NONINTREV	−0.4048	***	0.0601
IIP	−0.2688	***	0.0850
RLBLOANS	0.0020	***	0.0005
GDP_TREND	0.0412	***	0.0095
C	0.0088	*	0.0050
no. of observations	5,981		
no. of groups	820		

***, **, * indicate significance at 1%, 5%, 10% level

Summary

What Drives the Interest Rate Margin Decline in EU Banking – The Case of Small Local Banks

Bank interest rate margins have been declining in most EU countries over the last decade. This paper investigates the determinants of bank interest rate margins drawing on a unique sample of small local banks in Austria. The reduction of small local banks interest rate margins is mainly driven by a combination of decreasing operating costs, enabling banks to charge lower margins, and increasing competition. In addition, there seems to be a tradeoff between small local banks margins and non-interest revenues. In contrast to findings in the literature we furthermore document a small, but significantly positive effect of relationship banking on interest rate margins. (JEL G21, E40, C33)

Zusammenfassung

Die Determinanten der Zinsspannenreduktion auf dem EU-Bankenmarkt am Beispiel kleiner Lokalbanken

Im letzten Jahrzehnt sind die Zinsspannen von Banken in den meisten Märkten der EU zurückgegangen. Dieser Aufsatz untersucht die Determinanten von Zinsspannen am Beispiel kleiner Lokalbanken in Österreich. Der Rückgang der Zinsspannen wird vor allem durch einen Rückgang der Kosten und eine Steigerung des Wettbewerbs getrieben. Zudem scheinen niedrigere Zinsspannen durch höhere Erträge im Nicht-Zinsgeschäft kompensiert zu werden. Im Gegensatz zu bisherigen Ergebnissen aus der Literatur existiert ein positiver Zusammenhang zwischen der Bedeutung des Hausbankenprinzips und der Zinsspanne.