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Determinants of Deposit and Credit Euroization in Eastern Europe: A Bayesian Model Averaging Evidence¹

Soňa KUKUČKOVÁ – Petr VANĚK – Petr KORÁB*

Abstract

The paper investigates the motives for deposit and credit euroization in Eastern Europe employing Bayesian empirical methodology. We analyse an extensive dataset of macroeconomic fundamentals, perception surveys and institutional quality indicators, and deal with the uncertainty in the model by Bayesian model averaging. Apart from traditional fundamental macroeconomic factors, strong institutions are found to be an important driver of both credit and deposit euroization. Business regulation, perception of corruption, quality of political arrangement and trade restrictions impact borrowing and saving behaviour in the euro and should be reflected in designing economic policies in the region.

Keywords: euroization, Bayesian model averaging, currency substitution, foreign currency borrowing, institutional quality

JEL Classification: E51, F02, P24

Introduction

Despite the existence of national currencies most non-Eurozone East-European countries are to some extent euroized in that households and enterprises borrow and keep part of their savings in Euro. This phenomenon is strongly persistent in the Balkan region where the euro is considered a stable and trustworthy currency. In 2012, 75% of bank deposits in Croatia and Serbia and 40%

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of deposits in Albania, Bosnia and Herzegovina, Bulgaria and Macedonia were denominated in euros (Brown and Stix, 2015). Similar features can also be identified in Armenia and Georgia, and to a smaller degree in Latvia and Lithuania (Ivanov, Tkalec and Vizek, 2011).

The existence of a large volume of foreign currency in the economy may pose serious challenges for proper monetary policy implementation. Foreign currency inflows outside the control of the monetary authority lead to weaker monetary transmission (Ize and Yeyati, 2005). This fact also implies potential problems associated with exchange rate risk. Due to balance sheet mismatches in the banking sector, exchange rate fluctuations have the potential to create credit quality shocks in euroized economies. The implications of such shocks on bank soundness and real activity could be severe in the case of a substantial currency depreciation (Kraft, 2003). Euroization increases financial sector fragility by exposing banks to currency risk or currency-induced credit risk (Brown and Stix, 2015). Foreign exchange interventions become less effective as well, because the greater substitutability between local and foreign currency assets weakens the portfolio channel (Daude, Levy and Nagengast, 2016).

In this paper, we explore the motives for deposit and credit euroization in Bulgaria, Romania, Hungary, Croatia and Serbia, analysing an extensive dataset of macroeconomic fundamentals, institutional quality indicators and perception surveys. We are contributing to the current literature on euro circulation in non-Eurozone economies in three ways.

The proper estimation of the demand function for a foreign currency in the domestic economy faces the problem of the choice of suitable regressors in the model. In our case, we lack an appropriate well-established economic theory to support the selection of regressors. We tackle this problem by using a Bayesian empirical framework. We reduce the uncertainty in the model specification by employing Bayesian model averaging (BMA) using the Magnus, Powell and Prüfer (2010) estimator. This approach has been widely used in empirical analyses of commercial banks' behaviour (Kapounek, 2017; Hasan, Horvath and Mares, 2016; Fidrmuc and Lind, 2018). The BMA methodology is particularly useful in the cases of the large number of regressors suggested by the literature (Koop, 2009).

Secondly, the empirical framework enables us to compile a dataset of both deposit and credit euroization using the same empirical framework analysing a large number of potential regressors. We analyse macroeconomic factors, a perception indicator about future economic conditions and special emphasis is put on the indicators of institutional quality. This overcomes the limitations of

some single-country studies analysing a narrow set of determinants (see Ivanov, Tkalec and Vizek, 2011; Chailloux, Ohnsorge and Vavra, 2010; Manjani, 2015).

Lastly, we focus on both deposit and credit euroization in the estimation. Commonly, the literature solely analyses either the deposit (Tkalec, 2013; Stix, 2008; Brown and Stix, 2015) or credit type of euroization (Chitu, 2012). Some of the few examples looking at both types are provided by Arteta (2005), Honig (2009), Basso, Calvo-Gonzalez and Jugilas (2011) and Ivanov, Tkalec and Vizek (2011).

The empirical results document that, apart from fundamental macroeconomic factors, quality of institutions impacts credit and deposit euroization. Business regulation, perception of corruption, quality of political arrangements and trade restrictions determine the structure of bank deposits and the credit portfolio in the national currency and in the euro.

The remainder of this paper is structured as follows. Section 1 presents the review of related literature. Section 2 presents the structure of the dataset. Section 3 introduces the Bayesian estimator and the empirical framework. Section 4 presents the Bayesian model averaging results. The robustness of the main results is discussed in section 5 and the last section is the conclusion.

1. Literature Review

This section outlines the economic importance of the selection of regressors for the empirical part of the paper. In the subsequent review we focus on the economic, international macroeconomic and institutional factors which determine saving and credit behaviour in a foreign currency in the local economy.

Saving in a foreign currency is strongly determined by the presence of exchange rate risk. Appreciation of the national currency decreases the value of savings in a foreign currency, on the contrary, depreciation leads to increased costs of financing credit in a foreign currency (Ivanov, Tkalec and Vizek, 2011; Brown and Stix, 2015; Tkalec, 2013).

Dollarization of liabilities is driven by the interest rate differential (Rosenberg and Tirpák, 2008). Demand for FX loans grows with a negative differential of foreign to local interest rate as borrowers attempt to reduce the costs of obtaining credit (Zettelmayer, Nagy and Jeffrey, 2010).

Rising unemployment indicates higher risk in the local economy and has a significant impact on volumes of both deposits and credits of households. The question of the effect of income on the degree of euroization has been widely discussed in the literature (Seater, 2008; Stix, 2008) with inconclusive results. Seater (2008) predicts a connection of the level of income and currency substitution

(substitution between the national currency and the euro) which is more likely among higher-income households than lower-income households, but the sign of the effect cannot easily be predicted.

High past inflation has a positive impact on credit dollarization (Honig, 2009). As households and firms do not believe in the value of their own currency, they try to mitigate risk for both loans and deposits, and thus demand for credits in euros increases. Similarly, a stable inflation environment is expected to reduce the volume of provided credit in euros (Lin and Ye, 2013).

International flows stimulate both saving and borrowing in foreign currencies. Rosenberg and Tirpák (2008) argue that remittances are negatively correlated with household FX borrowings. Likewise, in the case of FX loans remittances play an important role only in selected regions (Fidrmuc, Hake and Stix, 2013). Luca and Petrova (2008) and Rosenberg and Tirpák (2008) find that real openness of the economy positively impacts borrowing in foreign currencies.

Sound government quality and low policy risk are a precondition of long-run currency stability and therefore reduce unofficial dollarization (Honig, 2009). Government bond yield spreads reflect how financial markets perceive government policy and its sustainability. However, these spreads might be affected by some factors outside government control.

Households' perception of economic conditions drives their saving and credit behaviour. Beckmann, Scheiber and Stix (2011) show that households perceived FX loans as riskier during the recent financial crisis. In general, foreign currency loans are driven by households' lack of trust in the stability of the local currency and in domestic financial institutions (Fidrmuc, Hake and Stix, 2013).

Further, special emphasis is placed on indicators of institutional quality. Brzoza-Brzezina, Chmielewski and Niedźwiedzińska (2010) and Kapounek (2017) show that institutional features of bank lending may be an important factor influencing households' choice of currency and institutional quality related to globalisation, freedom, government spending, low corruption and low marginal tax rates impacts bank lending.

Hanousek, Shamshur and Tresl (2017) and Hanousek and Kochanova (2016) contributed to understanding of the effects of corruption environment on cash holdings, analysing cash in general without distinguishing between domestic and foreign currency

The economic downturn following the recent financial crisis reduced foreign currency borrowing, but there is some indication this effect might be only temporary (Fidrmuc, Hake and Stix, 2013). In Beckmann, Scheiber and Stix (2011) CESEE households reduce FX loans over the crisis, but they found FX deposits highly attractive.

2. Data

Our country-level dataset covers five countries in Eastern Europe. We focus on non-Eurozone EU countries (Bulgaria, Croatia, Romania and Hungary) and a non-EU country (Serbia) as possible future candidates for the Eurozone-membership. This group of countries is homogeneous in terms of institutional (non-Euro Area countries and post-transformation economies), as well as economic (comparable GDP per capita) and regional (Eastern and South-East European countries) patterns. Euroization in the sample group is not causing problems for economic stability, but both deposit and credit euroization have reached considerable levels.

Overall, we analyse 19 explanatory variables over the 2004Q1 – 2016Q4 period. There are three groups of variables in our dataset: macroeconomic fundamental variables, indicators of perception and institutional quality indicators. The economic importance of the variables that were selected for the empirical part of the paper has been outlined in the preceding section.

Macroeconomic fundamental variables include the bilateral exchange rate, interest rate differential, unemployment, policy risk as measured by 10-year maturity government bond yield spreads, inflation (HICP), remittances and the current account on the balance of payments, reflecting the openness of the economy.

The dataset is compiled from various sources, including the IMF, OECD, Eurostat, national central banks and national statistical offices (see the definition of variables in Table 3 in the Appendix for a detailed description and sources of data). The data on institutional quality indicators covers the Political Constraint Index, the Corruption Perception Index and selected components of the Heritage Index of Economic Freedom, Fraser's Economic Freedom of the World Index and the CSGR Globalisation Index. They include areas such as business regulations, trade, monetary and financial freedom, political constraints and corruption perception.

For the purposes of empirical analysis, data are transformed into yearly growth rates which take into account the differing construction of several explanatory variables. This method of data transformation also substantially reduced the problem of multicollinearity in our sample. A simple inspection of the pairwise correlation matrix also does not indicate endogeneity problems. Tables 4 and 5 (in the appendix) provide summary statistics and the correlation matrix.

3. Methods

Using our rich dataset, we estimate the following models:

$$credit_eur_{ct} = \sum_{m=1}^M macro_{ctm} + perception_{ct} + \sum_{i=1}^I institutions_{ict} + v_t + \varepsilon_{ct} \quad (1)$$

$$deposit_eur_{ct} = \sum_{m=1}^M macro_{ctm} + perception_{ct} + \sum_{i=1}^I institutions_{ict} + v_t + \varepsilon_{ct} \quad (2)$$

where the variable *credit_eur* represents credit euroization, measured as the bank credit in the EUR/overall volume of provided credit in all currencies, in country *c*, in time *t*, *deposit_eur* represents deposit euroization, measured as the commercial banks' deposits in the EUR/overall volume of bank deposits in all currencies, in country *c*, in time *t* and *macro* represents selected macroeconomic fundamentals *m*, in a country *c*, in time *t*.

The second variable, denoted by *perception*, represents the perception indicator of households about their future economic situation, in a country *c*, in time *t*. The last set of variables, *institutions*, includes determinants of institutional environment quality *i*, in a country *c*, in time *t*. Finally, we include time effects v_t and a residual ε .

We employ a Bayesian model averaging estimator introduced by Magnus, Powell and Prüfer (2010) to fit a classical linear regression model with uncertainty about the choice of the explanatory variables. This Bayesian estimator uses conventional non-informative priors on the focus parameters and the error variance, and a multivariate Gaussian prior on the auxiliary parameters.

The statistical framework is a linear regression model of the form:

$$y = X_1\beta_1 + X_2\beta_2 + u \quad (3)$$

where y is an $n \times 1$ vector of observations on the outcome of interest; the X_j , $j = 1, 2$, are $n \times kj$ matrices of observations on two subsets of deterministic regressors; the β_j are $kj \times 1$ vectors of unknown regression parameters; and $u \sim N(0, \sigma^2)$, an $n \times 1$ random vector of unobservable disturbances whose elements are independent and identically distributed.

The focus regressors X_1 contain explanatory variables that are preferred in the model for theoretical reasons or other considerations about the phenomenon under investigation. The auxiliary regressors X_2 contain additional explanatory variables with lower certainty of inclusion into the preferred model.

The BMA algorithm calculates $2k^2$ combinations to obtain an exact BMA estimate, where k refers to the number of explanatory variables. The unconditional BMA estimates are obtained as a weighted average of the estimates from each of the possible models in the model space with weightings proportional to the marginal likelihood of the dependant variable in each model.

Bayesian model averaging deals with uncertainty about the choice of the explanatory variables that is generated by the lack of a one-to-one link between theory and empirical model specification (De Luca and Magnus, 2011). The

Magnus, Powell and Prüfer (2010) estimator helps in cases of a lack of appropriate economic theory for functional model specification, since it calculates posterior inclusion probabilities for each explanatory variable to be included in the model, using the equation:

$$\lambda_i = p(M_i | y) = \frac{p(M_i)p(y|M_i)}{\sum_{j=1}^I p(M_j)p(y|M_j)} \quad (4)$$

where $p(M_i)$ is the prior probability of model M_i and $p(y|M_i)$ is the marginal likelihood of y given model M_i .

4. Results

Table 1 presents the results of Bayesian Model Averaging for deposit and credit euroization. The key BMA statistic is the posterior inclusion probability (PIP) which reflects the importance of each variable. We follow Campos, Fidrmuc and Korhonen (2017) and select the variables with a PIP > 0.5 as the determinants of euroization for the economic interpretation of results.

Our estimates (Table 1) are mostly in line with the expectations described in the section Data. We present evidence that inflation (measured by the HICP) positively impacts the ratio of deposits in euros. The reason for that can be found in Ize and Yeyati (2005), who claim that high inflation rates, which cause real exchange rate instability, encourage investors to save in a foreign currency. In that case, saving in a foreign currency provides more stable purchasing power. Therefore, higher inflation differentials followed by greater real exchange rate volatility lead to higher deposit euroization.

The second set of potential determinants of deposit euroization analysed by the BMA procedure are indicators of the quality of institutions. The business regulation indicator is constructed on the logic that the more widespread different regulations are mirrored in a lower value of the index (see Table 3 in the Appendix). The results in Table 1 indicate that lower regulation of the financial system stimulates saving behaviour in the local currency and decreases the deposit euroization. Lower price controls, bureaucratic costs and other administrative requirements motivate saving behaviour in the local currency and decrease the ratio of deposits in euros.

The trade freedom indicator, the extent of tariff and nontariff barriers affecting imports and exports of goods and services, has a positive sign in the deposit euroization equation. Freedom of trade increases FX deposits, which is in line

with Basso, Calvo-Gonzales and Jurgilas (2011). The decrease in FX borrowing in the time of the financial crisis is in accordance with Fidrmuc, Hake and Stix (2013).

Table 1

BMA Estimates of Deposit and Credit Euroization

Dependent variable	Deposit euroization		Credit euroization	
	Coeff.	PIP	Coeff.	PIP
Constant	-0.818 '(1.527)	1	-2.507 '(0.583)	1
Unemployment	-0.00012 '(0.049)	0.09	-0.003 '(0.016)	0.09
Exchange rate EUR	-0.126 '(0.248)	0.26	0.819 '(0.1)	1
Hicp	1.613 '(0.815)	0.87	-0.029 '(0.147)	0.1
Ir differential	0.0014 '(0.004)	0.16	0.00007 '(0.001)	0.07
Current account	-0.00003 '(0.001)	0.05	-0.001 '(0.001)	0.26
Remittances	-0.006 '(0.021)	0.13	0.001 '(0.005)	0.09
Policy risk	0.00026 '(0.002)	0.07	0.0002 '(0.001)	0.1
Perception	-0.00018 '(0.002)	0.06	-0.00015 '(0.001)	0.07
Political constraint	0.096 '(0.316)	0.14	0.172 '(0.22)	0.46
Business regulation	-0.916 '(0.757)	0.64	1.603 '(0.412)	0.99
Corruption perception	-0.002 '(0.003)	0.36	-0.007 '(0.002)	1
Government spending	0.013 '(0.05)	0.12	-0.008 '(0.024)	0.15
Financial freedom	-0.005 '(0.113)	0.11	1.354 '(0.165)	1
Trade freedom	1.182 '(1.005)	0.68	-0.008 '(0.102)	0.07
Monetary freedom	-0.012 '(0.286)	0.12	-0.034 '(0.118)	0.13
Social globalisation	-0.008 '(0.071)	0.07	0.046 '(0.1)	0.23
Er_dummy	0.001 '(0.007)	0.06	0.067 '(0.013)	1
Eu_dummy	0.001 '(0.015)	0.06	-0.113 '(0.022)	1
Crisis_dummy	-0.06 '(0.078)	0.43	-0.326 '(0.049)	1
No. of countries	5		5	
Observations	55		55	

Note: Standard errors in parentheses.

Source: Own calculations.

Consequently, we analyse the determinants of credit euroization using the same empirical framework (Table 1). We present evidence that the bilateral exchange rate tends to positively influence the ratio of loans in euro. Similarly, in Epstein and Tzanninis (2005) loans in the foreign currency appear to be highly sensitive over the long run to changes in the exchange rate.

Our results show a significant effect of constraints in the political arrangements on credit euroization. The Political Constraints Index reflects the importance of institutional checks and balances on the discretion of policy-makers for the stability of a policy and is focused on the structures of political systems (Henisz, 2004). The index score is higher when government branches are more independent (Hoffman, 2010).

Our results show that local political constraints increase credits in euros. One of the possible explanations could be the more complicated prediction of the political decision-making process on the domestic political scene, so that subjects could perceive FX loans as a stable option.

The perception of corruption has a negative effect on credit euroization. The indicator is constructed on the logic that 10 indicates very little corruption and a score of 0 indicates a very corrupt government. Thus, the negative sign hints at higher credit euroization for more corrupt environments, which is in line with our former expectation and other literature sources (e.g. Neanidis and Savva, 2009; Nicolo, Honohan and Ize, 2005).

Financial freedom is part of the Economic Freedom Index in the group of indexes indicating openness of the economy. The results indicate that higher financial independence from government control relates to more credits in euros. Our interpretation is based on the argument that households and firms have more opportunities to obtain loans in euros under these circumstances.

The exchange rate regime is also suggested to be in the preferred model estimated by BMA. We explain the positive correlation with credit euroization by the fact that households experience reduced exchange rate risk in taking credit in a foreign currency in pegged arrangements. We are in line with Fidrmuc, Hake and Stix (2013) showing that households' forward-looking assessments of the stability of the local and the foreign currency is an important determinant of loan demand for a foreign currency.

Similarly, financial crisis reduced foreign currency borrowing in our estimations. This finding is in line with several other studies (e.g. Fidrmuc, Hake and Stix, 2013). As with EU membership, we find a negative effect on credit euroization which we explain by rise in institutional and legal system quality and increased perception of the financial system stability after EU accession.

5. Robustness

The robustness of the preferred model estimated by BMA is controlled by pooled OLS (see Janků, Kappel and Kučerová, 2015; for a suggested robustness check). We split the full sample to two subsamples in order to check the robustness of the results. Table 2 presents OLS estimates of the regressors identified by BMA with a PIP > 0.5 for both deposit and credit euroization.

Table 2

Robustness of Main Results

	Deposit euroization			Credit euroization		
	Full	HU, BG, RO	BG, RO	Full	HU, BG, RO	BG, RO
Exchange rate EUR				0.539*** '(0.105)	0.688*** '(0.108)	0.416*** '(0.152)
Business regulation	-0.729*** '(0.204)	-1.099*** '(0.23)	-0.411 '(0.296)	-0.353* '(0.188)	-0.203 '(0.231)	-0.052 '(0.255)
Corruption perception				-0.004*** '(0.001)	-0.006*** '(0.001)	-0.003** '(0.001)
Financial freedom				0.424*** '(0.104)	0.494*** '(0.099)	-0.075 '(0.154)
Er_dummy				0.044*** '(0.014)	0.049*** '(0.014)	0.028* '(0.016)
Eu_dummy				0.017 '(0.015)	0.190*** '(0.056)	0.091 '(0.056)
Crisis_dummy				-0.099*** '(0.027)	-0.123*** '(0.029)	-0.034 '(0.038)
Hicp	1.414*** '(0.295)	1.796*** '(0.325)	1.638*** '(0.307)			
Trade freedom	1.537*** '(0.434)	1.866*** '(0.452)	1.956*** '(0.483)			
Constant	-1.250** '(0.605)	-1.609** '(0.621)	-2.230*** '(0.729)	0.496* '(0.279)	-0.025 '(0.335)	0.680* '(0.365)
Observations	114	88	53	113	89	53
R-squared	0.295	0.424	0.471	0.581	0.689	0.352

Note: BG, RO, HU denote Bulgaria, Romania, and Hungary, resp. Standard errors in parentheses, *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: Own calculations.

Our empirical results are mostly robust to estimation with a different method on different subsamples. The exceptions are business regulation and EU membership where our results are sensitive to the selection of empirical methodology.

Conclusions

We present evidence of the impact of quality of institutions, macroeconomic fundamentals and perception of future economic conditions on deposit and credit euroisation in five post-transition Eastern European countries. Because of the

lack of appropriate economic theory for specification of the demand function for the euro as a foreign currency, we estimate the empirical models by Bayesian Model Averaging using an extensive manually-compiled dataset.

The Bayesian estimates show that, aside from traditional macroeconomic fundamentals, quality of institutions impacts deposit and credit euroisation in Eastern Europe. Regulation of the business environment, corruption and the rule of law, quality of the legislative, executive and judicial branches of government, and trade restrictions impact the demand for euro deposits and credits. The empirical results are robust to a different estimation method.

The results of this study help in understanding drivers in post-transition Eastern Europe and prove that quality of the business environment and the level of corruption should be reflected in designing economic policies in the region. Supporting the strength of the institutional environment and reducing corruption is a necessary condition for improvement of trust in the national currency and reducing incentives for saving and borrowing in euros.

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Appendix

Table 3

Definition of All Analysed Variables

<p>HICP <i>Eurostat</i> <i>Statistic office of Serbia</i> <http://ec.europa.eu/eurostat/data/database></p>	<p>Inflation is measured by the Harmonised Index of Consumer Prices (HICP). It measures the change over time in the prices of consumer goods and services acquired, used or paid for by euro area households.</p>
<p>Exchange rate <i>Eurostat</i> <i>Official websites of local central banks</i> <http://ec.europa.eu/eurostat/data/database></p>	<p>Nominal bilateral exchange rate of national currency to euro. Period average.</p>
<p>Interest rate differential <i>Eurostat</i> <i>OECD: Main Economic Indicators</i> <i>IMF International Financial Statistics</i> <i>Czech national bank official website</i> <http://www.oecd.org/std/oecdmaineconomicindicatorsmei.htm> <http://ec.europa.eu/eurostat/data/database> <https://www.cnb.cz/docs/ARADY/HTML/index.htm> <http://www.imf.org/en/Data></p>	<p>Short-term interest rate differential (money market rates) between the local economy and the Eurozone.</p>
<p>Policy risk <i>Eurostat</i> <http://ec.europa.eu/eurostat/data/database></p>	<p>The 10-year maturity government bond yield spreads are calculated based on averaged daily data for the government bond yield spreads relative to the government bond yield in the country selected as a benchmark for the calculation (Germany for the 10-year maturity).</p>
<p>Remittances <i>IMF Balance of Payments</i> <http://www.imf.org/external/datamapper/datasets/BOP></p>	<p>Remittances in the category Current Account, Secondary income, Credit.</p>
<p>Current account <i>IMF Balance of Payments</i> <http://www.imf.org/external/datamapper/datasets/BOP></p>	<p>The current account on the balance of payments measures the inflow and outflow of goods, services, investment incomes and transfer payments.</p>
<p>Unemployment <i>Eurostat</i> <http://ec.europa.eu/eurostat/data/database></p>	<p>Seasonally adjusted unemployment rate.</p>
<p>Perception <i>Eurostat</i> <http://ec.europa.eu/eurostat/data/database></p>	<p>Perception indicator from surveys conducted among households. The question being asked is "How do you expect that the financial situation of your household will develop over the next 12 months? "</p>
<p>Trade freedom <i>Frazer Institute</i> <i>Economic Freedom of the World Index</i> <http://www.freetheworld.com/index.html></p>	<p>Trade freedom is a composite measure of the extent of tariff and nontariff barriers that affect imports and exports of goods and services. Higher score indicates more trade freedom.</p>
<p>Business regulations <i>Frazer Institute</i> <i>Economic Freedom of the World Index</i> <http://www.freetheworld.com/index.html></p>	<p>The index covers price controls, administrative requirements, bureaucracy costs, requirements for starting a business, extra payments (bribes) licensing restriction, and tax compliance. The more widespread different regulations are mirrored in a lower value of the index.</p>

Financial Freedom Comp. of Economic Freedom Index < http://www.heritage.org/index/explore >	Financial freedom is a measure of banking security as well as a measure of independence from government control on the scale • 100 – Negligible government influence; • 90 – Minimal government influence; • 10 – Near repressive; • 0 – Repressive.
Monetary Freedom, Comp. of Economic Freedom Index < http://www.heritage.org/index/explore >	Monetary freedom combines price stability (weighted average inflation for previous three years) with an assessment of price controls (a penalty up to 20% if price controls are important).
Government spending index Comp. of Economic Freedom Index < http://www.heritage.org/index/explore >	The government spending component captures the burden imposed by government expenditures, which includes consumption by the state and all transfer payments related to various entitlement programs.
Political constraint index V < https://mgmt.wharton.upenn.edu/profile/henisz/ >	The index measures various features of the legislative, executive and judicial branches of government. The central variables are indices that seek to estimate the degree of political constraints.
Social globalization Comp. of CSGR Globalization index < https://warwick.ac.uk/fac/soc/pais/research/researchcentres/csg/index/guide/variables/ >	The index covers 9 indicators, including e.g. number of tourists (arrivals plus departures) as proportion of total population, stock of foreign population as proportion of total population.
Corruption perception index <i>Transparency International</i> < https://www.transparency.org/research/cpi/overview >	The index is based on a 100-point scale in which a score of 100 indicates very little corruption and a score of 0 indicates a very corrupt government.
Exchange rate regime – dummy <i>International Monetary Fund</i> IMF Annual Reports	Dummy for exchange rate regime. Fixed/pegged exchange rate regime = 1, floating exchange rate regime = 0.
EU membership – dummy	Dummy for EU membership. 1 = membership in the EU.
Financial crisis – dummy	Dummy variable for the financial crisis. Definition based on the IMF's (2014): 25 Years of Transition Post-Communist Europe and the IMF, Regional Economic Issues Special Report. 1 = 2008 – 2013.

Source: Own calculations.

Table 4
Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Dependent variables					
deposit euroization	223	1.044	0.262	0.765	2.953
credit euroization	179	0.998	0.117	0.486	1.274
Macroeconomic factors					
unemployment	142	1.033	0.163	0.725	1.621
exchange rate EUR	142	1.025	0.053	0.913	1.209
HICP	179	1.012	0.084	0.640	1.136
current account	127	0.803	2.900	-25.744	13.077
remittances	142	1.084	0.359	0.265	2.380
ir differential	137	1.394	2.708	0.158	22.526
policy risk	142	1.392	2.164	0.107	19.386
Perception indicators					
perception fin. situation	120	0.701	2.356	-15.293	7.158
corruption perception	178	2.238	3.468	0.878	12.312
Institutional quality indicators					
political constraint	138	0.975	0.074	0.682	1
business regulation	154	1.005	0.037	0.897	1.093
government spending	210	1.039	0.272	0.354	2.416
financial freedom	210	0.999	0.063	0.833	1.4
trade freedom	154	0.998	0.020	0.945	1.055
monetary freedom	210	1.005	0.045	0.844	1.115
Dummy variables					
social globalisation	118	1.014	0.042	0.990	1.223
er_dummy	238	0.290	0.455	0	1
eu_dummy	238	0.609	0.489	0	1
crisis_dummy	238	0.504	0.501	0	1

Source: Own calculations.

T a b l e 5
Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 dep_eur																					
2 loan_eur	0.2483																				
3 unemploy	-0.2145	0.1501																			
4 erEUR	0.03	0.1969	0.0887																		
5 HICP	-0.5998	0.3742	-0.2108	-0.0061																	
6 current	0.0555	-0.0499	-0.032	0.0141	0.0786																
7 irdiff	0.2741	0.1921	-0.2331	0.0104	0.4799	0.0114															
8 policyrisk	0.0912	0.171	0.0017	0.2447	0.354	-0.0212	0.3178														
9 percept	-0.1339	-0.0527	-0.0777	-0.2977	-0.0026	0.0203	0.0389	0.0428													
10 polcon	0.0207	0.086	-0.0321	0.0726	-0.1197	-0.0575	0.1191	-0.0575	-0.1135												
11 breg	-0.2818	-0.5472	0.0808	-0.1094	-0.0575	-0.0608	0.01	0.092	-0.0033	-0.0904											
12 corrupt	-0.2398	-0.1724	0.0322	0.1347	-0.0588	-0.1241	-0.0009	-0.0352	0.0756	0.125	0.0314										
13 rem	-0.0185	0.0543	-0.045	0.1087	-0.0114	-0.0189	0.1415	0.0402	0.1586	0.143	-0.05	-0.0799									
14 govspend	-0.4407	0.0805	-0.0859	-0.2728	-0.2161	0.0026	-0.0131	-0.0753	-0.0182	0.182	-0.0702	-0.2914	-0.048								
15 finfree	0.5821	-0.055	0.2402	-0.0419	-0.4739	-0.0113	-0.1914	0.0768	0.0727	-0.0541	0.1551	0.0659	-0.404	-0.2418							
16 tradefree	0.1474	-0.1526	-0.0139	0.0376	-0.0233	-0.0314	0.0463	-0.07	0.053	-0.3428	0.092	0.0159	0.0756	-0.2014	-0.0931						
17 monfree	-0.0221	-0.2419	-0.0367	-0.0015	0.3971	-0.0722	-0.202	-0.1374	-0.1894	0.2851	-0.02	0.1919	-0.2515	-0.2234	-0.0077	-0.5612					
18 soeglobal	-0.1427	-0.0349	-0.0856	-0.0961	-0.1337	-0.5176	-0.0313	-0.0433	0.0283	-0.0878	-0.0668	0.4349	-0.0405	-0.1947	0.0208	-0.008	0.1532				
19 er_dummy	-0.0284	0.3021	-0.0097	-0.3425	0.0619	-0.1718	0.14	0.0683	0.1301	-0.1166	-0.2092	-0.0731	0.0229	0.1731	-0.1487	0.0429	-0.0885	0.2523			
20 eu_dummy	-0.1735	-0.0275	0.0183	-0.131	0.256	-0.0513	0.0943	-0.0341	-0.1165	0.269	-0.155	0.0073	0.089	-0.1229	-0.1604	-0.2384	-0.0018	0.1286	0.265		
21 crisis_dummy	-0.1479	0.2919	0.4504	0.2005	0.3876	-0.0705	0.0394	0.1561	-0.0459	0.3291	0.5174	0.2443	-0.0871	-0.0171	0.0186	-0.2159	-0.01	-0.118	-0.1813	0.0153	

Source: Own calculations.