Determinants of Foreign Currency Loans in CESEE Countries: A Meta-Analysis

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In this paper, we analyze the growing literature on determinants of foreign currency loans in the countries of Central, Eastern and Southeastern Europe (CESEE), applying a metaregression approach. We consider the seven most common determinants presented in the literature and aim at obtaining a more clear-cut picture behind various effects related to differences in methods and data characteristics. In our meta-analysis we apply two alternative estimation methods and identify exchange rate volatility, foreign currency deposits and the minimum variance portfolio (i.e. the ratio of inflation volatility to real exchange rate volatility) as the most robust determinants of foreign currency loans. Our findings indicate that the results reported in the literature are systematically influenced by model specification, the econometric methodology applied and the country samples included in the papers.

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1 Introduction

In the catching-up process and as part of ongoing financial integration, the emerging economies in Central, Eastern and Southeastern Europe (CESEE) have built up high stocks of both assets and liabilities denominated in foreign currency, especially over the last decade. Consequently, the rising systemic risks to financial stability emerging from the large exposure of households and corporates to foreign currency risks in these economies have been gaining prominence in the last few years. Likewise, the impact of such foreign currency stocks on the effectiveness of monetary policy has become an important issue.

Stylized facts on foreign currency loans in the private sectors in CESEE countries show that substantial differences can be observed in both the share of foreign currency loans as well as in the importance of foreign currency loans in the household versus the corporate sector. In the Czech Republic, the share of foreign currency-denominated debt has remained relatively constant over the past five years, ranging between 10% and 15%, whereas in the countries of Southeastern and Eastern Europe (e.g. Croatia and Serbia), it has increased rapidly to over 60% of total loans. Moreover, although the phenomenon of foreign currency loans was first seen in the corporate sector, it quickly extended to households. In some CESEE countries (e.g. Bulgaria and Croatia), the corporate sector has a larger share of foreign loans, whereas in Hungary and Romania, the reverse is true.

The intriguing result from both the empirical and theoretical literature is that several determinants of foreign currency loans are acknowledged as playing a central role and are therefore included in the majority of the studies on the CESEE region. The determinants most often cited in the studies surveyed are the inflation rate, exchange rate depreciation, the volatilities of these two indicators, the implied

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share of foreign currency loans according to the minimum variance portfolio (MVP) approach, and banks' funding in foreign currency.[2] These determinants can be attributed to three major channels: the demand and the supply channels as well as the portfolio (monetary credibility) channel. The impact of some determinants may, however, be ambiguous, as they play a different role in each channel. Interestingly, no established benchmark exists in the literature concerning the effect each of these factors has on the share of private sector foreign currency loans in the CESEE countries.

Additionally, empirical studies related to foreign currency loans in the CESEE countries are inherently characterized by significant data problems. In general, reliable time series on credit developments are available only for recent years. Moreover, data are subject to frequent revisions and methodological changes. Some studies use individual data coming either from specific sources which are not generally available or from special surveys. Both sources may be subject to selection bias and low comparability with the total population of credit takers. As a result, comparisons of core statistics based on credit developments coming from different data sources can show significant differences. Yet, data problems are very common in many other fields in the natural and social sciences. Meta-analyses of existing studies have been suggested as a potentially fruitful way of gaining more powerful results (see e.g. Lipsey and Wilson, 2001) by extending the analysis beyond standard literature surveys. In addition to providing a more precise aggregate view on the subject, this approach allows for the analysis of possible factors which may influence the results (e.g. data definition, time period, characteristics of the authors). In the past decade, the use of meta-analysis has become a popular research tool in economics (see e.g. Stanley, 2001, Stanley and Jarrell, 2005), in monetary economics (see De Grauwe and Storti, 2004, Rose and Stanley, 2005, and Knell and Stix, 2005), and in international economics (see Havránek and Iršová, 2011). Transition economics, being especially restricted by data problems, has also become a field of meta-applications (see Campos and Coricelli, 2002, Fidrmuc and Korhonen, 2006, and Égert and Halpern, 2006).

The determinants of foreign currency loans are an especially appropriate field for a meta-analysis. On the one hand, a large number of papers is already available on the topic. Moreover, the financial crisis has fueled the general and policy interest for the determinants of foreign currency loans. On the other hand, the robustness of results reported in the literature may be questionable for the reasons sketched out above. Actually, the first finding of our meta-analysis is that previous studies on foreign currency loans succeed in explaining only a small fraction of foreign currency lending developments. The majority of coefficients reported for the most common determinants of foreign currency loans are statistically insignificant even at the marginal level of 10%. Does this mean that standard economic theory fails to explain the credit behavior in euroized countries? We try to answer this question

[2] *We should underline, however, that other determinants, such as the EU accession perspective or EU membership, euro adoption or bank funding in foreign currency, also deserve attention. In particular, recent results of the OeNB Euro Survey, which is a household survey performed in ten CESEE countries on the role of foreign currency-denominated assets in general and the euro in particular, show a positive impact of EU accession and the euro adoption perspective. However, these two determinants have been included only in a few model specifications in the papers surveyed and accordingly delivered a very low number of coefficients. Hence, the choice of determinants in our study is justified solely by the number of coefficients estimated in the empirical studies included.*

and show that several factors are robust determinants of foreign currency loans when we test their significance jointly. Taking stock of the growing literature on foreign currency loans in the CESEE countries, we test in a meta-analysis whether the reported coefficients are significant on average. Additionally, we turn our attention to the following questions: (1) What are the most important and robust determinants of foreign currency lending in the CESEE region,[3] and (2) what study-specific factors seem to have affected the results obtained in the studies? To answer these questions, we perform a meta-analysis for each of the seven most commonly analyzed determinants of foreign currency lending.[4]

The paper proceeds as follows: In the following section, we provide a concise summary of the findings of the literature, both theoretical and empirical, on the determinants of foreign currency loans in CESEE and identify the most common determinants. Section 3 then presents the advantages and the methodological approach of the meta-analysis. To this end, we focus on two estimation approaches: the most commonly used one, the weighted least squares (WLS) approach, and the random effects maximum likelihood (REML) approach. The second methodology is our preferred one, as it enables us to explore variance both within and between studies. Going further, section 4 provides some descriptive evidence of the effects of the seven determinants of foreign currency loans, and section 5 discusses the results of the meta-analysis and the robustness of the effects. The last section concludes.

2 Determinants of Foreign Currency Loans: Theoretical and Empirical Evidence

The theory of loan dollarization relies on two major theoretical approaches modeling the factors that influence both liability and asset dollarization in the private sector. The first approach is the concept of the Minimum Variance Portfolio (MVP) introduced by Ize and Levy-Yeyati (2003), which receives substantial attention in empirical analyses of both deposit and loan denomination in foreign currency. This concept suggests that the optimal share of foreign assets or liabilities (λ^*) is determined by the ratio of the inflation volatility and real exchange rate volatility.[5] More specifically, the MVP approach is based on expectations about the future developments of these factors, although, due to the lack of such data, the usual approach in the empirical literature is to substitute realized data for the respective expectations of inflation and real exchange rate volatility.[6]

The second approach is the theoretical model by Jeanne (2005), which explores the hypothesis that the dollarization phenomenon is the result of the lack of

[3] *Following the literature, we use the term "dollarization," which originates from the literature on the use of foreign currency loans (mostly in U.S. dollars) in the countries of Latin America. However, we should underline that most of the countries in CESEE are euroized rather than dollarized (the countries of the former Soviet Union are a notable exception). Additionally, some of the CESEE countries also have a large share of loans in Swiss francs (e.g. Poland, Hungary, and Croatia).*

[4] *Considering in particular the MVP approach, which comprises two other determinants included in the meta-analysis, we should underline that none of the studies surveyed includes both the MVP and exchange rate or inflation volatility approaches simultaneously.*

[5] *The optimal share of foreign currency loans is given by* $\lambda^* = \left(\sigma^2_{\pi\pi} + \sigma_{\pi s}\right) / \left(\sigma^2_{\pi\pi} + \sigma^2_{ss} + 2\sigma_{\pi s}\right)$, *where* σ *is the variance or covariance of inflation and changes in the real exchange rate, respectively.*

[6] *It is beyond the scope of our study to discuss this measurement issue here.*

monetary credibility. In contrast to the contribution by Ize and Levy-Yeyati (2003), Jeanne's contribution concludes that liability dollarization is driven by the attempt of borrowers to minimize their probability of default. Hence, even in the case of an enormous depreciation threat to the domestic currency, the perceived risk associated with holding loans in foreign currency could be lower than that associated with holding domestic currency loans. This surprising result arises from the response of borrowers to exchange rate depreciations. When the credibility of monetary policy is low (in terms of the tension between short and long-term objectives), borrowers are forced to borrow in foreign currency.[7] This finding is similar to the time inconsistency of monetary policy discussed more generally in the literature (Barro and Gordon, 1983), but applied to foreign currency loans. Interestingly, Jeanne's model is shown to be valid also for countries with fixed exchange rate regimes.

Following these major theories, the available empirical studies test the impact of the proposed determinants of foreign currency loans. As the dollarization phenomenon started in Latin American countries, most early studies analyzed the determinants of the borrowing and lending behavior in foreign currency in this region (e.g. Barajas and Morales, 2003). However, due to the increasing share of foreign currency loans in CESEE, the number of studies on private sector dollarization in this region has likewise increased during the past few years. To be able to obtain as large a number of coefficients as possible, we focus only on the interest rate differential, inflation, and exchange rate depreciation and the volatilities of these determinants, on MVP as well as on the supply side of deposit dollarization. However, the studies surveyed often show these determinants to have opposing effects on foreign currency loans.

Most of the studies refer to the differential between domestic and euro area loan interest rates. On the one hand, this differential reflects the relative price of foreign currency loans. Hence, a higher interest rate differential would induce more borrowing in foreign currency.[8] On the other hand, the real interest rate differential is influenced by macroeconomic stability, and its significance could result from the tradeoff between currency risk (in the case of a large devaluation of the domestic currency) and real interest rate risk (in the case of a lower-than-expected inflation rate). Such a positive effect has been established for the economies of Latin America (e.g. Barajas and Morales, 2003), while the findings for the CESEE region are rather mixed. For instance, Égert, Backé and Zumer (2007) document that borrowers in countries with a credible peg or currency board regime react more sensitively to interest differentials than borrowers in countries with flexible exchange rate regimes. Similarly, Rosenberg and Tirpák (2009) analyze the determinants of private sector loans in euro and Swiss francs in the CESEE EU Member States and in Croatia and find that the interest rate differential is a major and robust determinant of foreign currency loans. By contrast, using bank-level data, Brown and De Haas (2010) do not find that the interest rate differential has a significant impact.

[7] *Using data from the OeNB Euro Survey, Beckmann, Scheiber and Stix (2011) show that foreign currency loans in CESEE economies have remained attractive for borrowers even after significant exchange rate depreciations during the financial crisis.*

[8] *As a predominant share of foreign currency loans in the CESEE countries is denominated in euro, the empirical studies usually include the interest rate differential to euro-denominated loans.*

The (real) exchange rate depreciation in the domestic currency and its volatility are other control variables that are frequently used in the empirical research on foreign currency lending in CESEE. Empirical evidence suggests that a negative impact reflects the credit default risk of unhedged loans and a positive influence could emerge from the expected stability of repayment rates.[9] The theoretical impact of exchange rate depreciation may also be ambiguous, as it can have a different impact on lenders' and borrowers' behavior. Lenders may try to shift the exchange rate risk to borrowers, who in turn try to avoid it. On their part, borrowers might accept exchange rate risk, especially in countries with an unstable monetary environment (Jeanne, 2005). Moreover, in this model, corporate borrowers can use foreign currency loans as a commitment device, which indicates to the lenders the firm's quality through its treatment of potential default costs. Thus, exchange rate depreciation could also have to some extent a counterintuitive positive effect. Barajas and Morales (2003) provide evidence for Latin American countries that exchange rate volatility reduces credit dollarization in the short run. Luca and Petrova (2008) confirm this result for a large set of 21 transition countries. Rosenberg and Tirpák (2009) find that exchange rate volatility has negative but small effects on the share of foreign currency loans in the CESEE EU Member States and Croatia. Interestingly, past exchange rate volatility does not play a significant role, which contradicts the findings for other regions. They propose the explanation that EU membership has increased the perceived stability of the exchange rate in these countries, hence making economic agents more willing to accept currency risk.

The high inflation rate and its volatility are further factors included in the majority of the studies. As asserted by the model of Jeanne (2005), greater inflation volatility, which is a proxy for the lack of monetary credibility, induces more borrowing in foreign currency because foreign currency borrowing can be associated with more stable real interest rates than borrowing in local currency. Hence, from the perspective of the borrower, the impact of this factor on foreign currency loans depends on the tradeoff between currency risk and real interest rate risk. The empirical literature has shown that the problem of high inflation is less dominant in EU countries due to the stabilizing role of the euro area. The results of the surveyed empirical studies confirm this finding. Studies based on aggregate data and survey-based studies both generally show a positive effect on loan dollarization (e.g. Zettelmeyer, Nagy and Jeffrey, 2010), although some studies also show a significant negative effect of inflation (e.g. Steiner, 2011).

The concept of MVP introduced by Ize and Levy-Yeyati (2003) has been receiving increasing attention in empirical analyses. Basso, Calvo-Gonzales and Jurgilas (2007) confirm for a sample of transition countries that higher MVP induces a statistically significant higher degree of both deposit and loan dollarization, although the effect is negligible in economic terms. By contrast, Neanidis and Savva (2009) find no relationship between loan dollarization and the MVP indicator in the short run. Fidrmuc, Hake and Stix (2011) use survey data on households' portfolio behavior, which are found to be a significant and robust determinant of households' foreign currency loans.

[9] *The exact effect depends on the elasticity of the euro loan default and the rate of depreciation.*

One of the implications of the theoretical literature (see e.g. the model by Basso, Calvo-Gonzales and Jurgilas, 2007) is that funding in foreign currency leads to an expansion of foreign currency loans. Clearly, currency matching plays a major role in the choice of the currency denomination by borrowers and lenders.

Table 1

Surveyed Studies

Studies	Period	Countries	Data sample	Dependent variable	Determinants included
Arteta (2005)	1975/1990 –2000	92 countries	Macro-level data	Share of foreign loans in the private sector	Interest rate differential, inflation, exchange rate depreciation
Basso, Calvo-Gonzales, Jurgilas (2007)	2000–2006	24 CESEE, CIS countries	Macro-level data	Share of foreign loans in the private sector, change in the share of foreign loans in the private sector	Interest rate differential, MVP
Brown, Ongena, Yesin (2009)	2002–2005	CESEE, CIS countries	Firm survey data	Dummy: foreign currency loan (yes – no)	Interest rate differential, inflation volatility, exchange rate volatility, foreign currency deposits
Brown, Kirschenmann, Ongena (2010)	2003–2007	Bulgaria	Firm survey data	Dummy: foreign currency loan (yes – no)	Interest rate differential, inflation volatility
Brown, Ongena, Yesin (2011)	2002–2005	CESEE, CIS countries	Firm survey data	Dummy: foreign currency loan (yes – no)	Interest rate differential, inflation volatility, exchange rate volatility, foreign currency deposits
Brown, De Haas (2010)	2001, 2004	20 CESEE, CIS countries	Bank survey data	Share of foreign loans in the private sector (households and corporates)	Interest rate differential, inflation volatility, exchange rate volatility
Fidrmuc, Hake, Stix (2011)	2007–2010	9 CESEE countries	Household survey data	Dummy: foreign currency loan (yes – no)	Interest rate differential, inflation volatility, exchange rate volatility, MVP
Csajbók, Hudecz, Tamási (2010)	1999–2008	CESEE MS	Macro-level data	Share of foreign loans in the household sector	Interest rate differential, exchange rate volatility
Luca, Petrova (2008)	1990–2003	21 CESEE, CIS countries	Macro-level data	Ratio of foreign loans in the private sector (corporates)	Interest rate differential, exchange rate depreciation, foreign currency deposits
Neanidis (2010)	1991–2010	24 CESEE, CIS countries	Macro-level data	Share of foreign loans in the private sector	Interest rate differential, exchange rate volatility, exchange rate depreciation, inflation, foreign currency deposits
Neanidis, Savva (2009)	1993–2006	CESEE, CIS countries	Macro-level data	Change in loan dollarization	Interest rate differential, exchange rate depreciation, change in inflation rate, MVP, foreign currency deposits
Rosenberg, Tirpák (2008)	1999–2007	CESEE MS, Croatia	Macro-level data	Share of foreign loans in the private sector	Interest rate differential
Rosenberg, Tirpák (2009)	1999–2007	CESEE MS, Croatia	Macro-level data	Share of foreign loans in the private sector	Interest rate differential, exchange rate volatility, foreign currency deposits
Steiner (2009)	1996–2007	CESEE MS, Croatia	Macro-level data	Share of foreign loans in the private sector	Interest rate differential, exchange rate depreciation, inflation, foreign currency deposits
Steiner (2011)	1996–2007	CESEE MS, Croatia	Macro-level data	Share of foreign loans in the private sector	Interest rate differential, exchange rate depreciation, inflation, foreign currency deposits
Zettelmeyer, Nagy, Jeffrey (2010)	2000–2008, 2002–2005	CESEE, CIS countries	Macro-level data, firm survey data	Dummy: foreign currency loan (yes – no); share of foreign loans in the private sector	Interest rate differential, exchange rate depreciation, inflation, foreign currency deposits

Source: Authors' compilations.

Not only do banks try to match their open foreign currency positions due to regulatory measures (see e.g. Luca and Petrova, 2008), but borrowers also want to match their savings in foreign currency (as shown by Brown and De Haas, 2010).[10] In addition, the willingness of borrowers to match currencies is also strengthened by the large share of remittances in some countries in the CESEE region, (e.g. Bosnia and Herzegovina, Albania, and Romania). Therefore, the validity of this determinant has been tested in several of the studies surveyed.

Table 1 gives a brief overview of the studies surveyed, providing information on the time span, dependent variables as well as the determinants included.

3 A Meta-Analysis of the Determinants of Foreign Currency Loans

Empirical studies on the determinants of foreign currency loans tend to build upon linear regression models of the following type

$$FCL_{it} = \alpha + X_{it}\beta + \varepsilon_{it} \tag{1}$$

where, depending on the study, FCL stands for the corresponding share of foreign currency loans or the change in this share, X_{it} is a matrix of variables explaining differences in the dependent variable, and ε_{it} is an error term assumed to fulfill the usual assumptions of the standard linear regression model. Usually, equation (1) is estimated for private subsectors in one or more countries, indexed by i and for a period indexed by t.

In empirical studies using microeconomic (survey) data, where the dependent variable is a binary dummy which measures whether a given individual borrower (firm or household) has taken out a foreign currency loan, the corresponding model can be written as

$$P\left(FCL_{it} = 1\right) = F\left(\alpha + X_{it}\beta\right) \tag{2}$$

where F(•) is a nonlinear function, usually the cumulative normal distribution function for probit models or the logistic function for logit models. Similarly to the previous estimation, equation (2) is estimated for individual borrowers indexed by i (possibly available for several countries) over time t.

Although the comparability of microeconometric results with macroeconomic studies can be questioned, we have to keep in mind that all reviewed studies report marginal probability effects which are similar to the elasticities reported in a standard OLS regression. Moreover, the conditional expectation of the dependent variable, $E(FCL_{it} \mid X_{it})$, can be interpreted as the share of foreign currency loans held by a given individual (household) or corporate in the whole population of individual firms or households.

Using the corresponding parameter estimates from 16 studies dealing with the determinants of foreign currency loans in the CESEE region, we estimate

[10] *In particular, as results of the OeNB Euro Survey show, the path dependence and the widespread use of the euro in daily life are also strongly correlated with the willingness to demand a credit in euro (e.g. Fidrmuc, Hake and Stix, 2011, based on data from the OeNB Euro Survey).*

regression models which aim at explaining the differences in the estimated coefficients. A typical metaregression equation is thus given by

$$\hat{\beta}_{lm} = \mu + D_m \theta + u_{lm} \tag{3}$$

where $\hat{\beta}_{lm}$ is the coefficient estimate corresponding to variable l in study m and D_m is a matrix containing variables reflecting various characteristics of the study. It is further assumed that u_{lm} is the regression error term, which may have a different distribution for each of the analyzed studies. The matrix D_m includes both continuous and dummy variables, which summarize information related to e.g. data definition, data structure, estimation method, publication and included control variables.

As control variables in our metaregressions, we include information on the sample used and the characteristics of the study (for exact definitions of the control variables, see table A1 in the annex). Similarly to Fidrmuc and Korhonen (2006), the year of publication of the study shows whether there is a trend in the overall analysis of foreign currency loans. This could correspond to actual structural changes (e.g. the increasing role of foreign currency loans, changes in the strategies of foreign banks acting in CESEE economies) or to generally accepted views on determinants of foreign currency loans. Next, we differentiate between publications using aggregate data (base category) and according to whether the study is based on microeconometric datasets. We also use a dummy to include fixed effects (country, region or firm fixed effects)[11] and special factors not frequently included in the estimation, such as the foreign currency income of the borrowers (from own export activities in the case of firms or remittances in the case of households), and an EU enlargement variable. In addition, we consider whether a study accounts for either an estimation bias by instrumental estimation or selection correction. We also include a dummy variable for publications including data observations after the recent financial crisis. Further variables describe the geographic focus of the paper, including the use of dummy variables for Latin American and former Soviet Union countries, and the exclusion of currency board countries (Bulgaria, Bosnia and Herzegovina, and the Baltic states) from the sample. With the exception of the publication year variable, which is measured as the deviation from the mean publication year in our sample, all other variables are binary covariates. Since not all regression models reported in the studies in our sample include information concerning these covariates, our metaregression specifications do not include all these variables for each of the parameters of interest.

In principle, equation (3) could be estimated using ordinary least squares (OLS) methods, but such an estimation method does not take into account the relative precision of individual estimates (i.e their significance). A potential way of overcoming such a caveat is to employ a weighted least squares (WLS) estimation by using the precision of each parameter estimate (measured by the inverse of their standard errors or standard deviation) as a weight in the regression. This approach is consistent, for instance, with Knell and Stix (2005), although various authors (e.g. Krueger, 2003) have acknowledged the controversy of the weighting approach. Moreover,

[11] *Particularly studies using survey-level data (e.g. Brown, Ongena and Yesin, 2009) have underlined the importance of including country fixed effects for the statistical significance of the obtained coefficients.*

we also consider possible heteroscedasticity in the metaregression. Hence, in addition to WLS, we estimate standard errors clustered according to the individual studies.

While the application of WLS can account for the relative precision of the estimates within the specification given by (3), it cannot deal with the potential heterogeneity in estimates across studies. In particular, if we assume that the true value of β_l can only be imperfectly approximated by $\mu + D_m\theta$, so that $\beta_l = \mu + D_m\theta + \omega_l$, where ω_l is a normally distributed random variable with zero mean and variance σ^2_ω is equal to the standard error reported for β_{lm} in individual studies, then (3) can be written as

$$\hat{\beta}_{lm} = \mu + D_m\theta + \omega_l + u_{lm} \tag{4}$$

Under the assumption that ω_l and u_{lm} are uncorrelated, the model in equation (4) can be estimated by using random maximum likelihood methods (see e.g. Thompson and Sharp, 1999). This specification is thus able to account simultaneously for the between-study variance, given by σ^2_ω, and the individual variance of the estimate when accounting for the relative precision across the observed values of $\hat{\beta}_{lm}$. Therefore, the results for random effects maximum likelihood (REML) present the preferred estimations of our metaregression analysis. To show the robustness of our results, we also report the results of the WLS method.

As a further robustness check of our results, we focus on two samples of coefficients. On the one hand, we include the whole number of coefficients and estimate a separate regression for each determinant. On the other hand, we consider only the subsample of the coefficients of the baseline estimations in each paper.[12] The main results are usually taken as the most important contribution (although we came up with a much lower number of coefficients in this case), but also other presented estimates provide important hints regarding the overall stability of the results. To sum up, we estimate WLS and REML for both data samples, which yields four tables with results.

4 The Determinants of Foreign Currency Loans: Descriptive Evidence

We include 16 papers analyzing data on foreign currency loans in the CESEE region in this meta-analysis.[13] Together, they provide us with nearly 800 estimates for seven determinants, with the interest rate differential being the variable which is most often included in the studies. Most of these studies rely on aggregate data (estimating the share or the change in the share of foreign currency loans in the private sector as the main variable of interest), although a growing number of studies are based on survey-level data on firms or households. Actually, an advantage of our regional focus on CESEE countries as opposed to Latin American countries is the availability of results from survey data (mostly data on firms; one paper uses

[12] *Most of the studies surveyed state a preferred or baseline estimation explicitly. If this information was missing, we took the first estimations presented in a paper as the baseline results.*

[13] *We used various sources of information in the period from February to May 2011 (e.g. the EconLit Database) and searched for papers investigating the determinants of foreign currency loans. Several papers were published first as working papers and then as journal articles. Both versions were surveyed and included in the metaregressions unless the journal article is a clear spinoff of the working paper version.*

Table 2

Metastatistics

Determinants	Share of foreign loans			Respondents with foreign currency loans			Number of coeffi-cients	Share of signifi-cant coeffi-cients
	Min	Max	Median	Min	Max	Median		
								%
Interest rate differential	–2.988	4.142	0.001	–0.012	0.030	0.001	269	50.0
Exchange rate depreciation	–2.411	1.310	0.123	–0.006	0.006	–0.001	100	54.0
Exchange rate volatility	–4.017	1.702	–0.108	–0.006	0.006	0.002	73	23.3
Inflation	–1.634	0.238	–0.005	–0.016	0.004	–0.001	64	31.3
Inflation volatility	–10.01	12.540	2.824	–0.085	0.072	0.022	67	47.7
Minimum Variance Portfolio (MVP)	–4.898	7.511	0.015				151	57
Foreign currency deposits	–0.792	0.890	0.149	–0.009	0.003	–0.003	74	78.4

Source: Authors' calculations.

bank-level data and one paper includes household survey data). While this allows for a more detailed picture, it also complicates the methodological approach.

Table 2 reports some descriptive statistics for the coefficients of the determinants in the studies surveyed. The coefficients of the determinants of foreign currency loans seem to be rather similar despite differences in data types or the dependent variable (aggregate share of loans or share of respondents with a foreign currency loan). We have drawn three important conclusions from the descriptive evidence given in table 2. First, the average estimated coefficient for the interest rate differential over all 269 usable models is 0.001, which is surprisingly close to zero. Similar results are also valid for MVP and the exchange rate volatility. Second, there is a substantial variation within each sample and across the two subsamples. Third, an intriguing result from the descriptive evidence is that the share of significant coefficients in the studies surveyed is mostly around 50% or even lower for all determinants (with the exception of foreign currency deposits, where 76% of the coefficients are significant).

However, this descriptive discussion does not take the differences between studies explicitly and systematically into consideration. As the variation across subsamples of coefficients indicates, it could well be that the coefficients are influenced by certain specific characteristics of the individual studies and that correcting for these particularities leads to a more coherent picture. We turn next to this issue.

5 Metaregression Analysis: Results

Tables 3 and 4 present the results of the WLS and REML estimations of the metaregression model given by equation (3) for our seven most common determinants of foreign currency loans. Hence, we perform a separate metaregression for each of the seven determinants. We use robust standard errors clustered by individual studies in the metaregression estimates. The results are largely similar, but it seems that REML provides more reliable findings, as it accounts for variance both within and between studies. Hence, the REML results are our preferred estimates. However, we are mainly interested in the adjusted effect of the individual

determinants of foreign currency loans, which is shown by the intercept of the metaregression. In addition, we also discuss the impact of the included control variables as described in the annex on the performance of the metaregression.

We start by estimating equation (3) for all seven determinants separately by applying the REML approach (table 3) and by using WLS (table 4). In the case of WLS, we use the inverse standard errors of the coefficient estimates as weights. This means that more precise coefficients (i.e. coefficients with smaller standard errors) receive a larger weight in the regression (table 4).[14]

The interest rate differential is commonly viewed as the major explanatory factor of foreign currency loans on the demand side and is included in almost all studies (apart from only a few microeconomic estimations). Due to the larger number of observations of this coefficient (269), we initially expected the results to be more pronounced than for other determinants of foreign currency loans. Our findings confirm the descriptive results (see table 2), as the intercept in the metaregression remains positively signed as expected, although insignificant. Additionally, the interest rate differential might have played a more important role in the earlier years, as shown by a negative coefficient for the year of observation.

Table 3

Metaregression Estimates, Random Effect Maximum Likelihood (REML)

	Interest rate differential	MVP	Exchange rate depreciation	Exchange rate volatility	Inflation volatility	Inflation	Foreign currency deposits
Intercept	0.170	0.887 ***	–0.244	–0.340 *	10.342 ***	–0.007	0.747 ***
	(0.114)	(0.029)	(0.193)	(0.181)	(1.983)	(0.042)	(0.078)
Year of observation	–0.224 ***	–0.473 ***	0.151 **	–0.001	–2.846 ***	0.008	–0.132 ***
	(0.057)	(0.014)	(0.062)	(0.002)	(0.491)	(0.058)	(0.030)
Micro study	–0.389 ***		–0.691 **	0.110 ***	–6.207 **	0.265 ***	0.100
	(0.082)		(0.340)	(0.029)	(2.630)	(0.062)	(0.082)
Fixed effects	0.378 ***	0.001	–0.053	0.002	0.012	0.000	–0.303 ***
	(0.068)	(0.015)	(0.162)	(0.006)	(0.010)	(0.000)	(0.058)
Bias correction	0.026	0.005	–0.612 ***	0.532 **		0.037 *	–0.359 ***
	(0.067)	(0.012)	(0.138)	(0.263)		(0.020)	(0.119)
Hedging	0.008	0.018 ***	–0.340			–0.204	0.190
	(0.051)	(0.007)	(0.209)			(0.238)	(0.157)
EU enlargement	0.118 *		0.363		–0.452		–0.545 ***
	(0.064)		(0.310)		(1.942)		(0.133)
Postcrisis dummy	0.783 ***	1.863 ***	–0.433	–0.297			0.684 **
	(0.250)	(0.052)	(0.515)	(0.646)			(0.305)
CIS	–0.488 ***	–0.955 ***	1.116 ***	0.229			–0.229 ***
	(0.112)	(0.026)	(0.161)	(0.184)			(0.085)
No currency board	–0.016						
	(0.044)						
Latin America	–0.616 **		0.454	0.303	0.014 *	–0.053	–0.856 **
	(–0.251)		(0.461)	(0.646)	(0.007)	(0.345)	(0.328)
Observations	269	151	99	73	67	61	74
R^2	0.162	0.976	0.977	1.000	0.994	1.000	0.85

Source: Authors' calculations.

*Note: *(**)[***] stands for significance at the 10%(5%)[1%] level. Robust standard errors are clustered by study in brackets. The sample based is on the set of all estimates.*

[14] *We have tried different specifications of the metaregression and have also controlled for the inclusion of the other determinants in individual specifications in the papers (by including a dummy variable). These controls turned out to be broadly insignificant; hence, we have not reported them. It should also be noted that the papers surveyed tested broadly similar specifications.*

In turn, the dummy for the financial crisis has a positive and significant sign, hence implying that the effects of the financial crisis are rather unclear, because the crisis dummy and time trend (expressed by the year of observation) have different effects. Microeconometric studies generally report lower interest rate semielasticities than macroeconomic analyses. Overall, the low coefficient of determination (R^2) in the metaregression for the interest rate differential does not provide sufficient statistical evidence for a robust effect from this variable on foreign currency loans. This implies that, despite the widely received emphasis in the literature, interest rate differentials do not play a major role in the demand for foreign currency. Moreover, this result is irrespective of the applied meta-approach, as the WLS confirms the REML results. Moreover, as recent results of the OeNB Euro Survey show, a comparison of the perceived stability of the euro with that of the local currencies reveals that the euro is still "ahead" of the local currencies of the CESEE countries surveyed. Moreover, even after deterioration as a consequence of the recent economic and financial crisis, trust in the euro has rebounded, especially in the Southeastern European countries (Dvorsky, Scheiber and Stix, 2010). Hence, the sovereign debt crisis did not lead to a significant change in respondents' general perception of the euro as a "safe haven." It should be noted, however, that the latest developments in the euro area may have had an effect on this perception.

Jeanne (2005) and EBRD (2010) stress the importance of monetary credibility. Similarly, Ize and Levy-Yeyati (2003) show that foreign currency loans can be used to minimize the variance (i.e. the risk) of financial portfolios. Foreign currency assets receive higher weights in countries with unstable monetary conditions. The authors derive an optimum share of foreign currency loans and assets, which is determined by the covariance of inflation and real exchange rate volatility and the variance of both variables. In our meta-analysis, both approaches confirm that the MVP indicator is highly significant. Interestingly, as the CIS dummy shows, it might play a smaller role in former Soviet Union countries, which corresponds to the less developed financial markets in the region. Moreover, several papers use inflation and exchange rate volatility separately (e.g. Zettelmayer, Nagy and Jeffrey, 2010; Brown and De Haas, 2010). The estimations in table 3 and table 4 confirm the important role of inflation volatility, which is line with the lack of a monetary credibility argument as proposed by Jeanne (2005). However, the positive coefficients could be confirmed only for the larger sample including all coefficients (see tables 3 and 4). Hence, lower monetary credibility (as proxied by higher inflation volatility) is a robust determinant and imposes a positive effect on the demand for foreign currency loans. In turn, exchange rate volatility exerts a negative influence on foreign currency loans, although this determinant is only marginally significant in the REML estimations and highly significant in the WLS estimations. Overall, our findings confirm the validity of the minimum variance portfolio approach (see Ize and Levy-Yeyati, 2003). More specifically, the meta-regression results in the tables 4 and 5 detect inflation volatility as the more important driver of foreign currency loans. Furthermore, once we account for study-related and sample-related characteristics, the inflation rate and the exchange rate, though insignificant, tend to have the expected positive or negative impact on foreign currency loans.

Supply factors are often proxied for by the share of foreign currency deposits in total deposits. On the one hand, banks with high deposits in foreign currency have

Table 4

Metaregression Estimates, Weighted Least Squares (WLS)

	Interest rate differential	MVP	Exchange rate depreciation	Exchange rate volatility	Inflation volatility	Inflation	Foreign currency deposits
Intercept	0.194	0.880 ***	–0.323	–0.404 ***	10.814 ***	–0.034	0.205
	(0.154)	(0.011)	(0.248)	(0.026)	(0.008)	(0.038)	(0.216)
Year of observation	–0.098	–0.473 ***	0.161	0.008		0.054	–0.037
	(0.078)	(0.007)	(0.093)	(0.015)		(0.060)	(0.123)
Micro study	–0.098		–1.133 ***	0.085 **	–7.371 ***	0.334 *	0.586
	(0.078)		(0.161)	(0.030)	(0.003)	(0.134)	(0.407)
Fixed effects	0.051	–0.000	–0.003	0.001	0.017 **	–0.000	–0.035
	(0.036)	(0.000)	(0.004)	(0.004)	(0.006)	(0.000)	(0.049)
Bias correction	–0.021	0.000	–0.622	0.533 ***	0.000	–0.051	–0.544
	(0.048)	(0.000)	(0.377)	(0.038)	(0.000)	(0.118)	(0.408)
Hedging	–0.018	0.000 ***	–0.304		0.000	–0.503	0.091
	(0.014)	(0.000)	(0.250)		(0.000)	(0.399)	(0.344)
EU enlargement	–0.025		0.798 **		0.433 ***		–0.897 ***
	(0.023)		(0.266)		(0.001)		(0.001)
Postcrisis dummy	0.444	1.873 ***	–1.415 ***	–0.253 ***		0.000	0.828
	(0.336)	(0.018)	(0.365)	(0.024)		(0.000)	(1.016)
CIS	–0.204	–0.946 ***	1.140 ***	0.320 ***	–5.972 ***	0.000	0.036
	(0.146)	(0.012)	(0.215)	(0.062)	(0.000)	(0.000)	(0.114)
No currency board	–0.000			0.000	0.000	0.000	0.000
	(0.000)			(0.000)	(0.000)	(0.000)	(0.000)
Latin America	–0.368		1.412 ***	0.251 ***	0.016 ***	0.217	–0.827
	(0.312)		(0.366)	(0.036)	(0.002)	(0.355)	(1.016)
Observations	269	151	96	73	66	61	74
R^2	0.078	0.991	0.572	0.108	0.610	1.000	0.996

Source: Authors' calculations.

*Note: *(**)[***] stands for significance at the 10%(5%)[1%] level. Robust standard errors are clustered by study in brackets. The sample is based on the set of all estimates.*

an interest in shifting the currency risk to their customers. By contrast, Fidrmuc, Hake and Stix (2011) argue that a high share of deposits in foreign currency may reflect household preferences for savings in foreign currency if households face low monetary credibility. Actually, the MVP indicator is usually found to be highly correlated with the degree of deposits in foreign currency. Thus, deposit dollarization may likewise be seen as a factor related to monetary credibility in the CESEE economies. Our meta-analysis confirms that foreign currency deposits are, on average, a significant determinant of foreign currency loans. We also observe a positive time pattern, with an increase after the financial crisis. The positive sign is attenuated in studies including the former Soviet Union countries and the Latin American region. By contrast, the effects for studies accounting for selection methods, i.e. whether country, regional or individual fixed effects are included in the estimations, are negative, while survey-based studies usually attach a greater importance to deposit dollarization.

It seems that the publication bias does not play a significant role in our sample. Egger's publication bias test (results are available from the authors upon request) rejects the publication bias for all variables with the single exception of foreign exchange rate volatility. Moreover, the rejection of the null hypothesis of no publication test in this case seems to be caused by few outliers. Therefore, we do not extend our analysis to publication bias in this paper.

Table 5

Metaregression Estimates Based on Main Estimates, Random Effect Maximum Likelihood (REML)

	Interest rate differential	MVP	Exchange rate depreciation	Exchange rate volatility	Inflation volatility	Inflation	Foreign currency deposits
Intercept	0.276	0.891 ***	–0.646	–0.851 **	7.198	1.301	0.971 ***
	(0.241)	(0.042)	(0.591)	(0.395)	(12.621)	(6.299)	(0.054)
Year of observation	–0.450 ***	–0.476 ***	0.095	0.336	–2.690 ***	0.456 **	–0.165 ***
	(0.104)	(0.026)	(0.125)	(0.212)	(0.759)	(0.170)	(0.022)
Micro study	–0.540 ***		0.079	–0.531	–5.104	0.071	–0.095
	(0.166)		(0.637)	(0.425)	(7.894)	(6.264)	(0.065)
Fixed effects	0.578 ***		0.424	1.911 **	1.166	–1.112	–0.624 ***
	(0.162)		(0.705)	(0.897)	(6.113)	(6.293)	(0.044)
Bias correction	–0.009	–0.002	–0.793 ***	–2.732 **		–0.190	0.420 ***
	(0.178)	(0.044)	(0.267)	(1.135)		(0.149)	(0.047)
Hedging	0.004	0.022	–0.479			–1.864 **	–0.348 ***
	(0.139)	(0.018)	(0.475)			(0.681)	(0.057)
EU enlargement	0.218		–0.258		0.068		0.129
	(0.149)		(0.530)		(2.444)		(0.091)
Postcrisis dummy	1.511 ***	1.868 ***	0.628	0.668			–0.623 ***
	(0.477)	(0.085)	(1.084)	(0.941)			(0.044)
CIS	–0.849 ***	–0.968 ***	0.994 ***	–0.388	–5.358 ***		–0.061
	(0.253)	(0.046)	(0.354)	(1.388)	(1.518)		(0.041)
No currency board	0.009						
	(0.186)						
Latin America	–1.178 ***		–0.205	1.246	1.169	1.137 **	
	(0.420)		(0.743)	(1.401)	(6.113)	(0.509)	
Observations	104	37	55	45	38	24	39
R^2	0.122	0.970	0.624	0.000	1.000	0.980	1.000

Source: Authors' calculations.

*Note: *(**)[***] stands for significance at the 10%(5%)[1%] level. Robust standard errors are clustered by study in brackets. The sample is based on the set of estimates which are presented as preferred estimates or baseline estimates in the respective papers.*

In addition to the metaregressions based on the whole sample of estimates in each study, we also present the results based exclusively on the subsample of models that are reported as "preferred" or "baseline" specifications in the studies under scrutiny. As all studies present nearly 12 estimations on average showing contradicting results even within the same paper, the baseline results are assumed to have the largest validity. The results of the metaregressions for this subsample of estimates are presented in tables 5 and 6. The REML estimations confirm the important role of the Minimum Variance Portfolio indicator, the exchange rate depreciation volatility and the foreign currency deposits, while the other determinants are insignificant on average over all results. A striking difference to the previous results is the insignificance of the coefficient related to inflation volatility. The sign of the coefficient is still positive and the effect is slightly lower than the estimations in tables 3 and 4. The WLS results are again broadly in line with the REML results, although the inflation rate volatility is now insignificant and positive. Moreover, the results from both WLS and REML show that the effects of the three determinants found to be significant are even stronger for the "preferred" estimations.

It is rather difficult to assess the overall effect of all explanatory variables under a single best-practice approach (Havránek and Iršová, 2011), because the authors have different specification preferences. Several variables may be viewed as possibly important determinants of the financial behavior of firms, banks, and households,

Table 6

Metaregression Estimates Based on Main Estimates, Weighted Least Squares (WLS)

	Interest rate differential	MVP	Exchange rate depreciation	Exchange rate volatility	Inflation volatility	Inflation	Foreign currency deposits
Intercept	0.217	0.884 ***	–0.535 ***	–0.941	9.255	0.296 ***	0.642 ***
	(0.143)	(0.001)	(0.137)	(0.883)	(0.000)	(0.000)	(0.093)
Year of observation	–0.287 ***	–0.469 ***	0.099 **	0.387	–2.997 ***	0.456 ***	
	(0.082)	(0.004)	(0.035)	(0.560)	(0.000)	(0.000)	
Micro study	–0.287 ***		0.127	–1.152 ***	0.000	1.081 ***	–0.141
	(0.082)		(0.089)	(0.028)	(0.000)	(0.000)	(0.133)
Fixed effects	0.344 ***	0.000	0.268	1.835 **	0.700 ***	–0.106 ***	–0.565
	(0.050)	(0.000)	(0.463)	(0.560)	(0.000)	(0.000)	(0.156)
Bias correction	0.061	–0.007	–0.672	–2.846	7.932 ***	–0.190 ***	0.024 ***
	(0.063)	(0.006)	(0.407)	(1.734)	(0.000)	(0.000)	(0.000)
Hedging	–0.003	0.015 ***	–0.439 ***		0.000	–1.866 ***	–0.060
	(0.004)	(0.001)	(0.104)		(0.000)	(0.000)	(0.202)
EU enlargement	0.027		–0.337 ***	0.501	1.683 ***		–0.444 **
	(0.022)		(0.065)	(1.147)	(0.000)		(0.175)
Postcrisis dummy	1.035 **	1.849 ***	0.075	1.838 **	0.000	0.000	0.795 ***
	(0.371)	(0.011)	(0.275)	(0.560)	(0.000)	(0.000)	(0.133)
CIS	–0.545 ***	–0.960 ***	1.037 **	0.421	–8.705 ***	0.000	–0.164
	(0.160)	(0.001)	(0.389)	(1.651)	(0.000)	(0.000)	(0.165)
No currency board	–0.000		0.000	0.000	0.000	0.000	0.000
	(0.000)		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Latin America	–0.718 *		0.191	0.000	0.702 ***	1.134 ***	–1.359 ***
	(0.351)		(0.333)	(0.000)	(0.000)	(0.000)	(0.178)
Observations	104	37	52	45	37	24	41
R^2	0.211	0.997	0.599	0.342	0.575	0.419	0.956

Source: Authors' calculations.

*Note: *(**)[***] stands for significance at the 10%(5%)[1%] level. Robust standard errors are clustered by study in brackets. The sample is based on the set of estimates which are presented as preferred estimates or baseline estimates in the respective papers.*

but serious data problems preclude their widespread use in the empirical research. If they are burdened with a measurement error, their inclusion can actually cause the quality of final estimations to deteriorate. Nevertheless, the bias correction, the inclusion of fixed effects, and especially the impact of the financial crisis are generally considered to improve the estimations. Moreover, the microeconomic approach has gained importance and popularity recently, but only some variables reviewed in our meta-analysis are soundly defined from the microeconomic perspective. This includes especially foreign currency deposits and the interest rate, if data are available at the individual level. As the majority of the variables reflect macroeconomic developments, we can consider models based on macroeconomic data more appropriate for the meta-estimations.

While the specification of the metaregression reflects the preferences of the author of the meta-analysis, a comparison of several approaches shows that by and large, the meta-effects remain similar to the estimated intercept. In general, the methodological variables do not have large and significant effects. Moreover, these variables often work in different directions. More importantly, if the postcrisis period is also included in the analysis, the expected effects are generally strengthened and also statistically significant.

6 Summary and General Conclusions

Foreign currency loans have played an important role in the catching-up process in the majority of the CESEE countries and have gained growing attention from economic researchers in recent years. In particular, the financial crisis intensified the attention to the determinants of lending in foreign currency due to the negative impact of foreign currency loans on financial stability in the CESEE countries. Overall, we were able to find 16 studies on the determinants of foreign currency loans in the CESEE region. From these studies, we collected nearly 300 estimation equations providing roughly 800 coefficients on the seven most common determinants.

Furthermore, while the literature underlines the importance of foreign currency loans, it provides a highly ambiguous picture of their effective determinants. The foreign currency borrowing behavior of individuals and firms is determined not only by economic and monetary policies, but also by more general political developments, especially in CESEE countries, where accession to the European Union and/or to EMU is an important subject in the political agenda of governments. Additionally, once lenders get used to foreign currency deposits, it may take a rather long time to change their behavior again, which, in turn, indirectly impacts borrowing in foreign currency. Hence, both path dependence and expectations matter for the determination of the credit currency structure.

Interestingly, although several papers were published by high-ranking journals or working paper series with a strong policy impact, we can see that roughly half of the published coefficients are actually significant. Moreover, the economic significance of the coefficients differs widely. However, these differences are not so surprising if we consider the heterogeneity of analyzed data and the methods applied. The literature analyzes developments in highly heterogeneous countries, including EU Member States and Western Balkan countries or CIS states. Some studies also choose a more general focus and additionally include developing countries, especially from Latin America. Similarly, the level of data aggregation is highly different. Some papers look at the aggregate share of foreign currency loans, while others focus on borrowing by individual firms and households based on survey-level data.

Despite these differences, we try to identify common ground, using metastatistics and metaregressions. These tools allow us to find a more clear-cut picture behind various data effects. Thus, we demonstrate which explanatory variables appear as robust explanatory factors for foreign currency loans. Our results show that especially indicators related to portfolio behavior and monetary credibility play a robust role (EBRD, 2010). The implied shares of loans denominated in foreign currency according to the minimum variance portfolio approach and exchange rate volatility appear as significant determinants of foreign currency loans on average in all published studies. The same is also true of the degree of foreign currency deposits, with a similar interpretation as the minimum variance portfolio indicator, as the model of Ize and Levi-Yeyati (2003) is also valid for deposits in foreign currency.

However, we also show that several standard determinants play only a minor role in loan euroization. For example, foreign currency loans are often viewed as being a result of high domestic interest rates. In this view, borrowers take an excessive risk if they take out foreign currency loans and underestimate the danger

of exchange rate depreciation, but also if they react to the perceived lack of monetary credibility. We show that, on average, interest rate differentials do not influence the currency selection for loans. Thus, opting for foreign currency loans does not seem to be the result of blind greed on the part of borrowers in CESEE countries.

Additionally, we were able to show that exchange rate movements do not play a clear role in foreign currency loans. On the one hand, exchange rate depreciation (not its volatility) does not robustly influence the demand for foreign currency loans. While this finding corresponds to the previously mentioned weak results for interest rate differentials, it also shows that borrowers in the CESEE economies, despite their experience with the so-called trend appreciation before the financial crisis, may well underestimate the potential losses from depreciation. On the other hand, exchange rate volatility is the robust determinant in our meta-analysis. It is also a substantial component of the MVP indicator. Thus, borrowers seem to account for the exchange rate risk by trading it off against inflation rate volatility (i.e. a proxy for the monetary credibility), as shown by the robustness of the MVP indicator. A detailed analysis including a broader sample of countries with different experiences in terms of exchange rate trends could shed more light on this issue.

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Annex

Table A1

Definition of the Study-Related Variables Used in the Meta-Analysis

Control variables	Definition
Year of observation	Continuous variable measured as the deviation from the mean year of the period of observation
Micro study	Binary dummy: 1 if a study is based on survey data, 0 otherwise
Fixed effects	Binary dummy: 1 if a study accounted for either country or industry fixed effects, 0 otherwise
Bias correction	Binary dummy: 1 if a study accounted for either an estimation bias by instrumental estimation or selection correction (Heckman selection bias), 0 otherwise
Hedging	Binary dummy: 1 if a study accounts for remittances (in the case of households) or export activities (in the case of firms), 0 otherwise
Postcrisis dummy	Binary dummy: 1 if a study includes the time period after the outbreak of the recent economic and financial crisis (i.e. after 2008), 0 otherwise
CIS	Binary dummy: 1 if a study includes CIS countries, 0 otherwise
Latin America	Binary dummy: 1 if a study includes the Latin American countries, 0 otherwise
EU enlargement	Binary dummy: 1 if a study accounts also for the EU accession or euro adoption perspective, 0 otherwise
No currency board	Binary dummy: 1 if a study excludes countries that have currency board regime, 0 otherwise

Source: Authers' compilation.