

Do Foreign Banks Raise the Risk of Foreign Currency Lending in Central and Eastern Europe? A Survey

PETER HAISS, ANDREAS PAULHART AND WOLFGANG RAINER¹

THIS VERSION AS OF JAN. 15, 2008

Paper for presentation at the 17th Annual Meeting of the European Financial
Management Association, Athens, June 25-28, 2008

Abstract

In recent years foreign direct investment (FDI) by banks into Central and Eastern Europe (CEE) has increased considerably, resulting in foreign bank ownership of about 85% across the region. According to literature this entailed the provision of new services and enhanced efficiency in the domestic banking sector. At the same time, however, some CEE countries recorded a substantial increase in foreign currency (FX) denominated credit, leading to concerns about the potential risks of asset deterioration in the domestic banking sector and of accusations about foreign banks “exporting” risks. We analyze whether there exists a significant relationship between foreign bank share and FX lending. Using a linear regression model with data on 13 CEE countries for the period 1999 to 2006 we find that foreign banks do not increase the risk of foreign currency lending. The existence of a fixed exchange rate regime, though, seems to have a positive impact on the level of foreign currency lending.

Key words: foreign banks, foreign currency lending, loan growth, currency regime

EFM classification codes: 510, 610, 620

Peter R. Haiss
Lecturer, EuropaInstitut,
University of Economics and
Business Administration,
Vienna, Austria
Althanstrasse 39-45/2/3
A-1090 Wien, Austria
phone: ++43 (0)664 812 29 90
fax ++43(0)1 313 36- 758
peter.haiss@wu-wien.ac.at

Andreas Paulhart
Graduate student,
EuropaInstitut, University of
Economics and Business
Administration, Vienna, Austria
Althanstrasse 39-45/2/3
A-1090 Wien, Austria
phone ++ 43(0)650 441 22 50
fax ++43(0)1 313 36- 758
Andi.Paulhart@gmx.at

Wolfgang Rainer
Graduate student,
EuropaInstitut, University of
Economics and Business
Administration, Vienna, Austria
Althanstrasse 39-45/2/3
A-1090 Wien, Austria
phone ++ 43(0)676 693 67 93
fax ++43(0)1 313 36- 758
Wolfgang-Rainer@gmx.at

¹ The opinions expressed are the authors' personal views and not necessarily those of the institutions the authors are affiliated with. The authors are indebted to helpful comments by Gerhard Fink and the Finance-Growth/Integration Nexus-Team at WU-Wien, <http://www.wu-wien.ac.at/europainstitut/forschung/nexus>

1 INTRODUCTION

In recent years Central and Eastern European countries recorded impressive growth rates. In line with this positive development credit levels in these countries surged. This has led some researchers to point to the threats of a possible credit boom (ECB, 2005b, 5). Credits in foreign currency account for a substantial part of total credit volume in some of these countries. Foreign currency lending, however, entails a number of additional risk factors to the lender, the borrower and the financial stability. In light of these developments authors like Farnoux/ Lanteri/ Schmidt (2004), Boissay/ Kozluk/ Calvo-Gonzalez (2006) and the European Commission (2004) suggest that foreign bank entry in these countries may be a contributing factor to their high and growing foreign currency credit levels. The IMF (2007; Tieman, 2007) warns that the growth of foreign currency lending by Austrian and other foreign banks warrents special attention. In this paper we accordingly analyze whether there exists a significant relationship between the market share of foreign banks and the level of foreign currency lending.

The structure of the paper is as follows. Section 2 gives a theoretical background on the developments of Financial Sector FDI and foreign currency denominated lending in Central and Eastern Europe. Section 3 describes the method of the empirical part of this paper, followed by a short description of the data used in the regression models in section 4. Section 5 presents the empirical findings, which are subsequently critically discussed in section 6. Section 7 sums up.

2 THEORETICAL BACKGROUND

2.1 Financial Sector FDI in Central and Eastern Europe

Beginning during the 1980s, foreign banks started to enter the Central European and Baltic countries. Their endeavors to conquer these markets continued and even intensified during the 1990s (De Haas / Naalborg, 2006, 159). To a large extent, market entry was accomplished via M&A activity, which was driven by privatization. For the upcoming years, though, the ECB forecasts a downturn in the number of mergers, since most formerly state-owned banks have already been privatized and the concentration of the banking industry appears to be rather high. Hence, M&A activity is primarily expected to go on in those markets, where the transformation process has not led to an equilibrium structure yet. In fact, the level of foreign

ownership in CEE countries varies substantially. On average, however, it exceeds the 70% mark. In addition to the acquisition of formerly state-owned institutions, mergers of parent companies could become an issue contributing to industry consolidation. Apart from the prospering M&A activities, several banks decided to enter CEE via greenfield investments. One of the main advantages of this strategy is that bad loans, which might be attached to a takeover target, need not be assumed (ECB, 2005a, 18).

In 2007, total banking assets in CEE continued to increase at a high pace. However, the growth rate of 28.8% was slightly below the respective 2006 rate (RZB Group, 2007, 4).

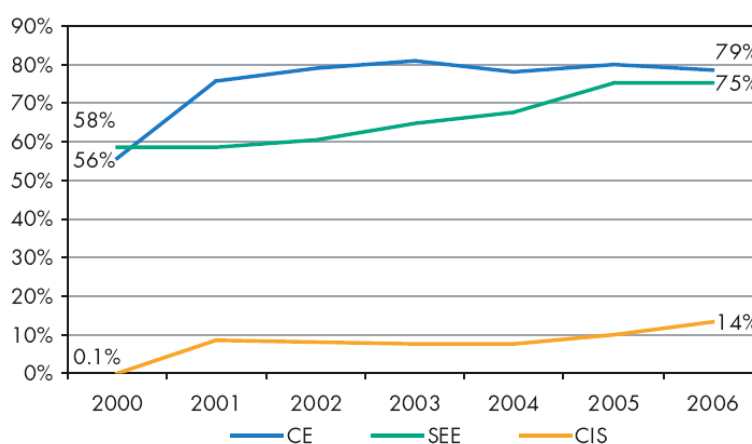


Figure 1 Market share of majority foreign owned banks. Source: RZB Group, 2007, 17.

Figure 1 presents the development of the market share of majority foreign owned banks from 2000 to 2006. It divides CEE into three sub-regions, namely Central Europe (Poland, Hungary, Czech Republic, Slovakia and Slovenia), Southeastern Europe (Romania, Bulgaria, Croatia, Serbia, Bosnia and Herzegovina and Albania) and the Commonwealth of Independent States (Russia, Ukraine and Belarus). On the whole, majority foreign owned banks were able to improve their position in the period covered in all three sub-regions. Whereas they are dominant in CE and SEE, in the CIS they only reach a market share of 14% (RZB Group, 2007, 18).

As for the Austrian banking industry, CEE countries are of outstanding importance. At the end of 2006, the consolidated assets of the six major Austrian banks investing in these markets reached €188 bn. By that time, this corresponded to 20.3% of the Austrian banking industry's total consolidated assets (OeNB, 2007, 48). Another figure reveals that Austrian banks have become important players in the region: 14.5% of the CEE banking industry's

assets are owned by Austrian banks and their subsidiaries. If Russia and Turkey are neglected, this percentage reaches even 23.7% (OeNB, 2007, 50).

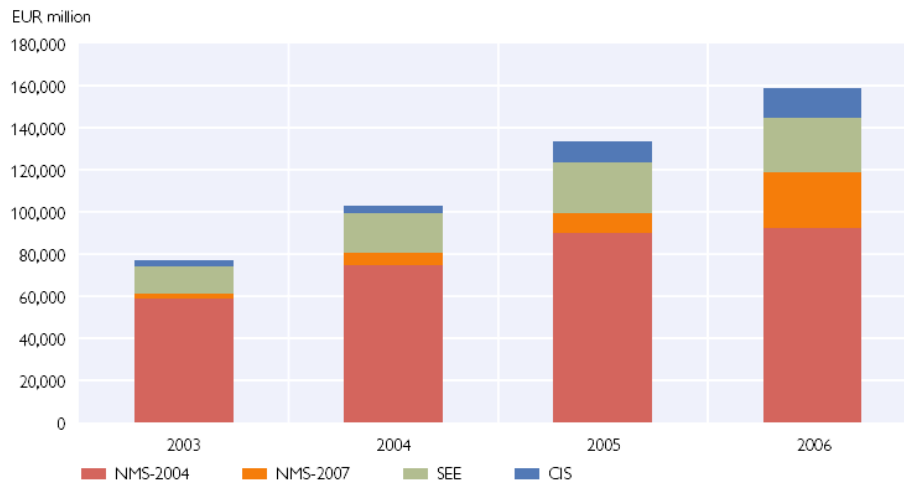


Figure 2 Total Assets of Austrian CEE subsidiary banks. As on December 31, 2006. Source: OeNB, 2007, 50.

2.2 Is there a relationship between FSFDI and the level of foreign currency lending?

Although there does not seem to be an obvious nexus between the level of FSFDI and the level of foreign currency credit, a look at some statistics leads us to the assumption that there is such a relationship: Farnoux, Lanteri and Schmidt (2004) in their paper about FDI in the Polish financial sector present a graph which compares the relative amount of foreign currency denominated loans recorded by Polish banks and foreign banks from 1998 and 2002 (Chart 3).

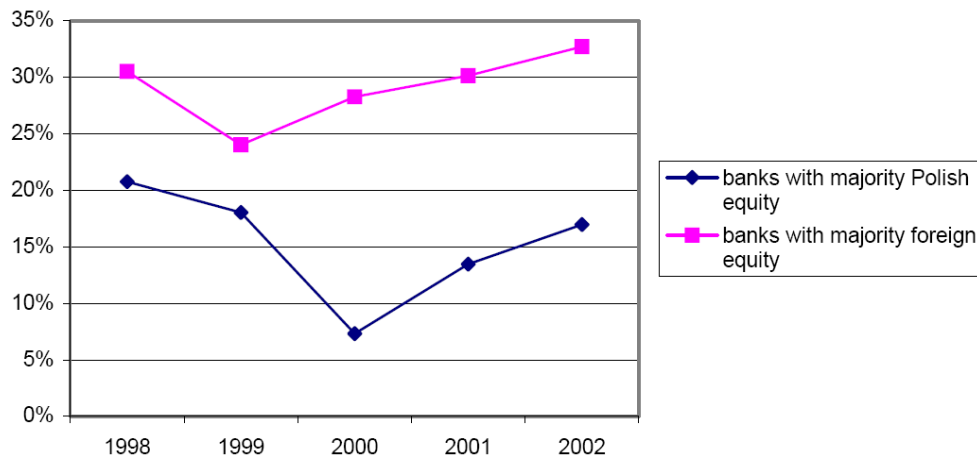


Figure 3 Share of foreign currency-denominated claims on nonfinancial corporations in total claims, commercial banks, by bank nationality. Source: Farnoux / Lanteri / Schmidt, 2004, 21. Banque de France calculations based on NBP data.

The chart clearly shows that foreign banks issued foreign currency denominated credits more often than their Polish counterparts. Based on this finding, Farnoux, Lanteri and Schmidt conclude that the market entry of foreign banks may have improved the access to fx-lending in Poland. The remarkably big difference between the levels recorded by foreign-owned banks and Polish institutions is explained with the former's more aggressive strategy in this field (Farnoux / Lanteri / Schmidt, 2004, 21).

Boissay, Calvo-Gonzalez and Kozluk provide another explanation: According to them, foreign bank entry is in general boosting credit growth in CEE because foreign banks use better risk management techniques than local institutions. In addition, competition is enhanced, which in turn leads to lower interest rates and thus accelerates credit growth. Moreover, foreign banks have superior funding possibilities thanks to their parent banks (Boissay / Calvo-Gonzalez / Kozluk, 2006, 3). So assuming that foreign banks tap their parent banks for additional funding, it might be more convenient for them to issue loans in their own currency. Accordingly, it would be logical if foreign banks accounted for a disproportionately high share of fx-loans. Therefore, the entry of foreign banks should bring along a higher share of foreign currency credits in total credits. However, this theory could not be confirmed by their empirical analysis: Whereas data from Bulgaria seemed to fit the theory, data from other countries such as Lithuania, Latvia and Estonia did not support it. In Croatia, the share of fx-credits in total credits had even dropped during the period observed (Boissay / Calvo-Gonzalez / Kozluk, 2006, 17).

While Boissay, Calvo-Gonzalez and Kozluk (2006) analyzed the development of fx-lending in the period from 1999 to 2004, the European Commission (2004) just provides a snapshot. It is interesting to note that the Commission names specifically Lithuania, Latvia and Estonia as examples indicating that there might be a nexus between FSFDI and fx-lending. So according to the Commission's paper, cross-ownership with banks from the Euro Area is one of the factors contributing to the considerable level of euro-denominated loans in the new Member States (European Commission, 2004, 15).

2.3 Foreign currency lending in CEE

Alongside the general credit expansion in Emerging Europe, which is generally considered a sign of catching-up with "old" Europe (World Bank, 2007, 1), some CEE countries have experienced a special boom in foreign currency denominated credit (Figure 4). Over the period 1999 to 2006 foreign currency loans in Slovenia have grown at an average annual compounded rate of 21.4%, accounting for 55.4% of total domestic credit in 2006. Poland, Hungary and Slovakia also recorded substantial increases, with compounded annual growth rates (CAGR) of 7.1%, 6.4% and 5.9%, respectively. This trend, however, is not observed in all CEE countries. Serbia, Belarus and Kazakhstan, for example, recorded a sharp decline in foreign currency lending, with respective CAGRs of -31.5%, -10.2% and -8.5 (Table 7)².

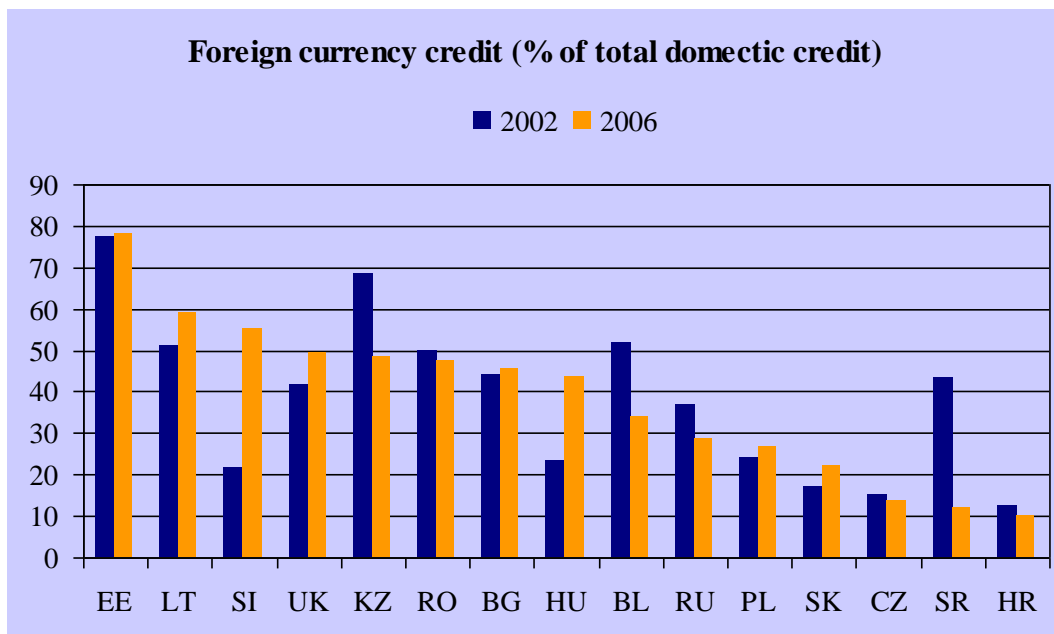


Figure 4 Foreign currency credit as percentage of total domestic credit for selected CEE countries. *Source: RCB CEE Banking Sector Report 2007, Central Bank of Estonia, Central Bank of Lithuania*

² For Serbia data were only available from 2001 on. For Belarus and Kazakhstan the data series started at 2002.

2.4 Risks of foreign currency lending

In contrast to loans denominated in domestic currency, foreign currency credits entail a number of additional risk factors to borrowers, lenders and the financial sector as a whole. Most noticeably are the foreign exchange risk and the interest rate risk (Waschiczek, 2002, 98).

Foreign exchange risk

Probably the highest risk factor in fx-borrowing is the exchange rate risk. Unless the borrowing party hedges its fx-exposure against adverse currency movements, there is a considerable risk of increased interest and redemption costs in the case of domestic currency depreciation (Waschiczek, 2002, 91). In this context it is specifically interesting to distinguish between fx-loans granted to corporations and those granted to households, as the latter are usually unhedged against adverse currency movements (IMF, 2006b, 51).

Interest rate risk

The second major risk involved in foreign currency lending is the interest rate risk. As most fx-loans are granted over a longer term period and are usually extended on a rollover basis, the interest risk involved is considerable (Waschiczek, 2002, 93). In general, interest rates are an important monetary policy instrument and used by central banks to direct national monetary policy (Görgens/Ruckriegel/Seitz, 2004, 123). People with foreign currency loans may not be fully aware of the consequences of monetary policy in these countries.

Economic risk and financial stability

Extensive foreign currency borrowing also raises concerns on the financial stability. Although currency mismatches alone are not a sufficient factor to trigger a financial crisis, “they can play a major role in exacerbating them and making them very costly to resolve” (ECB, 2006a, 62). The rationale behind this is that “a financial crisis usually precipitates a sharp currency depreciation”, which dramatically increases interest and redemption costs (ECB, 2006a, 62).

Impact on monetary transmission

A high share of foreign currency lending can influence the effectiveness of monetary policy instruments. Backe et al (2007) argue that there exists “a negative correlation between increasing foreign currency-denominated savings and loans and the efficiency of monetary

policy using the interest rate channel, since central bank interest rate policies influence trends in savings and loans denominated in local currency” (Backe et al, 2007, 124).

2.5 Reasons for foreign currency loans – demand versus supply side

In principal the surge in foreign currency credit can be demand or supply driven (Waschiczek, 2002, 83). In the following we discuss the arguments for both sides.

2.5.1 Demand side

From a borrower’s perspective, the decision for preferring a loan denominated in a foreign currency over one in domestic currency, is likely to be influenced by the expectation that this type of loan will reduce the borrower’s costs through lower interest and redemption payments. Intuitively, such loans are attractive in period of local currency appreciation and low foreign currency interest rates (ECB 2005b, 55). There are, however, additional factors that influence this decision making process.

In a survey carried out among central banks and supervisory authorities in 11 countries in the first half of 2006, the ECB investigates several reasons for the widespread use of foreign currency loans (ECB, 2006b, 38pp). Table 1 presents a summary of the findings. According to this study “a positive interest rate gap between domestic and foreign currency loans seemed to be a necessary but not a sufficient condition for customers borrowing in foreign currency” (ECB, 2006b, 39). Figure 5 shows the interest rate gaps for selected CEE countries against four major currencies (EUR, CHF, JPY, USD) for 1999 and 2006. As can be seen, the interest rate gaps in all observed countries and against all four currencies declined substantially over this period. In countries with pegs to the Euro the interest rates have to a significant extent converged with Euro Area interest rates. For Bulgaria and Latvia the observed interest gap in 2006 was 2.8% and 1.2%, respectively, while for Lithuania and Estonia it was even negative with –0.95% and –1,03%. Still, although the huge gaps of the late 1990s have diminished, for many countries foreign currencies still offer significantly lower interest rates compared to domestic currencies (Figure 5).

The fixed exchange rate regimes in Bulgaria and the Baltic States were also reported as one of the main reasons for these countries’ high share of foreign currency credit. The study further finds an appreciation trend of the local currency to be an important decision factor in

Romania and Poland. Other named reasons include among others expectations to join the Euro Area soon, a lack of risk awareness and a strong export orientation of the country.

Main reasons for the popularity of foreign currency loans

	AT	BG	CZ	EE	HU	LT	LV	PL	RO	SI	SK
interest rate advantage	X	X		X	X	X		X	X	X	
fixed exchange rate regime		X		X		X	X				
expectation to join the euro area soon				X		X	X				
lack of risk awareness	X				X			X	X		
herd behavior	X										
appreciation trend of local currency								X	X		
strong export orientation						X	X				X
scarcity of domestic financing					X		X				

Source: ECB

Table 1 ECB study on the popularity of fx-loans in CEE, Source: ECB, 2006b, 41.

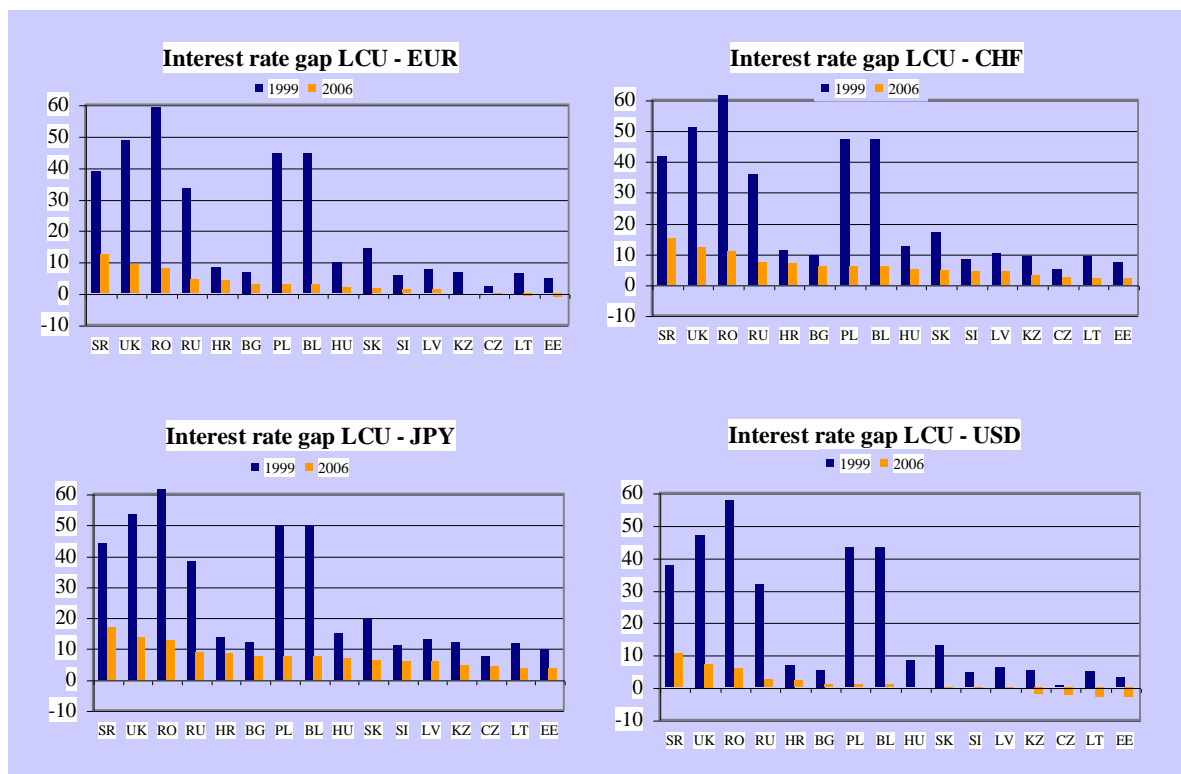


Figure 5 Interest rate gaps of lending rates. Local currency units (LCU) to EUR, CHF, JPY and USD. Source: Own calculations, EIU Country Data (9.11.2007)

2.5.2 Supply side

Supply side arguments try to explain what drives banks to grant loans in foreign currencies, given their relatively higher risk. For foreign-owned banks the preference for providing loans in foreign currency might stem from the fact that most of these banks refinance themselves in their respective home markets via their parent bank (ECB, 2006a, 60). The IMF argues that the growth in the foreign currency exposure of emerging Europe in recent years can be attributed at least partly to foreign banks' access to cheap external financing (IMF, 2006a, 51).

Higher fees on foreign currency loans are another tempting argument for banks in favor of this practice. Although an empirical analysis of the cost structure of foreign currency loans in CEE is to our knowledge absent, a study from Austria reveals that banks charge an additional 1.5% to 2% compared to ordinary loans (Waschiczek, 2002, 86).

A number of studies show that foreign bank entry increases the competitive pressure on domestic banks (Boissay/Calvo-Gonzalez/Kozluk, 2006, 3 and RZB Group, 2007, 29). Product innovation can be an attractive means for foreign banks to gain market share. In our view, there are two basic arguments, why foreign banks may promote the product innovation "fx-loans". First, as outlined above, foreign banks have better access to foreign capital and can thus refinance fx-loans more easily. Secondly, foreign banks may see an opportunity in the distrust of local people in their domestic currency and the domestic banking sector (ECB, 2006b, 62).

In conclusion there exist a number of reasons for foreign banks to consider granting foreign currency loans in the high growth markets of Central and Eastern Europe. We investigate this assumption in the following empirically.

3 METHOD

We analyze the underlying hypotheses using an ordinary least square linear regression model with the level of fx-credit as the dependent variable. The calculations differ in the use of diverse explanatory variables. In addition, we conduct an Analysis of Variance (ANOVA). In contrast to the independent variable used in the linear regression analysis, the independent variable in the ANOVA is not metrical, but a qualitative attribute. The one-way ANOVA serves to identify significant differences between various groups (Martens, 2003, 158-159). Therefore, it enables us to analyze the influence of purely qualitative features on the level of fx-credit.

4 DATA

For the regression analysis we collected data on 13 Central and Eastern European countries³ covering the time period 1999 to 2006. The data have been obtained from the Country Data database of the Economist Intelligence Unit, the various editions of the RZB CEE Banking Sector Reports and the UniCredit report on Banking in CEE and the role of international players. It has to be mentioned that there were some discrepancies in the time series on foreign currency credit. Specifically, for Bulgaria, Serbia and the Ukraine the various editions of the RZB reports presented inconsistent figures for some years. In these cases we used the figures of the most recent edition of October 2007. For the individual references see the Appendix.

5 RESULTS

5.1 Regression model foreign currency credit and market share of foreign banks

Based on the theoretical discussion in the preceding sections, we test whether there exists a relationship between the market share of foreign banks and the level of foreign currency lending. The rationale for this hypothesis, as discussed in Section 2.4.2, is that foreign banks may prefer to lend in their home currencies for various reasons, such as the availability of refinancing. The market share of foreign banks is operationalized as the percentage of foreign

³ Bulgaria, Belarus, Croatia, Czech Republic, Hungary, Kazakhstan, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Ukraine

bank assets to total assets. Foreign currency lending is measured as the percentage of fx-credits to total domestic credit. The 0-Hypothesis is as follows.

0-Hypothesis: “There exists no statistically significant relationship between the level of foreign currency credit and the market share of foreign banks.”

Table X shows the results of the regression model. The F-test shows that at a confidence level of 95% we cannot say that there exists a significant relationship between foreign currency lending and the market share of foreign banks. We have to accept the 0-Hypothesis. If one chose a 90% confidence interval the model would show a negative relationship, with a respective Beta of -0.193 and a very low adjusted R Square of just 28%.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,193(a)	,037	,028	18,37043

a Predictors: (Constant), MARKET_SHARE

Table 2 Model summary for the regression of the market share of foreign banks on the level of fx-credit, *Source: own calculations.*

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1306,013	1	1306,013	3,870	,052(a)
	Residual	33747,286	100	337,473		
	Total	35053,298	101			

a Predictors: (Constant), MARKET_SHARE

b Dependent Variable: FXCREDIT

Table 3 Analysis of Variance (ANOVA) for the regression of the market share of foreign banks on the level of fx-credit, *Source: own calculations.*

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	44,228	3,921		11,281	,000
	MARKET_SHARE	-,116	,059	-,193	-1,967	,052

a Dependent Variable: FXCREDIT

Table 4 Coefficients for the regression of the market share of foreign banks on the level of fx-credit, *Source: own calculations.*

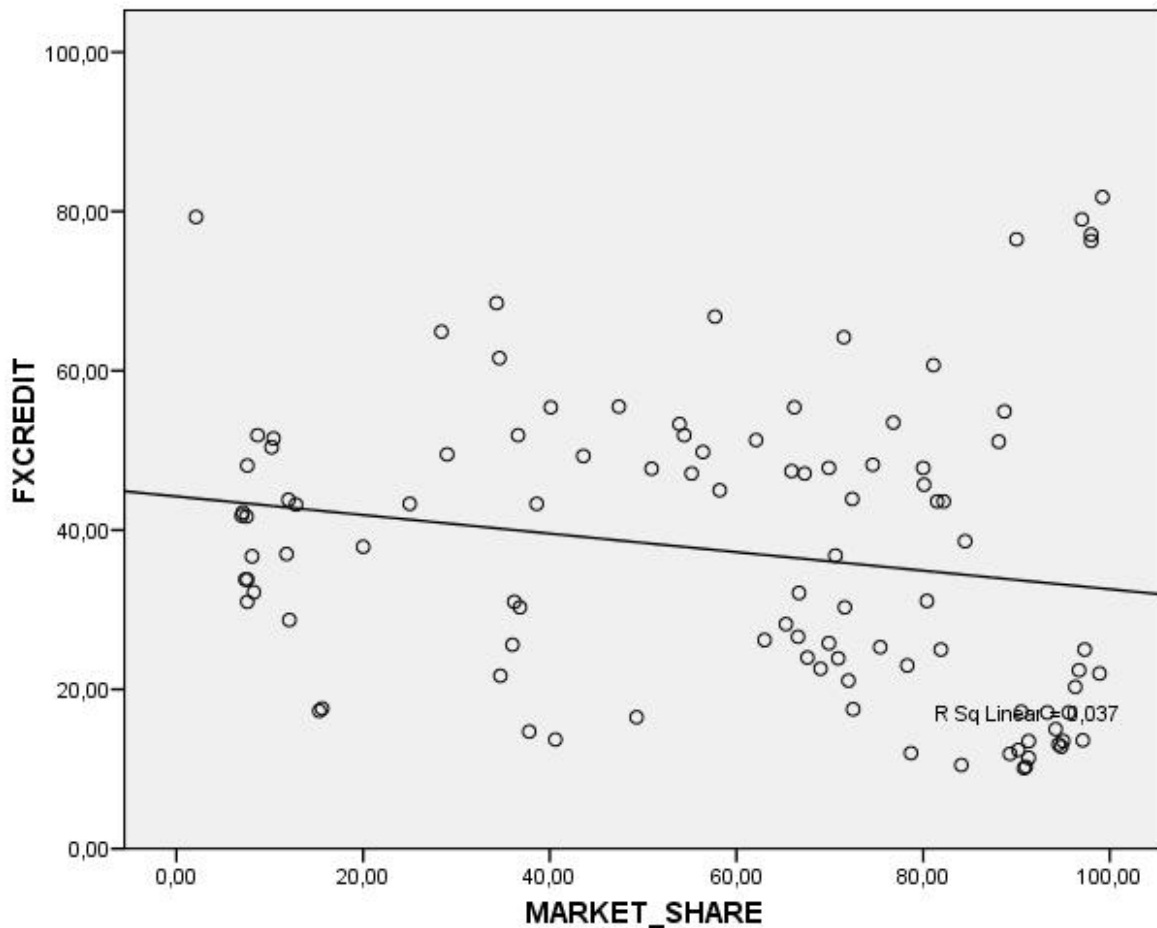


Figure 6 Scatter plot for the regression of the market share of foreign banks on the level of fx-credit, *Source: own calculations.*

5.2 Regression models on an individual country level

As the overall model of the previous section could not identify a significant relationship between fx-lending and the market share of foreign banks, in this section, we break down the analysis on an individual country level. We calculate regression models separately for each of the 13 countries under investigation. The variables remain the same as in the previous section. Accordingly, also the hypothesis is equal to the one in the previous analysis.

0-Hypothesis: “There exists no statistically significant relationship between the level of foreign currency credit and the market share of foreign banks.”

Table X in the Appendix shows the statistical results. At a 95% confidence interval we find a significant relationship for three countries only. In Slovakia there appears to be a significant and positive relationship with a respective Beta of 0.786. However, for the Czech Republic

and Serbia the analysis shows a significant negative relationship with Betas of -0.962 and -0.876, respectively. Also the adjusted R Squares appear to be reasonably high for these three countries.

However, for the remaining 10 countries under investigation the analyses show that there exist no significant relationships. For these countries we have to accept the 0-Hypothesis.

Another interesting fact is that at a softened confidence interval of 90% the analyses for three more countries, namely Bulgaria, Slovenia and the Ukraine, show a significant and positive relationship, albeit with lower adjusted R Squares than for the first three countries.

5.3 Regression model with exports/GDP as explanatory variable

As noted above in section 2.4.1 one of the factors influencing the level of foreign currency credit can be the export orientation. The rationale is that a country with a strong export orientation will have high foreign currency inflows. Consequently, it could be rational for the companies in that country to finance in foreign currency, thus reducing the foreign exchange risk.

To test this hypothesis we run a regression model with the export orientation, operationalized as exports in percentage of GDP, as the explanatory variable.

0-Hypothesis: “There does not exist a significant relationship between the level of foreign currency credit and the export orientation of a country.”

The statistical results in table X show that at a 95% confidence interval we have to reject the 0-Hypothesis. There exists a significant relationship between foreign currency lending and the export orientation of a country. Contrary to the theory, however, this relationship is negative, with a Beta of -0.241. We discuss these findings in section 6.

5.4 Market share of Austrian banks as explanatory variable

Given there does not seem to be a general nexus between FSFDI and the level of fx-credit, the presence of Austrian banks could explain the surge in the level of foreign currency denominated loans in some countries. According to the OeNB (2007), Austrian banks tend to issue fx-loans more intensively than other foreign institutes operating in CEE. One of the

reasons might be that they can draw on the experiences gained in the Austrian market, where higher levels of fx-credit have been recorded in the past (OeNB, 2007, 43). Therefore, we conduct another linear regression analysis, using the market share of Austrian banks as independent variable and the level of fx-credit in the respective country as the dependent variable. The data about the market share of Austrian banks is taken from Unicredit.

0-Hypothesis: “The market share of Austrian banks in CEEC does not have a significant impact on the level of fx-credit in those countries.”

The regression analysis shows a surprising result: Contrarily to the assumption by the OeNB, the presence of Austrian institutes even appears to have a considerably negative impact on the level of fx-credit. Using the 95% confidence interval, the results are significant and beta equals -0.638. The adjusted R Square amounts to 0.352.

5.5 Interest rate gap as explanatory variable

As already pointed out in chapter 2, the interest rate advantage is one of the most commonly mentioned reasons for taking out a foreign currency loan. However, it must be added that the interest rate gap does not seem to be the central motivation (ECB, 2006b, 39-41). In theory, the shrinking interest rate gap, which has been recorded during the last few years in all of the observed countries would suggest a decline in the level of foreign currency denominated credit as well (ECB, 2006b, 40; Epstein and Tzanninis, 2005). Hence, the interest rate argument is not consistent with the other explanatory variables analyzed in this paper. As it seems to be that popular in practice, however, we believe that it deserves closer investigation. Therefore, we run another linear regression analysis. The interest rate gap is used as the independent variable and again, the level of fx-credit is the dependent variable.

0-Hypothesis: “The interest rate gap between the local currency and the Euro does not have a significant impact on the level of fx-credit in the respective countries⁴.”

The regression analysis confirms the 0-Hypothesis. At a confidence interval of 95%, the nexus between the interest rate gap and the level of fx-credit is not significant.

⁴ According to the ECB (ECB, 2006b, 39), the majority of fx-loans in the observed countries was denominated in euro. That is why we chose the interest rate gap between the local currency and the euro for our regression analysis.

5.6 Exchange rate regime as explanatory variable

Boissay, Calvo-Gonzalez and Kozluk (2006) suggest that the existence of exchange rate regimes might be a driver for the rising level of fx-credit. They assume that due to exchange rate regimes the exchange rate risk is perceived as very low, which might in turn encourage foreign currency lending (Boissay / Calvo-Gonzalez / Kozluk, 2006, 16p). In order to investigate whether there is a link between these two variables we conduct an ANOVA. The observed countries are assigned either the variable 0, indicating that their currency is floating freely, or the variable 1, which means that the country has a fixed exchange rate regime.

O-Hypothesis: “There is no significant difference in the level of fx-credit between countries which have a fixed exchange rate regime and countries where the currency is floating freely.”

As can be seen in Table 5, the level of fx-credit is higher in those countries which have implemented a fixed exchange rate regime. On average, 51.029% of the loans issued are denominated in a foreign currency, whereas the respective percentage in countries without a currency regime reaches only 29.978%. At a confidence interval of 95%, this difference is significant.

Descriptives

FXCREDIT

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
0	9	29,9778	15,91884	5,30628	17,7415	42,2141	10,10	49,50
1	7	51,0286	17,07100	6,45223	35,2405	66,8166	22,00	78,10
Total	16	39,1875	19,18443	4,79611	28,9648	49,4102	10,10	78,10

Table 5 Descriptive statistics for ANOVA of fx-credit and foreign exchange regime, *Source: own calculations.*

ANOVA

FXCREDIT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1744,848	1	1744,848	6,470	,023
Within Groups	3775,790	14	269,699		
Total	5520,638	15			

Table 6 Analysis of Variance (ANOVA) of fx-credit and foreign exchange regime, *Source: own calculations.*

Figure 7 shows the outcome of the ANOVA graphically. The vertical line on the left-hand side refers to those countries without a fixed exchange rate regime (0), whereas the line on the right-hand side depicts the outcome for those countries which have implemented a fixed

exchange rate regime (1). So the lines represent the 95% confidence interval, whereas the dot in the middle denotes the average share of fx-credit in total credit issued in the respective countries.

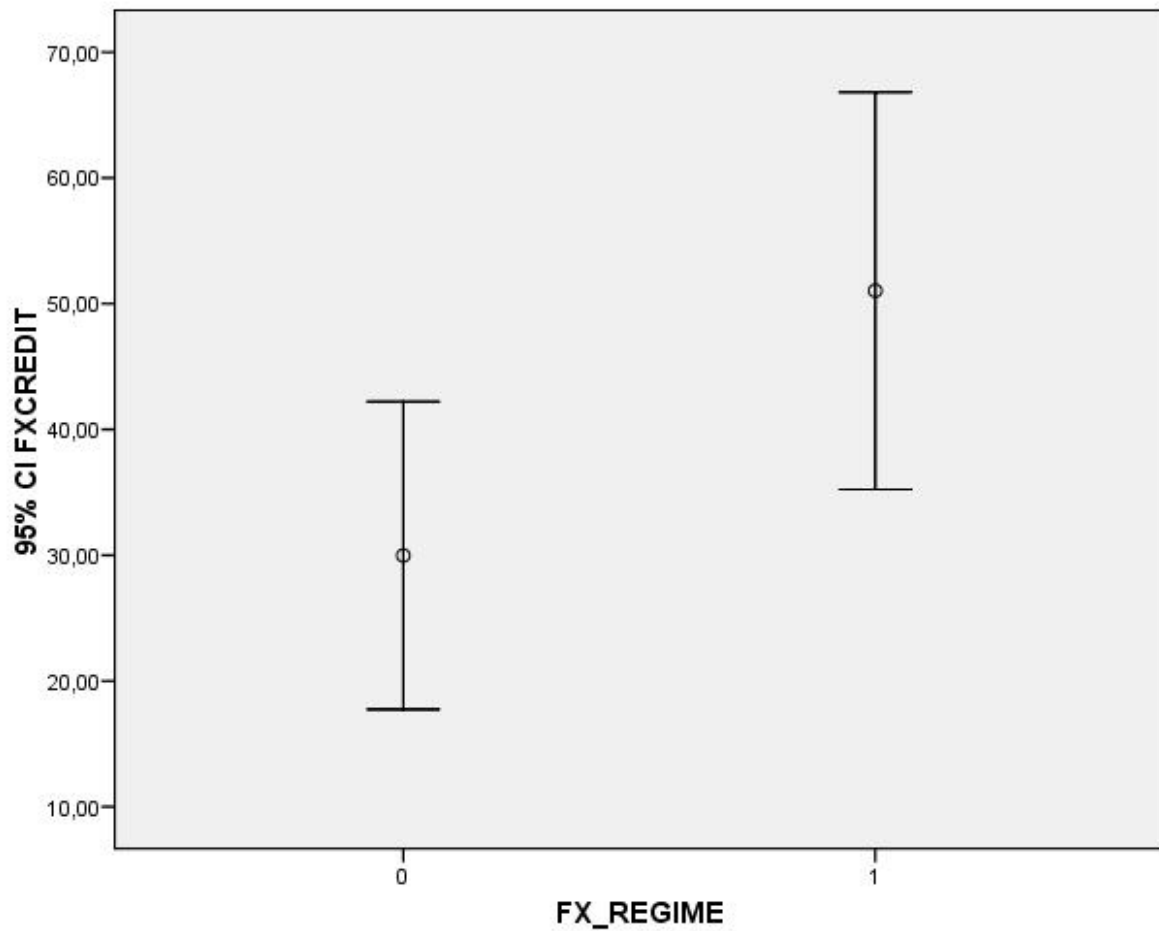


Figure 7 Error bar chart for the means of fx-credit for the group of countries with(1) and without(0) a fixed exchange rate regime at a 95% confidence interval, *Source: own calculations.*

6 DISCUSSION

6.1 Regression model foreign currency credit and market share of foreign banks

From our findings we can conclude that foreign banks do not raise the risk of foreign currency lending. However, as a caveat we have to mention that we used only aggregated data on total foreign currency-denominated credit. At this point it would be interesting to distinguish between household and corporate credit, to see if foreign banks have a significant influence on either of these two categories. For example the IMF reports that “foreign banks have played a particularly important role in the expansion of household credit in EM countries” (IMF, 2006a, 52).

Another objection concerns the currencies in which the fx-loans are denominated. In our analysis we do not distinguish between different currencies. However, given the fact that the dominant players in the CEE banking market are European banks, it would be highly desirable to conduct the analysis also for different currencies, most notably Euro-denominated fx-loans.

On a more general level, we have to question our research methodology. Although linear regression models are an easy and straight forward to use research method, in reality relationships are often non-linear and complex. It is also questionable whether the relatively short time-period used in our analysis captures all critical developments.

6.2 Regression models on an individual country level

As the general model did not reveal a significant relationship between fx-credit and the market share of foreign banks, it is questionable whether one can just break-down the analysis into individual country cases. The challenge here lies in explaining why foreign banks should have an influence in some, but not in all countries. However, given the mostly insignificant results of our analyses our calculations do not provide a sufficient basis for this discussion. Further research is highly desirable.

6.3 Regression model with exports/GDP as explanatory variable

Contrary to the underlying theory we find that the export orientation of a country is negatively linked with the level of foreign currency credit. Especially for this analysis it would be desirable to calculate the regression only for corporate fx-credit, and not total fx-credit. Due to a lack of data, however, we used total fx-credit as a proxy for this analysis. The reportedly

high share of household fx-lending in some CEE countries (IMF, 2006a, 54) points to a possible distortion of our results.

6.4 Market share of Austrian banks as explanatory variable

As regards the nexus between the presence of Austrian banks and the level of fx-credit, it has to be borne in mind that the question whether a bank is Austrian sometimes cannot be answered unambiguously. For example, does it make sense to include Bank Austria in the set of Austrian banks, even though it is owned by Unicredit? And if so, is it consistent to categorize Banca Comerciala Romana as an Austrian bank as well, just because Erste Bank owns the majority of its shares since 2006?

6.5 Interest rate gap as explanatory variable

Our regression model which uses the interest rate gap as the independent variable has several weak points, too. First, as already pointed out earlier, the underlying theory would not suggest a rise, but rather a downturn of the level of fx-credit.

Secondly, we only ran the regression using the interest rate gap between Euro and the local currencies. Therefore, our calculation does not take into consideration that a considerable share of fx-credit is denominated in other major currencies, for example Swiss Francs (OeNB, 2007, 43). So in order to conduct a more precise regression, data revealing the shares of these currencies in total credit denominated in foreign currencies is required.

6.6 Exchange rate regime as explanatory variable

As for our analysis concerning the impact of exchange rate regimes on the level of fx-credit, the categorization of the countries may be a matter of discussion. In fact, our approach neglects the sort of regime introduced by a country. For example, we did not investigate the exchange rate regime in more detail. Hence, the acceptable range of exchange rate movements did not have an influence on our findings.

7 SUMMARY

This paper investigates the nexus between FDI in the financial sector and the level of fx-credit in CEE. In addition, the influence of other factors, that is the respective country's export orientation, the interest rate gap and the presence of Austrian banks, is analyzed as well.

Beginning in the 1980s, foreign banks entered the CEE countries (De Haas / Naalborg, 2006, 159). M&A seemed to be a particularly attractive form of market entry, since many of the formerly state owned institutions were privatized. As a result, the average share of foreign ownership exceeds the 70% mark today (ECB, 2005a, 18). Alongside these developments, CEE countries are experiencing a lending boom and foreign currency denominated loans appear to be particularly popular (RZB Group 2007). It must be noted that compared with credits denominated in the domestic currency, foreign currency credits entail a number of additional risk factors to borrowers, lenders and the financial sector as a whole. Most noticeably are the foreign exchange risk and the interest rate risk (Waschiczek, 2002, 98).

According to the literature, there are several ways how foreign bank entry could boost fx-lending: Farnoux, Lanteri and Schmidt suggest that foreign institutes might apply more aggressive marketing strategies (Farnoux / Lanteri / Schmidt, 2004, 21). The foreign banks' superior funding possibilities could be another channel (Boissay / Calvo-Gonzalez / Kozluk, 2006, 3).

In order to test these assumptions statistically, we use an ordinary least square linear regression model with the level of fx-credit as the dependent variable. The models differ in the use of diverse explanatory variables. In addition, we conduct an Analysis of Variance (ANOVA), which enables us to analyze the influence of purely qualitative features on the level of fx-credit (Martens, 2003, 158p).

For the regression analysis we collected data on 13 Central and Eastern European countries covering the time period 1999 to 2006. The data have been obtained from the Country Data database of the Economist Intelligence Unit the various editions of the RZB CEE Banking Sector Reports and the UniCredit report on Banking in CEE and the role of international players. It has to be mentioned that the various editions of the RZB reports presented slightly inconsistent figures for some years. In these cases we decided to use the most recent ones.

Our calculations showed that there is a significantly positive correlation between the existence of a fixed exchange rate regime and the level of fx-credit in the investigated countries. Furthermore, the presence of Austrian banks and a country's export orientation appear to have a significantly negative impact on the share of loans denominated in a foreign currency. According to our analysis, the other explanatory variables, namely the market share of foreign banks in general and the interest rate gap, do not have a significant influence on the level of fx-credit.

The connection between fixed exchange rate regimes and the level of fx-credit is supported by the theory, whereas the negative impact of Austrian banks contradicts our initial assumptions. Of course, a more detailed analysis of the type of exchange rate regime would help to gain deeper insights. Furthermore, the period observed should be extended in order to obtain more precise results.

REFERENCES

- Arena, Marco/ Reinhart, Carmen/ Vázquez, Francisco (2007), The Lending Channel in Emerging Economies: Are Foreign Banks Different?, IMF Working Paper 07/48, <http://www.imf.org/external/pubs/ft/wp/2007/wp0748.pdf> (10.11.2007).
- Backé, Peter/ Reininger, Thomas/ Walko, Zoltan (2006), Main Features of Recent Banking Sector Developments in Selected Southeastern European Countries: A Cross-Country Perspective, in: Österreichische Nationalbank, Financial Stability Report 11, Vienna, 66-82, http://www.oenb.at/en/img/fsr_11_tcm16-43708.pdf (10.11.2007).
- Backé, Peter/ Ritzberger-Grünwald, Doris / Stix, Helmut (2007), The Euro on the Road East: Cash, Savings and Loans, Monetary Policy & The Economy Q1/07, 114-127, http://www.oenb.at/en/img/mop_2007_q1_in_focus_05_tcm16-56384.pdf (10.12.2007).
- Backé, Peter/ Walko, Zoltan (2007), Bank Intermediation in Southeastern Europe: Depth and Structure, Focus on European Economic Integration 2/2006, 48-68.
- Bank for International Settlements (2005), Foreign Direct Investment in the financial sector – experiences in Asia, central and Eastern Europe and Latin America, CGFS papers No. 25, Basel, <http://www.bis.org/publ/cgfs25.htm> (10.11.2007).
- Banque de France (2006), Credit flows and credit booms in emerging market economies, Financial Stability Review No. 9, 49-66, http://www.banque-france.fr/gb/publications/telnomot/rsf/2006/rsf_1206.pdf (10.11.2007).

- Bodnár, Katalin (2007), Survey evidence on the exchange rate exposure of Hungarian SMEs, in: Peter Mooslechner, Doris Ritzberger-Grünwald, Peter Backé(eds): Workshops – Proceedings of OeNB Workshops Nr. 12, OeNB, Vienna: 205-256, http://www.oenb.at/de/img/ws12_bodnr_tcm14-65932.pdf (10.11.2007).
- Boissay, Frederic/ Calvo-Gonzalez, Oscar/ Kozluk, Tomasz (2006), Is Lending in Central and Eastern Europe developing too fast? Preliminary draft, paper presented on the Conference on European Economic Integration, 14-15th November 2005, Vienna, http://www.eu-financial-system.org/fileadmin/content/Dokumente_Events/second_conference/Boissay_Calvo-Gonzales_Kozluk.pdf (10.11.2007).
- Buch, Claudia/ Kleinert, Jörn/ Zajc, Peter (2003), Foreign Bank Ownership: A Bonus or Threat for Financial Stability?, SIERF Studies 2003/4, 45-83, <http://www.sierf.com/download/graz/grazprogramme.pdf> (10.11.2007).
- Business Insights Ltd. (2004), Mergers and Acquisitions in European Financial Services – Best practice, future forecasts and strategies for success.
- Calvo, Guillermo A./ Végh, Carlos A. (1992), Currency Substitution in Developing Countries: An Introduction, IMF Working Paper 92/40, May 1992, [http://wbln0018.worldbank.org/LAC/lacinfoclient.nsf/6f1c77f445edaa6585256746007718fe/fc8f30777cb0300c85256888003ac142/\\$FILE/calvo-vegh-rae.pdf](http://wbln0018.worldbank.org/LAC/lacinfoclient.nsf/6f1c77f445edaa6585256746007718fe/fc8f30777cb0300c85256888003ac142/$FILE/calvo-vegh-rae.pdf) (10.11.2007).
- De Haas, Ralph/ Naalborg, Ilko (2006), Foreign banks in transition countries: to whom do they lend and how are they financed?, Financial Markets, Institutions & Instruments 15/4, 159-199.
- De Haas, Ralph/ Van Lelyveld, Iman (2006), Foreign banks and credit stability in Central and Eastern Europe. A panel data analysis, Journal of banking and Finance 30, 1927-1952.
- ECB (2005a), Banking Structures in the new EU Member States, January 2005, www.ecb.int/pub/pdf/other/bankingstructuresnewmemberstatesen.pdf (5.11.2007)
- ECB (2005b), Lending Booms in the New EU Member States: Will Euro Adoption matter? ECB Working Paper No. 543, <http://www.ecb.int/pub/pdf/scpwps/ecbwp543.pdf> (10.11.2007).
- ECB (2006a), Macroeconomic and Financial Stability Challenges for Acceding and Candidate Countries, ECB Occasional Paper series, No. 48, <http://www.ecb.int/pub/pdf/scpops/ecbocp48.pdf> (26.11.2007)
- ECB (2006b), EU Banking Sector Stability, November 2006, www.ecb.int/pub/pdf/other/eubankingsectorstability2006en.pdf (5.11.2007)

- Epstein, Natan/ Tzanninis, Dimitri (2005), Austria: Selected Issues, IMF Country Report No. 05/249, Washington, D.C., <http://www.imf.org/external/pubs/ft/scr/2005/cr05249.pdf> (10.11.2007).
- European Commission (2004): Financial Market Integration and the Use of the Euro in the New Member States, Quarterly Note on the Euro-Denominated Bond Markets, No. 75, September 2004, http://ec.europa.eu/economy_finance/publications/bond_markets/2004/bondq0304_en.pdf (7.12.2007).
- Farnoux, Marc/ Lanteri, Marc/ Schmidt, Jerome (2004), Foreign direct investment in the polish financial sector, Case study prepared for the CGFS Working Group on Financial Sector FDI, <http://www.bis.org/publ/cgfs22bdf.pdf> (10.11.2007).
- Görgens, Egon/ Ruckriegel, Karlheinz/ Seitz, Franz (2004), Europäische Geldpolitik, 4. Auflage, Stuttgart, Lucius & Lucius.
- IMF (2006a), Global Financial Stability Report, Sept. 2006, Chapter 2: Household Credit growth in Emerging Markets, 46-73, <http://www.imf.org/external/pubs/ft/GFSR/2006/02/pdf/chap2.pdf> (10.11.2007).
- IMF (2006b), World Economic Outlook, Sept.2006, Chapter: World Economic Systems and Cycles, 58-65, <http://imf.org/external/pubs/ft/weo/2006/02/pdf/weo0906.pdf> (10.11.2007).
- IMF (2007), IMF Executive Board Concludes Article IV Consultation with Austria, Public Information Notice (PIN) No. 07/48, May 2, 2007, <http://www.imf.org/external/np/sec/pn/2007/pn0748.htm> (14.01.2008).
- Kubis-Labiak, Barbara (2005), The Banking and Regulatory Framework in EU Accession Countries. Key players, market drivers and tax systems, Business Insights Ltd.
- Martens, Jul (2003), Statistische Datenanalyse mit SPSS für Windows, 2. Auflage, München und Wien, Oldenbourg.
- OeNB (2006), Austria's Financial Intermediaries Are on a Dynamic Growth Path, Financial Stability Report 12, 37-61, http://www.oenb.at/en/img/fsr_12_reports_04_tcm16-49852.pdf (10.11.2007).
- OeNB (2007), Austrian Financial Intermediaries Benefit from the Benign Economic Climate, Financial Stability Report 13, 37-65, http://www.oenb.at/en/img/fsr_04_tcm16-8061.pdf (7.12.2007)
- RZB Group (2004), CEE Banking Sector Report, Vienna, <http://www.ecri.eu/new/system/files/37+2004bankingsectorinCEE.pdf> (10.11.2007).

- RZB Group (2005), CEE Banking Sector Report Part 1, Vienna, <http://www.rzb.at/ceebankingreport2007> (10.11.2007).
- RZB Group (2006), CEE Debt Market Guide, Vienna, <http://www.rzb.at/ceebankingreport2007> (10.11.2007).
- RZB Group (2007), CEE Banking Sector Report, Vienna, <http://www.rzb.at/ceebankingreport2007> (10.11.2007).
- Tieman, Alexander (2007), Cross Border Banking Issues for the Austrian Banks and Their Supervisors, in IMF (2007): Austria: Selected Issues, IMF Country Report No. 07/143, April 2007.
- UniCredit Group (2006), Banking in CEE and the role of international players, <http://www.unicreditgroup.eu> (10.11.2007).
- Waschiczek, Walter (2002), Foreign Currency Loans in Austria - Efficiency and Risk Considerations, in: OeNB, Financial Stability Report 4, Wien, 83-99, http://www.oenb.at/en/img/fsr_04_tcm16-8061.pdf (10.11.2007).
- World Bank (2007), Credit Expansion in Emerging Europe: A Cause for Concern? World Bank EU8+2 Regular Economic Report Part II, January 2007, http://siteresources.worldbank.org/INTECA/Resources/EU8+2_SpecialTopic.pdf (5.11.2007)

8 STATISTICAL APPENDIX

8.1 Data

Credits in foreign-currency, in % of total credits

	1999	2000	2001	2002	2003	2004	2005	2006	CAGR
Belarus*	-	-	-	51.9	50.4	43.8	37	33.8	-10.17%
Bulgaria*	64.9	64.2	36.8	43.9	43.6	48.2	47.8	45.7	-4.89%
Croatia*	-	10.5	11.9	12.4	10.3	11.4	13.5	10.1	-0.65%
Czech Republic*	28.1	25.3	17.1	15	13.5	12.8	13.1	13.6	-9.85%
Estonia*, **	76.5	79	76.3	77.1	81.8	80.4	79.9	78.1	0.30%
Hungary*	28.2	32.1	26.2	23	25	31.1	38.6	43.6	6.42%
Kazakhstan*	-	-	-	68.5	55.5	51.9	51.5	48.1	-8.46%
Latvia*	55.4	47.8	53.5	51.9	53.3-	-	-	-	-0.96%
Lithuania*, ***	61.6	66.8	60.7	51.1	54.9	55.775	60.65	59.1	-0.59%
Poland*	16.5	17.5	21.1	23.9	30.3	24	25.8	26.6	7.06%
Romania*	49.3	47.7	47.1	49.8	45	51.3	47.1	47.4	-0.56%
Russia*	51	38.5	33.7	36.7	33.8	31	32.2	28.7	-7.89%
Serbia*	-	-	79.3	43.2	37.9	30.3	22.6	12	-31.45%
Slovakia*	14.7	13.7	17.2	17.1	20.3	22.4	25	22	5.93%
Slovenia*	-	17.3	17.6	21.7	25.6	31	43.3	55.4	21.41%
Ukraine*	48.5	54	44.2	41.8	41.7	42.2	43.3	49.5	0.29%

* Source: RCB Banking Sector Reports 2004, 2005, 2006, 2007

** Source: from 2004 to 2006 Estonian Central Bank

*** Source: from 2004 to 2006 Central Bank of Lithuania

Table 7 Credits in foreign currency in percentage of total domestic credit, *Source: RCB CEE Banking Sector Reports 2004, 2005, 2006, 2007, Estonian Central Bank, Central Bank of Lithuania.*

Market share of foreign banks, in % of total assets

	1999	2000	2001	2002	2003	2004	2005	2006	CAGR
Belarus*	-	4.5	9.6	8.7	10.2	12	11.8	7.6	9.13%
Bulgaria*	28.4	71.5	70.6	72.4	82.2	74.6	80	80.1	15.97%
Croatia*	39.9	84.1	89.3	90.2	91	91.3	91.3	90.8	1.29%
Czech Republic*	-	75.4	93.3	94.2	95	94.8	94.5	97.1	4.31%
Estonia*	90	97	98	98	99.2	-	-	-	2.46%
Hungary*	65.3	66.7	63	78.3	81.9	80.4	84.5	81.5	3.22%
Kazakhstan*	-	-	-	34.3	47.4	36.6	10.4	7.6	-31.39%
Latvia*	66.2	69.9	76.8	54.4	53.9	-	-	-	-5.01%
Lithuania*	34.6	57.7	81.1	88.1	88.7	-	-	-	26.54%
Poland*	49.3	72.5	72	70.9	71.6	67.6	69.9	66.6	4.39%
Romania*	43.6	50.9	55.2	56.4	58.2	62.1	67.3	65.9	6.08%
Russia*	-	-	-	8.1	7.4	7.6	8.3	12.1	10.55%
Serbia*	-	0.3	2.1	12.8	20	36.8	69	78.7	106.42%
Slovakia*	37.8	40.6	90.5	95.6	96.3	96.7	97.3	98.9	14.73%
Slovenia*	4.8	15.3	15.6	34.7	36	36.2	38.6	40.1	17.42%
Ukraine*	-	-	-	7	7.5	7.1	25	29	42.67%

* Source: RCB Banking Sector Reports 2004, 2005, 2006, 2007

Table 8 Market share of foreign banks, in percentage of total assets, *Source: RCB CEE Banking Sector Reports 2004, 2005, 2006, 2007.*

Exports in % of GDP

	1999	2000	2001	2002	2003	2004	2005	2006
Belarus	13.4%	15.4%	14.6%	14.7%	16.6%	20.1%	20.7%	22.5%
Bulgaria	8.8%	9.9%	9.8%	9.6%	11.9%	15.4%	16.6%	19.4%
Croatia	11.6%	11.3%	11.1%	10.9%	12.8%	15.5%	15.7%	17.2%
Czech Republic	19.6%	20.4%	22.4%	25.0%	29.8%	38.4%	40.5%	45.1%
Estonia	19.4%	23.5%	22.2%	21.0%	25.2%	29.7%	33.9%	36.8%
Hungary	22.1%	23.0%	23.3%	24.9%	29.5%	35.1%	36.7%	40.7%
Kazakhstan	9.1%	13.3%	10.8%	10.9%	12.9%	17.9%	21.9%	26.4%
Latvia	10.5%	10.4%	10.1%	10.6%	12.3%	15.2%	17.1%	16.7%
Lithuania	9.7%	11.7%	12.9%	14.5%	17.2%	20.8%	23.8%	25.7%
Poland	7.7%	8.4%	9.2%	10.2%	12.5%	15.9%	18.0%	20.2%
Romania	7.0%	8.2%	8.3%	9.4%	11.1%	13.3%	14.6%	15.4%
Russia	8.2%	10.1%	9.1%	9.0%	10.4%	12.7%	15.4%	17.5%
Serbia	-	-	-	5.6%	7.0%	8.9%	10.2%	12.3%
Slovakia	17.2%	19.3%	19.5%	21.1%	30.1%	34.9%	36.6%	42.8%
Slovenia	26.5%	25.5%	25.7%	27.3%	32.1%	37.3%	39.0%	41.9%
Ukraine	6.3%	7.3%	7.3%	7.6%	8.7%	10.7%	10.5%	10.6%

* Source: EIU Country Data database (5.12.2007)

Table 9 Exports in percent of GDP, *Source: EIU Country Data database (10.11.2007).*

8.2 Model summary individual country regressions

Country	R Square	Adjusted R Square	Beta	t	F	Sig.
Belarus	0.002	-0.331	0.044	0.076	0.06	0.944
Bulgaria	0.405	0.305	0.636	-2.019	4.077	0.09
Croatia	0.091	-0.9	0.302	0.71	0.503	0.51
Czech Republic	0.926	0.911	-0.962	-7.911	62.591	0.001
Estland	0.24	0.13	0.49	0.973	0.947	0.402
Hungary	0.144	0.001	0.379	1.004	1.008	0.354
Kazakhstan	0.24	-0.13	0.49	0.973	0.947	0.402
Lettland	0.009	-0.321	-0.94	-1.64	0.27	0.88
Lithuania	0.458	0.227	-0.677	-1.592	2.534	0.21
Poland	0.226	0.097	0.475	1.323	1.752	0.234
Romania	0.024	-0.138	-0.156	-0.386	0.149	0.713
Russia	0.436	0.248	-0.66	-1.523	2.231	0.225
Serbia	0.752	0.69	-0.867	-3.484	12.139	0.025
Slovakia	0.618	0.555	0.786	3.118	9.72	0.021
Slovenia	0.539	0.447	0.734	2.418	5.847	0.06
Ukraine	0.681	0.574	0.825	2.528	6.392	0.086

Table 10 Model summary of the individual country regressions of market-share of foreign banks on fx-credit, *Source: own calculations.*

8.3 Model summary exports/GDP as explanatory variable

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,241(a)	,058	,049	17,38757

a Predictors: (Constant), EXPORT_GDP

Table 11 Model Summary for the regression with export/GDP as explanatory variable, *Source: own calculations.*

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1981,966	1	1981,966	6,556	,012(a)
	Residual	32046,740	106	302,328		
	Total	34028,705	107			

a Predictors: (Constant), EXPORT_GDP

b Dependent Variable: FXCREDIT

Table 12 ANOVA for the regression with export/GDP as explanatory variable, *Source: own calculations.*

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	45,253	3,513		12,882	,000
	EXPORT_GDP	-44,179	17,255	-,241	-2,560	,012

a. Dependent Variable: FXCREDIT

Table 13 Coefficients for the regression with exports/GDP as explanatory variable, *Source: own calculations.*

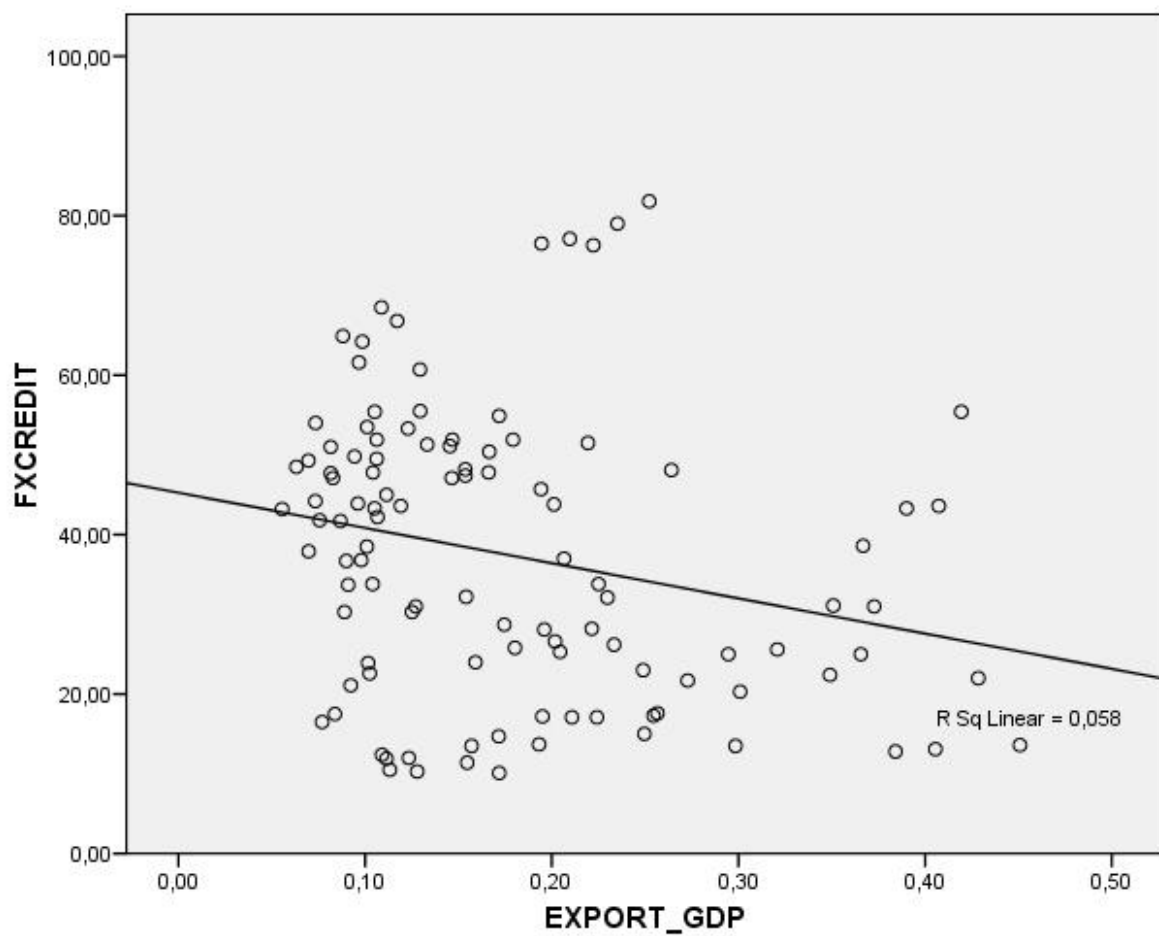


Figure 8 Scatter plot for the regression with exports/GDP as explanatory variable, *Source: own calculations.*

8.4 Model summary market share of Austrian banks as explanatory variable

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,638(a)	,406	,352	12,68735

a Predictors: (Constant), MS_AUSTRAN_BANKS

Table 14 Model summary for the regression with the market share of Austrian banks as the explanatory variable, *Source: own calculations.*

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1212,334	1	1212,334	7,531	,019(a)
	Residual	1770,658	11	160,969		
	Total	2982,992	12			

a Predictors: (Constant), MS_AUSTRAN_BANKS

b Dependent Variable: FXCREDIT

Table 15 ANOVA for the regression with the market share of Austrian banks as the explanatory variable, *Source: own calculations.*

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t		Sig.
		B	Std. Error	Beta	B	Std. Error	
1	(Constant)	40,832	7,535		5,419		,000
	MS_AUSTRAN_BANKS	-,483	,176	-,638	-2,744		,019

a Dependent Variable: FXCREDIT

Table 16 Coefficients for the regression with the market share of Austrian banks as the explanatory variable, *Source: own calculations.*

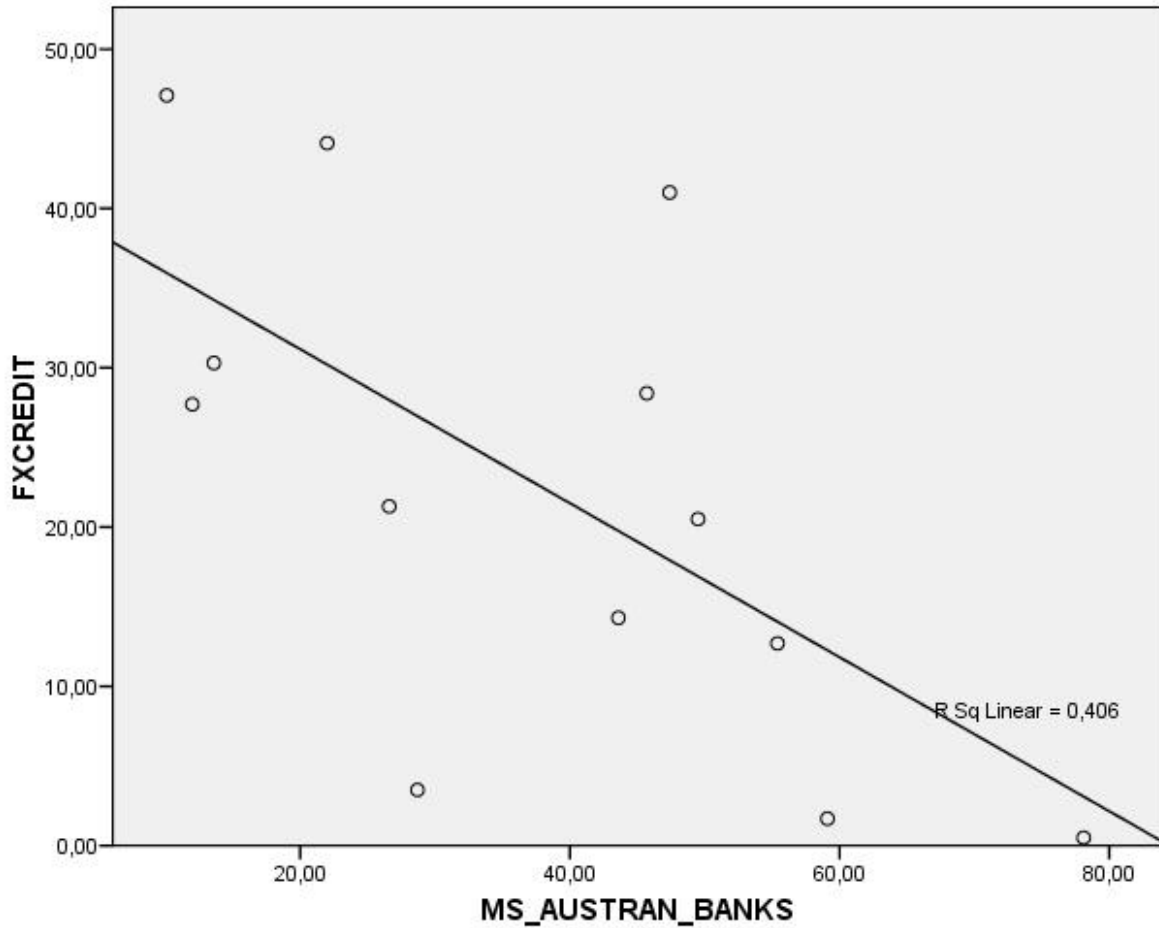


Figure 9 Scatter plot for the regression with the market share of Austrian banks as the explanatory variable, *Source: own calculations.*

8.5 Interest rate gap LCU/EUR as explanatory variable

The term interest rate gap refers to the spread of the average lending rates of the home currency and the Euro Area.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,009(a)	,000	-,009	18,28391

a Predictors: (Constant), INTEREST_GAP

Table 17 Model summary for the regression with interest rate gap LCU/EUR as explanatory variable, *Source: own calculations.*

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2,643	1	2,643	,008	,929(a)
	Residual	35770,259	107	334,301		
	Total	35772,902	108			

a Predictors: (Constant), INTEREST_GAP

b Dependent Variable: FXCREDIT

Table 18 ANOVA for the regression with interest rate gap LCU/EUR as explanatory variable, *Source: own calculations.*

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	37,848	2,208		17,141	,000
	INTEREST_GAP	-,012	,138	-,009	-,089	,929

a Dependent Variable: FXCREDIT

Table 19 Coefficients for the regression with interest rate gap LCU/EUR as explanatory variable, *Source: own calculations.*

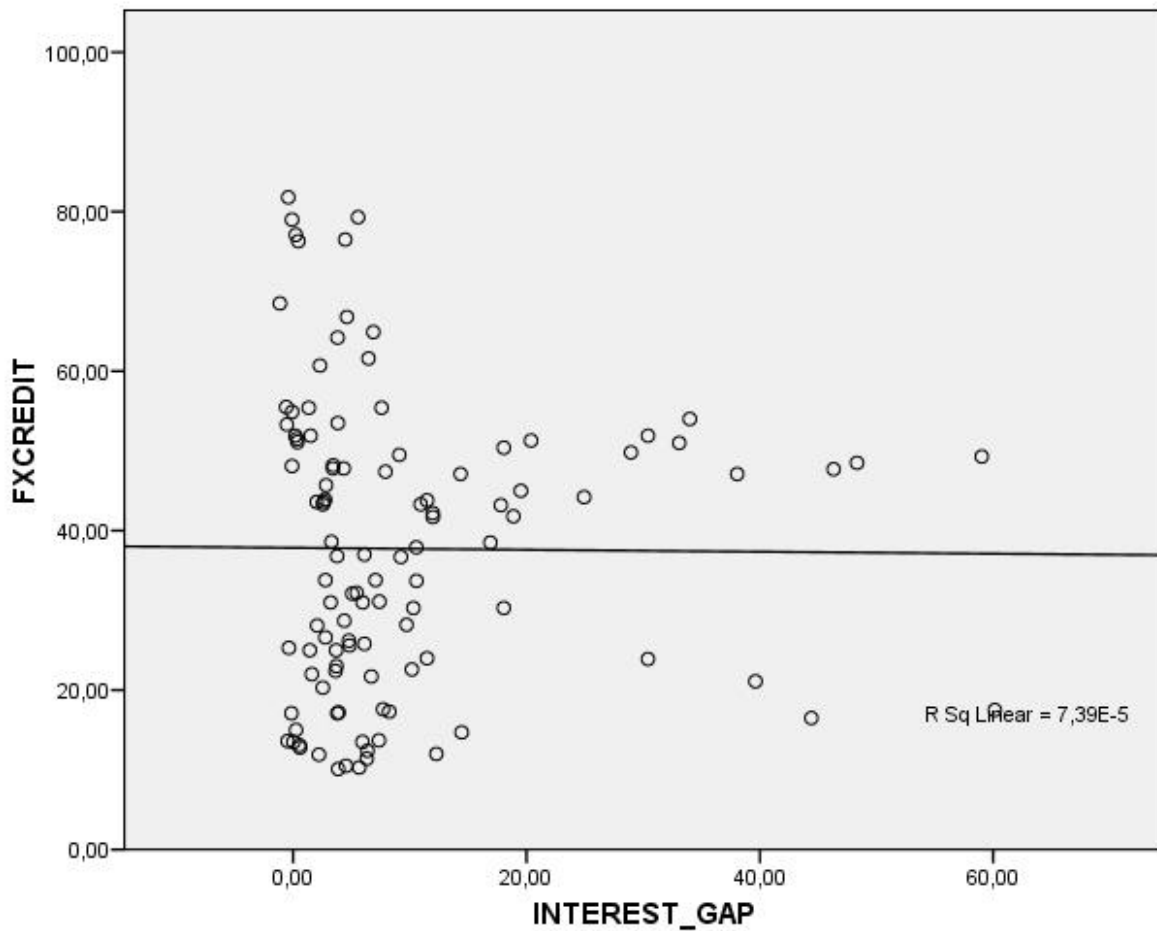


Figure 10 Scatter plot for the regression with interest rate gap LCU/EUR as explanatory variable, *Source: own calculations.*