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Determinants of Foreign Currency Borrowing in the New Member States of the EU

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Abstract
The paper empirically investigates the determinants of foreign currency borrowing by the private sector in the new member states of the European Union. We find that striking differences in patterns of foreign currency borrowing between countries are explained by the extent to which domestic banks finance credit expansion from abroad, the level of deposit dollarization, and the interest rate differential. Joining the EU appears to have played an important role, by providing direct access to foreign funding, offering hedging opportunities through greater trade openness, lending credibility to exchange rate regimes, and raising expectations of imminent euro adoption. The empirical evidence suggests that regulatory policies to slow foreign currency borrowing have had only limited success.

1. Introduction

Private sector borrowing in foreign currencies has become a familiar feature of the catching-up process in Central and Eastern Europe. This "dollarization" – in fact a "euroization" or "swissfrancization" – process,[1] which appears closely linked to the rapid growth of private sector credit, has recently come into focus with the sudden shifts of exchange rates in many countries in the region, raising concerns about borrowers' ability to service foreign currency loans. A full understanding of what has been driving such borrowing and what explains striking differences between countries in the region is still elusive. While there is agreement that the convergence--related demand for capital, largely satisfied by foreign parent banks, has played a key role, it is not fully clear how this interacts with a number of other factors such as individual countries' monetary policy, the effect of EU and ERM2 membership, and regulatory policies. Only very recently has there been research examining these issues in the new member states of the EU (NMS).

This paper examines the drivers of foreign currency borrowing during the run--up to euro adoption using a multivariate approach. Specifically, we expand recent work by Basso, Calvo-Gonzales and Jurgilas (2007) and Brzoza-Brzezina, Chmie-

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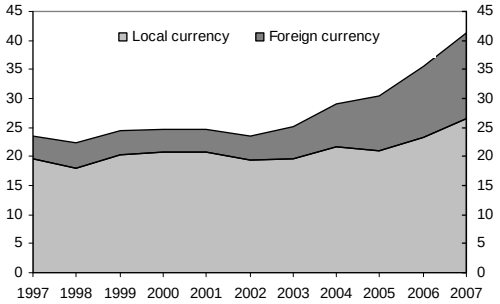
[1] Although somewhat of a misnomer, in line with the literature we use the term "dollarization" to describe the denomination or indexation of loans and deposits in currencies other than the domestic legal tender. In the region, the euro is the most commonly used foreign currency, but Swiss franc-denominated loans are also popular in some countries (e.g., Hungary, Poland).

Figure 1 NMS: Credit to the Private Sector (% of GDP)



Note: Country sample excl. Slovenia.
Source: National authorities, Eurostat, and authors' calculations.

lewski, and Niedźwiedzińska (2007) by using a new dataset and some additional policy-related variables. Our work also relates to the analysis by Luca and Petrova (2008) discussing the role of regulations. The paper does not examine credit growth in the NMS *per se* – a phenomenon that has been widely researched in recent years[2] – but rather examines the change in the composition of private sector credit from domestic to foreign currency.

The paper is organized as follows. First, we present some stylized facts that highlight recent trends and differences among countries. Second, we review some of the commonly offered hypotheses for foreign currency borrowing in the region. Third, we present regression results from a model that includes a variety of variables and draws on a set of panel data for the NMS. Finally, we offer some tentative conclusions.

2. Stylized Facts

Rapid credit growth and a growing share of loans in foreign currency have become a hallmark of the convergence process in many NMS. In the region, the ratio of the private sector's credit from banks to GDP has increased steeply over the last decade, with the share of loans denominated in or indexed to foreign currency increasing from 4 to 15 percent[3] (*Figure 1*). This trend appears to have accelerated over the last few years following the countries' accession to the European Union. While familiar in other emerging market regions, notably Latin America, liability dollarization seems particularly strong in the NMS (*Figure 2*).

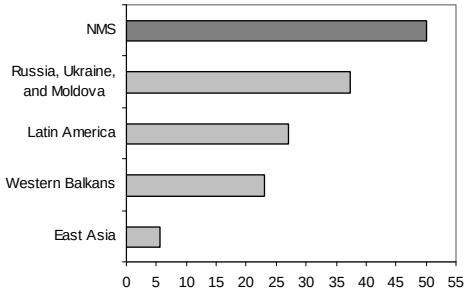
The dollarization process has been asymmetric between loans and deposits. While foreign currency borrowing has expanded in many countries, foreign currency deposits have remained broadly stable across the region.[4] In *Figure 3* this can be seen by a shift of the gravity of financial dollarization away from the 45-degree line, indicating a growing exposure of private sector balance sheets to currency risk. This trend has potentially significant implications for financial stability.

[2] See, for example, Cottarelli, Dell'Ariccia, and Vladkova-Hollar (2003); Kiss, Nagy, and Vonnak (2006); Égert, Backé, and Žumer (2006); Backé and Wójcik (2008).

[3] Legal restrictions on foreign currency borrowing were lifted in most countries in the mid-1990s.

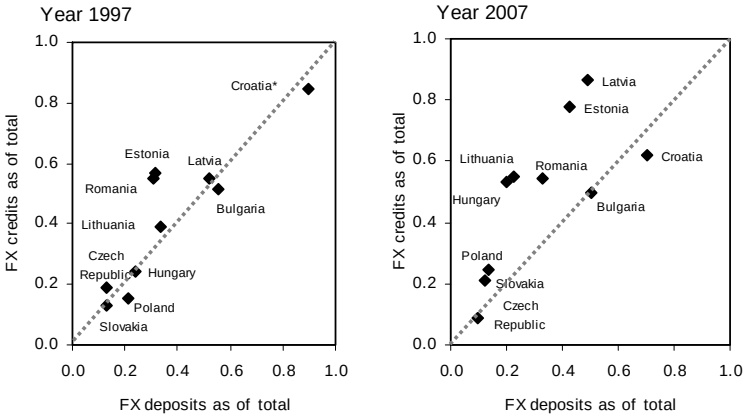
[4] This may suggest that demand-side factors are increasingly playing a role in foreign exchange borrowing, a point that is further investigated in sections 3 and 4 below.

Figure 2 Emerging Market Countries: Foreign Exchange Borrowing (2005, as % of total loans to the private sector)



Note: Regional figures are calculated as medians.
Source: Tamirisa and others, 2007, pp. 30, national authorities, and authors' calculations.

Figure 3 Financial Dollarization in the NMS



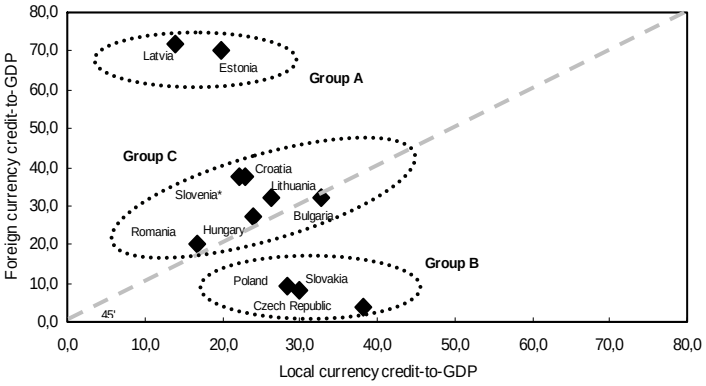
Note: * 1999q3
Source: National authorities and authors' calculations.

There are striking differences between individual NMS. The composition of credit to the private sector is highly biased towards foreign currency in two Baltic countries – Estonia and Latvia (Group A in *Figure 4*) – while borrowers in Central Europe – the Czech Republic, Poland and Slovakia (Group B) – prefer domestic currency. There is an intermediate group of countries (Group C) where the shares of local currency and foreign currency credit have remained roughly equal. Sometimes this phenomenon is explained by national characteristics (Czechs are supposedly more "conservative" than Estonians). The purpose of this paper is to investigate whether economic incentives and country-specific characteristics underlie these stereotypes.

3. Reasons for Foreign Currency Borrowing – Some Hypotheses

Dollarization is not a new phenomenon. Borrowing in foreign currencies has been a common feature in many emerging market countries in Latin America and Asia. The "original sin" literature (Eichengreen and Hausmann, 1999), which devel-

Figure 4 Local Currency vs Foreign Currency Credit-to-GDP Ratio (in %, 2007)



Note: *2006
Source: National authorities and authors' calculations.

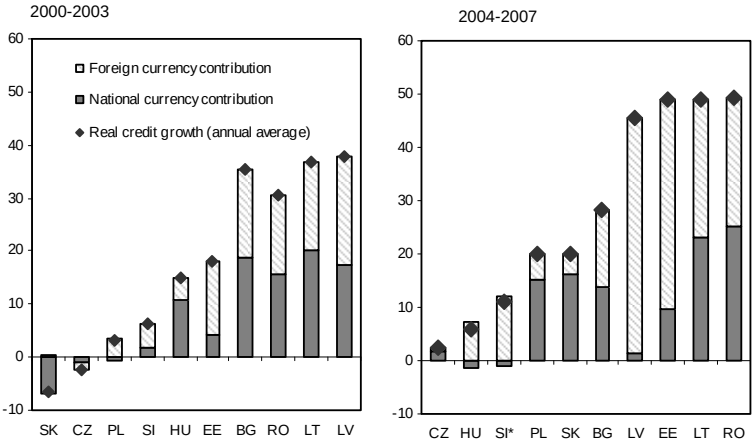
oped following the financial crises of the late 1990s and originally focused on sovereign borrowing, attributed dollarization mostly to a lack of monetary policy credibility. But borrowing in foreign currencies has also been popular in the private sector and in some industrial countries in Europe, such as Italy and the Nordic countries in the early 1990s (Drees and Pazarbaşioğlu, 1998). The fact that dollarization led to painful balance sheet effects following sudden exchange rate depreciation has contributed to the view that it constitutes a vulnerability.

Overall credit growth and borrowing in foreign currencies are closely related. During transition, consumption smoothing is an important channel for credit expansion (Backé and Wójcik, 2008). *Figure 5* illustrates that foreign currency borrowing has contributed to much of the overall credit growth, especially in countries where the private sector's indebtedness has increased very rapidly in recent years. One reason for this may be that access to foreign currency loans, usually at lower rates than for domestic currency loans, not only affects the choice of currencies, but also the real interest rate as perceived by borrowers. When making a decision to borrow, they will often use expected *domestic* inflation or wage growth to deflate the nominal *foreign currency* interest rate, especially if they consider exchange rate risk to be low. This can yield highly negative real interest rates, thus greatly increasing the overall demand for credit, given that inflation and wage growth tend to be higher in the catching-up economies. Since this paper is concerned with the currency composition of borrowing rather than overall credit growth, we will not pursue this linkage further.

The impact of deposit dollarization on liability dollarization is well documented in the literature,[5] suggesting that domestic banks seek currency-matched portfolios. In a country where domestic banks are facing highly dollarized deposits, they are more likely to lend in foreign currency.

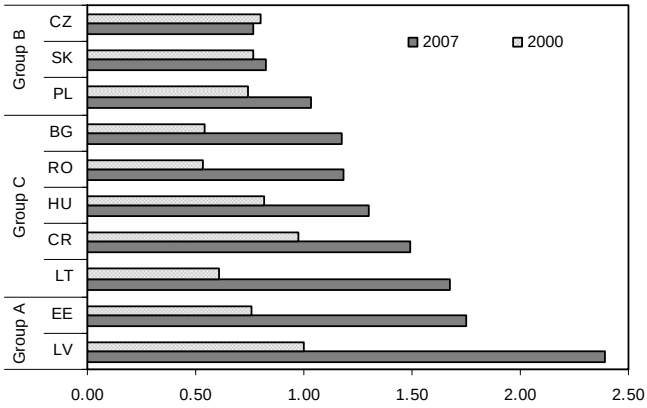
[5] See for example Calvo (2002), Ize and Levy Yeyati (2003), Barajas and Morales (2003), and Luca and Petrova (2008).

Figure 5 Real Credit Growth to the Private Sector (in %)



Note: * 2004–2006.
Source: National authorities and authors' calculations.

Figure 6 Loan-to-Deposit Ratio in the NMS



Source: National authorities and authors' calculations.

The availability of foreign funds fueling the credit expansion in the NMS may also influence the currency composition of credit. As credit expands beyond the level of domestically available resources, banks attract capital from abroad. This is often done through existing financial links to parent banks residing in the EU. Since domestic bank regulations often restrict open currency positions, banks pass foreign--funded loans to their customers in foreign currency. This also allows them to transfer currency risk directly to borrowers (however, they still bear the credit risk). Apart from Slovenia, foreign-owned banks clearly dominate the domestic banking sectors in the NMS and their presence has strengthened further during the last decade. *Figure 6* shows that countries experiencing a strong increase in the loan--to-deposit ratio, driven by credit expansion (e.g., the Baltics), are also those bor-

rowing in a foreign currency (from *Figure 4* above). Basso, Calvo-Gonzales, and Jurgilas (2007) develop a theoretical and empirical model that shows how the presence of foreign banks in the NMS increases liability dollarization.

Interest rate differentials between local and foreign currency are believed to drive the choice between borrowing in domestic versus foreign currency. Several recent empirical studies examining foreign currency borrowing in the NMS (Basso, Calvo-Gonzales, and Jurgilas, 2007; Brown, Ongena, and Yeşin, 2008) assume that uncovered interest rate parity does not necessarily hold and use nominal interest rate differences to explain dollarization. The significance of interest rate differentials depends on the credibility of the underlying currency regime and expectations regarding exchange rate movements and inflation differentials. In a country with a highly credible peg, an only small interest rate differential can induce a shift in lending patterns, while in a flexible exchange rate regime a larger differential may be necessary to induce a similar shift. The rationale behind this is developed by Jeanne (2003), who built a theoretical model describing the determinants of liability dollarization from the perspective of borrowers.

At first glance, a country's currency regime appears to play a role as well. Barajas and Morales (2003), using a panel on Latin American economies, show that central bank policy aimed at minimizing exchange rate variability leads to increasing dollarization of liabilities. Backé and Wójcik (2008) suggest that perceived exchange rate risk is smaller in countries with exchange rate pegs, especially currency board regimes. This hypothesis seems to be confirmed by *Figure 4* above: borrowers in countries with de facto rigid exchange rate regimes (Group A) are more willing to take on foreign exchange risk than those with flexible exchange rate regimes (Group B). But the figure also highlights that the explanation cannot lie in the currency regime alone, as both Lithuania and Bulgaria have operated currency boards for many years, but have a much lower share of credit denominated in foreign currency. Moreover, a blunt classification into pegged and non-pegged exchange rate regimes is not warranted because in several cases (Latvia in 2005, Lithuania in 2002) the anchor currency was changed and in some other countries (Croatia, Hungary, Romania, and Slovenia) the exchange rate has been a de facto consideration in monetary policy making. When determining whether borrowers assess currency risk based on the expected stability of the exchange rate it would therefore seem useful to look at its actual past variability.

Imminent euro adoption is expected to be a factor in financial dollarization, as suggested, for example, by Levy Yeyati (2006). One would expect borrowers to increase their borrowing in (cheaper) foreign currencies if they think that currency risk will soon disappear. Foreign exchange borrowing did initially accelerate in the Baltics when they entered ERM2 – the "antechamber to the euro" – soon after joining the EU. In Slovenia the share of foreign currency loans to the private sector rapidly expanded during its successful run-up to the eurozone and a similar trend was observed earlier in Austria – although this may also have been related to the liberalization of rules regarding foreign currency borrowing at the time. While the evidence is therefore mixed, events like EU membership and ERM 2 participation are usually thought to have some positive influence on the dollarization of credit in the NMS.

Finally, a country's economic policies surely have a bearing on foreign currency borrowing. The most obvious channel is through monetary policy, which will directly affect the interest rate differential discussed above, as well as the volatility of the exchange rate. Taxes and subsidies can also influence borrowing behavior; for example, the tightening of the eligibility criteria for housing subsidies in Hungary in 2004 is believed to have induced consumers to switch to cheap foreign currency loans (Bokor and Pellenyi, 2005). Conversely, recognizing the risks associated with foreign currency loans, financial supervisors throughout the region have recently taken various regulatory measures to slow down such borrowing. An interesting question, examined below, is whether these actions have had the intended effect.

4. Empirical Estimation

The various hypotheses laid out above can be examined in a panel regression model (see equation below). For the dependent variable we use the ratio of loans denominated in (and indexed to) foreign currency to total domestic bank loans to the non-financial private sector. An alternative specification of the dependent variable also includes the private sector's direct borrowing from abroad, all of which is assumed to be in foreign currency.[6] Our preferred model contains the following key independent variables:

– the ratio of foreign currency deposits to total deposits,
– banks' net foreign assets,
– the severity of regulatory measures aimed at discouraging foreign currency borrowing,
– the difference between local and foreign nominal interest rates, and
– exchange rate volatility.

Consequently, the model can be written as follows:

$$fxloans_{i,t} = \alpha + \beta_1 fxdep_{i,t} + \beta_2 banknfa_{i,t} + \beta_3 restrict_{i,t} + \beta_4 irdiff_{i,t} + \beta_5 ervolat_{i,t} + X_{i,t} + u_{i,t}$$

with the first five independent variables as described above and a vector $X_{i,t}$, consisting of additional variables that were also tested but not included in our preferred model (e.g., the asset share of foreign banks, trade openness, and dummies for ERM2 and EU membership). The exact specification and empirical validity of all the variables are discussed below.

The regression draws on quarterly data for the NMS. The sample of countries contains the new EU member states from Central and Eastern Europe that had not adopted the euro by end-2007 – the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, and Slovakia (which joined the EU in May 2004),[7] Bulgaria and Romania (which joined in January 2007), as well as Croatia (an EU candidate since 2004). Hence, the panel comprises 10 countries and quarterly data for the period 1999–2007. Data for loans and deposits in domestic and foreign currencies were de-

[6] These loans are often granted to subsidiaries of foreign corporates operating in the NMS from banks that also provide financial services to their parent companies in the home country.

[7] Slovenia was excluded because the available time series of data were much shorter than in the other countries. Data for Macedonia, another EU candidate country, were not compatible with those used for the other countries.

Table 1 Estimation Results

Dependent variable: Ratio of FX loans to total loans to private sector					
	OLS pooled	FE model	RE model	RE model	RE model
	A	B	C	C.1	D
Ratio of FX deposits	0.764***	0.666**	0.676***	0.684***	0.724***
	0.024	0.219	0.076	0.074	0.071
Banks' net foreign assets	-1.056***	-0.526***	-0.531***	-0.531***	-0.407***
	0.065	0.144	0.049	0.049	0.048
Interest rate differential	0.131***	0.042	0.041**		0.108***
	0.029	0.050	0.020		0.020
Inflation differential				0.002***	
				0.000	
FX restriction index	-4.653***	-1.131	-1.119**	-1.197**	0.509
	0.640	1.436	0.483	0.477	0.442
Exchange rate volatility	-1.621**	-0.232	-0.251	-0.253	-0.029
	0.671	0.346	0.291	0.288	0.270
Adj. R sq.	0.74	0.70	0.70	0.71	0.66
Observations	324	324	324	326	324

Note: *; **; *** refers to significance at 10%, 5%, and 1% level respectively. All models include a constant term and robust standard errors are shown.

Source: Authors' calculations.

rived from national sources, while most other data used for the independent variables were collected from Eurostat, IMF, EBRD and BIS databases. The index of policies to influence foreign exchange borrowing was constructed using information from IMF staff reports and a questionnaire among country desks. Summary statistics and a correlation analysis are shown in the *Appendix*.

The preferred model specification is estimated by panel regression with country random effects[8] and appears robust (*Table 1*, column C). The relatively high correlation between our dependent variable and banks' net foreign assets suggested possible endogeneity problems. Due to a lack of efficient instrumental variables we ran our baseline model including various lags of banks' net foreign assets (up to 3 lags) to test for signs of endogeneity. Our baseline results were not affected.

As expected, the ratio of foreign exchange deposits is highly significant. Moreover, banks' net foreign assets[9] are also highly significant and have the expected sign. This suggests that as countries during convergence draw on capital inflows to fund domestic borrowing for consumption smoothing purposes, they tend to rely relatively more on foreign currency loans. Unlike Basso, Calvo-Gonzales, and Jurgilas (2007), we find that it is irrelevant whether such foreign funding is chan-

[8] A set of models is shown in *Table 1*. This includes pooled OLS regression and panel regressions with fixed and random country effects. The panel regression with random-country effects is our baseline model. The relevance of random country effects was confirmed by performing the Hausman test.

[9] Alternatively, we run our baseline model with the loan-to-deposit ratio instead of banks' net foreign assets, as these two variables are strongly correlated and allow us to control for credit expansion financed by foreign capital inflows and channeled through the domestic banking sector. Nevertheless, we decided to use the latter variable in our baseline model based on the better overall fit of the model.

neled through domestic banks borrowing abroad (e.g., through syndicated loans) or foreign-owned banks drawing on credit lines from their parent banks. In our model, the share of foreign banks in total assets is not significant.

The interest rate differential is another important determinant of foreign currency borrowing. This variable[10] has the expected positive sign and is highly significant. In line with both the theoretical and the empirical literature, a higher interest rate differential leads to higher dollarization of liabilities in a country. Monetary stability is a significant but not a very important factor in borrowing decisions, as can be seen by using the inflation differential vis-à-vis the euro area in *Table 1*, column C.1 as a proxy.

The effect of past exchange rate volatility on dollarization is ambiguous in our model. The panel regression found that past exchange rate volatility does not appear to play much of a role when correcting for other factors: while the coefficient has the expected sign, it is not statistically significant.[11] This contrasts with empirical findings from other regions (e.g., Kamil, 2009, for Latin American corporates, as well as Barajas and Morales, 2003), which suggest the opposite. An economic explanation of why the NMS are different may be that EU membership – at least until the beginning of the financial crisis (the period covered by our data set) – increased economic agents' confidence in the stability of the exchange rate, making them more willing to assume currency risk. Moreover, nominal exchange rates have generally been appreciating in countries with flexible currency regimes, making borrowing in foreign currencies even more attractive – although this proves not to be a decisive factor in our model.[12]

Joining the European Union does not have any discernible direct effect on foreign currency borrowing. The dummy variable for EU membership has the expected sign and is statistically significant. However, it lowers the overall fit of the model. The reason may be that the associated confidence effects come into play before the actual entry date and at different times in different countries, something that is difficult to measure. Another way to test both the expected time until euro adoption and expectations about exchange rate stability is participation in the Exchange Rate Mechanism (ERM2), which ex ante limits exchange rate movements, especially the scope for large depreciations. This dummy variable is not statistically significant. The explanatory power of ERM2 may be affected by the fact that the majority of countries participating in it (i.e., the Baltics) joined with an already rigid exchange rate regime.

Hedging opportunities in the private sector increase dollarization, at least in the corporate sector. Revenues from abroad make it easier for corporates to hedge

[10] Because of data limitations, we use the 3-month money market rate differential of the local currency vis-à-vis the euro ($i - i^*$). While this ignores the fact that in some countries foreign currency loans are often denominated in Swiss franc, these interest rates are highly correlated with euro interest rates (factor 0.96). Using this approximation also implies that the risk premium and fees for the median borrower in a country are constant at one point in time for both local currency loans and foreign currency loans. Anecdotal evidence confirms that, at least until recently, banks did not include the currency risk in their calculations.

[11] Modeling the exchange rate impact by using not actual past volatility but a simple dummy that distinguishes between fixed and flexible regimes yields a non-significant coefficient.

[12] Brzoza-Brzezina, Chmielewski, and Niedźwiedzińska (2007) find that the level of exchange rates matters: borrowers take out foreign exchange loans when the domestic currency is strengthening. Using the logarithm of the nominal exchange rate we were not able to verify this in our model.

Table 2 Testing the Robustness of the Estimation Results

Dependent variable: Ratio of FX loans to total loans to private sector			
	RE model	RE w/ time dum.	RE model
	C	C.I	C.II
Ratio of FX deposits	0.676***	0.799***	0.921***
	0.076	0.084	0.078
Banks' net foreign assets	-0.531***	-0.452***	-0.741***
	0.049	0.054	0.069
Interest rate differential	0.041**	0.092***	0.036
	0.020	0.022	0.024
FX restriction index	-1.119**	-0.909*	-1.163**
	0.483	0.482	0.463
Exchange rate volatility	-0.251	-0.092	-0.280
	0.291	0.304	0.293
Adj. R sq.	0.70	0.67	0.84
Observations	324	324	258

Note: *; **; *** refers to significance at 10%, 5%, and 1% level respectively. All models include a constant term and robust standard errors are shown.

Source: Authors' calculations.

their foreign currency exposure. We tested various measures of openness – exports plus imports, exports of goods and non-factor services – which all have the correct positive sign. However, their statistical significance varies across different specifications. As the majority of countries from our sample are very open economies, we exclude this variable from our baseline model.

Finally, regulatory policies aimed at reducing foreign currency borrowing may have only a limited effect. Based on the information gathered from IMF Staff Reports, we construct an index measuring the severity of such measures, ranging from stepped-up monitoring (least restrictive) to quantitative limits on the foreign currency lending of banks[13] (most restrictive).[14] To guard against reverse causality, the model uses various lags for this variable. Policies against foreign currency lending have the expected sign in the specification that uses only borrowing from domestic banks as the dependent variable (*Table 1*, column C), but turns statistically insignificant when direct borrowing from abroad is included (*Table 1*, column D). This illustrates that various measures imposed by domestic financial supervisors indeed affect the flow of foreign currency credit through the domestic banking system, but may also divert borrowing to non-resident financial institutions. With no capital account restrictions in the NMS, such policies may therefore be largely ineffective.

[13] Such a measure was in place in the past in Romania.

[14] Exclusively the measures that strictly targeted foreign exchange borrowing (as opposed to overall credit growth) were considered. The index is defined as: $Index_{i,t} = \sum policy_{i,t}$. The values associated with the respective policies are as follows: monitoring of FX risk –0.2, disclosure of FX risk to customers –0.4, tightening of eligibility criteria for FX borrowing –0.6, higher FX risk weights/provisioning/reserve requirement –0.8, and introduction of ceilings on FX exposure –1.0.

Our model tracks well actual developments in most countries. In order to test the robustness of the results, we included time dummies to control for common shocks to countries (*Table 2*, column C.I) and also restricted our sample by excluding outliers (Estonia, Latvia; *Table 2*, column C.II). In the latter specification the coefficients of the ratio of FX deposits and banks' net foreign assets increased markedly, while the interest rate differential variable turned insignificant.[15] The remaining results were unaffected.

5. Conclusions

We found that the growing dollarization of liabilities in the NMS can be explained primarily by the extent to which domestic banks finance credit expansion from abroad, the level of deposit dollarization, and the interest rate differential. A number of other measurable variables, such as regulatory policies and trade openness, have a bearing on foreign currency borrowing by the private sector. Our model, which draws on panel data for NMS from Central and Eastern Europe plus Croatia and covers the period 1999–2007, is robust to alternative specifications.

The central point from this analysis is that membership in the European Union boosts foreign currency borrowing through various indirect channels. First, by fully liberalizing the capital account, EU membership offers borrowers increased access to foreign funding, both through domestic banks affiliated with foreign parents and directly from abroad. Second, by increasing trade openness, it provides hedging opportunities, especially for the corporate sector. Finally, EU membership appears to have boosted the private sector's confidence in exchange rate stability and imminent euro adoption. As a result, borrowers appear to have considered devaluation a low-probability event and therefore neglected the exchange rate risk associated with borrowing in foreign currency. This has been reinforced by interest rate differentials. For the same reasons, commercial banks appear to have also been more willing to lend in foreign currency. The empirical analysis shows that regulatory measures aimed at slowing foreign currency borrowing are largely ineffective because access to foreign financing directly from abroad makes it easy to circumvent them. Given that under EU law capital account restrictions are not an option to close this loophole, any measures to address foreign currency exposures will therefore require close cooperation between supervisors in home and host countries.

[15] This variable is statistically significant at the 13% level.

APPENDIX Summary Statistics and Correlation Analysis

TABLE 1 Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Banks' net foreign assets (as % of GDP)	330	-3.09	10.32	-47.44	15.03
Exchange rate volatility	350	0.91	1.05	0.00	8.49
FX restriction index	360	0.26	0.68	0.00	4.20
Inflation differential vs. euro area (squared)	360	77.94	322.51	0.00	2 690.54
Interest rate differential vs. euro	353	6.27	13.55	-1.20	106.03
Loan-to-deposit ratio	358	92.62	33.15	49.14	243.50
Ratio of FX loans/total loans (private sector)	358	46.47	22.55	8.76	86.78
Ratio of FX loans/total loans (private sector; incl. cross-border loans)	358	55.34	19.53	23.35	90.02
Ratio of FX deposits/total deposits (private sector)	360	35.19	20.87	9.60	90.32
Remittances (as % of GDP)	305	0.50	0.51	0.01	2.47
Trade openness (as % of GDP)	360	114.47	32.02	54.26	180.08

Source: Authors' calculations.

TABLE 2 Correlation Analysis

	fxloans	*fxloansx*	*fxdep*	*banknfa*	*loandep*	*restrict*	*ervolat*	*infdif*	*nirdif*	*opengdp*	*remitgdp*
fxloans	1.0000										
fxloansx	0.9874	1.0000									
fxdep	0.7060	0.7126	1.0000								
banknfa	-0.5831	-0.5428	-0.1783	1.0000							
loandep	0.5047	0.4370	0.2355	-0.8959	1.0000						
restrict	0.2088	0.2320	0.2728	-0.4005	0.3914	1.0000					
ervolat	-0.2013	-0.1608	-0.1067	0.1718	-0.2384	-0.0414	1.0000				
infdif	0.0780	0.1479	0.0890	0.0922	-0.1884	-0.0832	0.1751	1.0000			
nirdif	0.0446	0.1223	0.0777	0.1055	-0.2470	-0.0959	0.3244	0.9345	1.0000		
opengdp	-0.0277	-0.0390	-0.2781	-0.0771	0.0709	-0.2169	-0.4443	-0.2614	-0.4015	1.0000	
remitgdp	0.1437	0.1072	0.4350	-0.0391	0.1944	0.2154	-0.2717	-0.1558	-0.2207	-0.0915	1.0000

Note: Fxloans denotes ratio of foreign currency loans to total loans in the private sector. *Fxloansx* denotes ratio of foreign currency loans to total loans in the private sector including cross-border loans. *Fxdep* denotes ratio of foreign currency deposits to total deposits in the private sector. *Banknfa* denotes ratio of banks' net foreign assets to country's GDP. *Loandep* denotes loan-to-deposit ratio. *Restrict* denotes the FX restriction index. *Ervolat* denotes volatility of exchange rate vis-à-vis euro. *Infdif* denotes HICP inflation differential vs. euro area. *Nirdif* denotes nominal interest rate differential vs euro area. *Opengdp* denotes ratio of sum of exports and imports to country's GDP. *Remitgdp* denotes ratio of remittances to country's GDP.

Source: Authors' calculations.

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