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THE EUROIZATION OF BANK DEPOSITS IN EASTERN EUROPE

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The Euroization of Bank Deposits in Eastern Europe

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Summary

In Eastern Europe a substantial share of bank deposits are denominated in foreign currency. Deposit euroization poses key challenges for monetary policy and financial sector supervision. On the one hand, it limits the effectiveness of monetary policy interventions. On the other hand, it increases financial sector fragility by exposing banks to currency risk or currency induced credit risk. Policymakers disagree on whether Eastern European countries should tackle deposit euroization with "dedollarization" policies or should rather strive to adopt the Euro as their legal tender. Assessing the potential effectiveness of "dedollarization" policies requires a clear understanding of which households hold foreign currency deposits and why they do so.

Based on survey data covering 16,375 households in ten countries in 2011 and 2012, we provide the first household-level analysis of deposit euroization in Eastern Europe. We examine how households' preferences for and holding of foreign currency deposits are related to individual expectations about monetary conditions and network effects. We also examine to what extent monetary expectations, network effects and deposit euroization are the legacy of past financial crises or the outflow of current policies and institutions in the region.

Our findings suggest that deposit euroization in Eastern Europe can be partly tackled by prudent monetary and economic decisions by today's policymakers. The preferences of households for Euro deposits are partly driven by their distrust in the stability of their domestic currency, which in turn is related to their assessment of current policies and institutions. However, our findings also suggest that a stable monetary policy may not be sufficient to deal with the hysteresis of deposit euroization across the region. First, we confirm that the holding of foreign currency deposits has become a "habit" in the region. Second, we find that deposit euroization is still strongly influenced by households' experiences of financial crises in the 1990s.

1. Introduction

Policymakers and academics agree that the widespread euroization of bank deposits in Eastern Europe constrains domestic monetary policy and poses a major threat to financial stability (Levy Yeyati, 2006; Ranciere et al. 2010). However, they disagree on how best to deal with deposit euroization. International financial institutions, for example the EBRD and the IMF, emphasize the need to "dedollarize" the banking sector (e.g. Nagy et. al, 2010). Enhancing the credibility of domestic monetary policy is seen as a key step towards dedollarization (Kokenyne et al. 2010). By contrast, some policymakers in the region view deposit euroization as an inevitable heritage of past financial crises, and thus recommend a fast adoption of the Euro.[1]

Figure 1 here

In 2012, more than 75 percent of bank deposits in Croatia and Serbia and more than 40 percent of deposits in Albania, Bosnia and Herzegovina, Bulgaria and FYR Macedonia were denominated in foreign currency, predominantly the euro. Figure 1 shows that the share of foreign currency denominated deposits increased strongly in south-east Europe (e.g. Serbia, Albania, Romania, Bulgaria) during the financial crises of the 1990s and has remained high throughout the more recent financial and sovereign crises. By contrast, the share of foreign currency deposits has declined gradually in Central Europe (e.g. Poland, Hungary, Czech Republic).

What drives these large differences in the euroization of deposits across countries? Are households' expectations regarding future monetary conditions the main driver of foreign currency deposit holdings? If so, are these expectations affected by the recent track-record of

[1] In a recent interview the Governor of the Croatian Central Bank suggested that due to past financial crises and in spite of a stable monetary policy in recent years euroization in Croatia had become a habit which is not likely to change. He concluded that a full adoption of the Euro was likely to be more effective in dealing with deposit euroization than any policy to promote local currency holdings. http://www.nzz.ch/aktuell/wirtschaft/wirtschaftsnachrichten/der-euro-waere-mit-wenig-kosten-verbunden-1.18108415 (accessed September 6, 2013).

domestic policy makers or are they rooted in historical experiences of banking and currency crises? To what extent do habit or network effects, which are also possibly rooted in past financial crises, determine households' preferences for foreign currency deposits?

In this paper we use household-level survey data to clarify the drivers of deposit euroization in Eastern Europe, and to assess the potential effectiveness of dedollarization policies. We examine how the demand for foreign currency deposits is related to individual expectations about future monetary conditions as opposed to network effects. Motivated by the recent empirical research on the role of financial sophistication and financial decision making, we also examine to what extent financial literacy affects the demand for foreign currency deposits across households.

Our analysis is based on a representative household-level data set collected by the Euro Survey project of the Austrian central bank (OeNB). Since 2007 the OeNB has repeatedly carried out surveys among private individuals to collect information on the role of the euro in 10 Eastern European countries – the six new EU member countries Croatia, Bulgaria, Romania, Poland, Hungary, and Czech Republic as well as the four (potential) EU candidates Albania, Serbia, Bosnia and Herzegovina and FYR Macedonia. Our analysis focuses on the two surveys from fall 2011 and fall 2012 because they provide comprehensive information on the potential drivers of deposit euroization. Moreover, these two survey waves elicited information on the foreign currency deposit preferences of households, irrespective of whether they had savings in a deposit account or not. This information enables us to disentangle demand from supply effects of deposit euroization. Also, we obtain information on the demand for foreign currency deposits among the numerous households which have a bank account, but do not (currently) have savings in a deposit account.[2]

We report five main findings: First, we document that the euroization of deposits in Eastern Europe is demand-driven: Among households which have a savings account the share of foreign currency deposits coincides with stated preferences for foreign currency savings. Second, we show that deposit euroization at the household-level is strongly related to monetary expectations: Households which expect a depreciation of the local currency over the next year or who have little trust in the long-term stability of the local currency are more

[2] While 72% of the surveyed households have a transaction account with a bank, only 17% of households report that they hold savings in a deposit account.

likely to prefer foreign currency deposits. Exchange rate expectations have a stronger impact on deposit substitution in countries with a pegged currency, likely due to the fact that any depreciation in these countries would be severe. Third, we find that network effects strongly affect the preferences of households for foreign currency deposits: Conditional on their monetary expectations, households which report that foreign currency saving is common in their country are more likely to prefer foreign currency deposits themselves. Fourth, we show that financially sophisticated households are more likely to base their currency choice on monetary expectations. Finally, we document that deposit euroization in Eastern Europe is strongly influenced both by past financial crises as well as by current policies and institutions. The role of past versus current policies is surprisingly similar across household cohorts.

Overall, our results suggest that deposit euroization in Eastern Europe may be partly tackled by a stable monetary regime and sound economic policies of today's policymakers: deposit euroization is related to trust in the stability of the local currency, which in turn is influenced by households' assessments of current policies and institutions. Our results, however, also show that stable monetary policy is unlikely to be sufficient to deal with the hysteresis of deposit euroization across the region: we confirm that the holding of foreign currency deposits has become a "habit" and is still strongly influenced by the experience of financial crises in the 1990s.

2. Deposit Substitution: Theory and Evidence

The term dollarization - or in our case euroization – relates to the use of foreign currency as a medium of payments (*currency substitution*) and as a medium to store wealth (*asset substitution*). In this paper we examine the preferences of households for foreign currency savings accounts as opposed to local currency savings accounts. We relate this *deposit substitution* primarily to the motive of wealth storage and thus to *asset substitution*. However, the funds held in foreign currency savings accounts may also be used directly for payment purposes. Thus in the following we relate our analysis to the existing literature on both asset substitution and currency substitution.

2.1. Theory

Ize and Levy Yeyati (2003) provide a portfolio theory of asset substitution. They propose that – under the condition that the uncovered interest rate parity holds - risk-averse investors choose the currency composition of their assets and liabilities so as to minimize the variance of the real value of their net worth. Higher inflation volatility and lower volatility of the real exchange rate imply a higher share of foreign currency assets and liabilities in the minimum variance portfolio (MVP). The portfolio theory thus suggests that deposit substitution will increase if households expect higher volatility of domestic inflation *or* lower volatility of the real exchange rate. When the uncovered interest parity does not hold households deviate from the minimum variance portfolio: They increase the share of foreign currency assets and decrease the share of foreign currency liabilities as the real interest rate differential between the foreign and local currency widens.[3] The portfolio theory suggests that deposit substitution will increase if the expected real interest rate on foreign currency deposits rises compared to the real interest rate on local currency deposits. Thus - for given market deposit rates - households which expect higer domestic inflation and/or a stronger depreciation of the local currency will be more likely to prefer foreign currency deposits.

Broda and Levy Yeyati (2008) provide a market failure theory of asset substitution. In their model a positive correlation between exchange rate risk and default risk encourages banks to finance themselves with foreign currency deposits. They show that if there is asymmetric information about their currency exposure and government safety nets (i.e. deposit insurance) treat foreign currency and local currency deposits equally, depositors will accept lower real interest rates on foreign currency deposits than local currency deposits. In a further model of market failure Ranciere et al. (2010) show that implicit bail-out guarantees (e.g. the guarantee that the exchange rate of the local currency will not be allowed to depreciate) give incentives for debtors and creditors to write debt contracts in foreign currency.[4] Such implicit guarantees are likely to be stronger, the larger the share of domestic borrowers which hold unhedged foreign currency debt.[5] For deposit substitution, the market failure theories suggest a possible

[3] See Froot and Thaler (1990) for evidence on deviations from the uncovered interest parity.

[4] See also Schneider and Tornell (2004).

[5] Recent policy measures to protect foreign currency mortgage borrowers in Hungary provide an example of implicit bail-out guarantees for foreign currency borrowers. The experience of Latvia during the 2008/2009

role of network effects: Households with given expectations regarding monetary conditions will be more likely to choose foreign currency deposits if deposit substitution is widespread in the economy. This is the case because widespread deposit substitution enables monetary authorities to devalue the local currency without hurting domestic savers.

Currency substitution theories (e.g. Engineer 2000) suggest that agents choose the foreign versus local currency as a means of payment by trading off the purchasing power risk of local currency versus the transaction costs of using foreign currency. In these models foreign currency is more likely to be used as a medium of exchange if (i) the expected depreciation of the local currency is high, and (ii) the transaction costs of using foreign currency (counterfeit risk, currency conversion costs) are low. Craig and Waller (2004) show that due to network effects the transaction costs of using foreign currency versus local currency can be endogenous to the level of currency substitution. For deposit substitution these theories suggest that households which regularly use savings deposits for payment purposes will be more likely to hold their deposits in foreign currency if expected inflation and depreciation of the local currency is high and foreign currency is widely used as payment medium.

2.2. Evidence

Empirical evidence on the determinants of deposit substitution is scarce and mostly limited to aggregate data.[6] Ize and Yeyati (2003) examine aggregate data for 46 low-income, middle-income and upper income countries for the period 1990-1995. They provide evidence supporting the minimum-variance portfolio theory: The aggregate share of foreign currency

financial crisis provides an example of how widespread foreign currency borrowing may limit the ability to devaluate the domestic currency.

[6] By contrast, there is now ample research documenting the relevance of foreign currency deposits for foreign currency lending and thus for financial sector fragility, specifically in Emerging Europe. Luca and Petrova (2008) and Basso et al. (2011), examining aggregate credit dollarization for transition countries, document that countries in which banks have a higher share of foreign currency funding display a higher share of loans in FX. Brown and De Haas (2012) examine bank-level survey data from 20 transition countries and that banks with a higher share of foreign currency customer deposits lend more in foreign currency to firms and households. Brown et al. (2013c) confirm this result using administrative data from one Bulgarian Bank. Brown et al. (2011) and Fidrmuc et al. (2013) use survey data to provide firm-level and household-level evidence on the determinants of foreign currency borrowing in Emerging Europe.

deposits is positively related to inflation volatility and negatively related to real exchange rate volatility (see also Levy Yeyati, 2006). De Nicolo et al. (2005) examine a sample of 100 countries for the period 1990-2001 and confirm the impact of inflation and exchange rate volatility on aggregate deposit dollarization. In addition, they find that higher inflation levels and weak institutions (government efficiency, rule of law, corruption etc.) are associated with higher levels of dollarization. Brown et al. (2013a) examine the relation between regional consumer price inflation and financial dollarization within Russia. They match regional-level data on CPI inflation with data on the currency denomination of bank deposits and loans for 71 Russian regions over the period 2005-2008. They find that regions with higher local inflation experience a stronger dollarization of bank deposits.

Valev (2012) provides household-level evidence on the use of foreign currency as a means of payment in Eastern Europe. Using household survey data from Bulgaria in 2003 he finds that the use of the euro (rather than Bulgarian lev) as a means of payment is related to network effects rather than to expected currency depreciation. Using the same Euro Survey data as we use in this paper, Stix (2012) provides evidence on why households hold cash in foreign currency as opposed to domestic currency. In contrast to Valev (2012) these cash holdings are not necessarily confined to payments but also serve as a store of value. His results highlight both the role of network effects (i.e., households are more likely to hold cash in foreign currency if they report that payments in foreign currency are common) and of depreciation expectations.

2.3. Our contribution

We complement the above empirical literature by employing household-level data to study the determinants of foreign currency deposits in Eastern Europe. The use of household-level as opposed to aggregate data allows us to address a number of identification problems that are inherent in the latter: (i) Household-level data allows us to isolate the behavior of individual savers from that of firms. (ii) Household-level data also allow us to disentangle demand drivers of deposit dollarization from supply-side drivers. (iii) Household-level measures of monetary expectations and network effects enable us to accurately identify the main determinants of financial dollarization.

The use of household-level data also allows us to study heterogeneities in the preferences for foreign currency deposits across households: We can establish to what extent households' preferences for foreign currency deposits are related to household age and personal experience of past financial crises. We can also establish to what extent foreign currency deposit preferences are related to financial sophistication at the household level.

3. Data and Methodology

3.1. Empirical framework and hypotheses

The empirical framework for our analysis is presented in Figure 2. Based on the theories reviewed above we conjecture that household demand for foreign currency deposits (as opposed to local currency deposits) is directly affected by (i) monetary expectations of the household (exchange rate and inflation), (ii) network effects (the use of foreign currency as a means of storage or payment by other households), and (iii) selected socioeconomic characteristics of the household (income, risk tolerance, financial literacy).

We further conjecture that deposit substitution may be indirectly affected by household-level experiences of financial crises in the past as well as by the household's assessment of current policies and institutions. In particular, existing evidence suggests that monetary expectations, network effects as well as household preferences (e.g. risk tolerance) and socioeconomic characteristics (income sources, financial literacy) network effects may be influenced by past macroeconomic turbulence. Ehrmann and Tzamourani (2012) document hysteresis in monetary expectations of households.[7] Osili and Paulson (2014) show that households which have experienced a banking crisis in the past are less likely to use bank deposit accounts. Malmendier and Nagel (2010) document that households which have experienced macroeconomic downturns, are less risk tolerant and have a lower propensity to invest in financial markets. Employing the same survey data we use in this study Stix (2013) documents that memories of past banking crises and current trust in the banking sector affect the propensity of households to save in cash as opposed to with banks.

[7] Feige (2003) provides evidence for hysteresis of currency substitution in transition economies.

Figure 2 here

Based on this empirical framework we split our analysis into two sections: First, we examine to what extent deposit euroization in Eastern Europe is driven by individual monetary expectations, network effects and socioeconomic characteristics of the household. Second, we examine how past experiences of financial crises as opposed to the assessment of economic policies and institutions affect deposit substitution indirectly through monetary expectations and network effects. With respect to these questions we test the following two hypotheses:

Hypothesis 1: Households prefer foreign currency as opposed to local currency deposits if (i) they expect a depreciation of the local currency and or higher domestic inflation, and (ii) if they perceive that a larger share of other households in their country hold foreign currency deposits.

Hypothesis 2: Households which have experienced a financial crisis in the past and households that have a negative assessment of current policies and institutions are more likely to distrust the domestic currency.

Motivated by the recent literature on financial sophistication and financial decision making we further examine to what extent household education and financial literacy affect the demand for foreign currency deposits. Existing evidence suggests that financially literate households (or households with strong cognitive abilities) are more likely to hold more sophisticated financial assets (Van Rooij et al. 2011, Christelis et al. 2010) and are more likely to diversify their financial asset holdings (Guiso & Jappelli 2009).[8].

Financial sophistication may also affect the sensitivity of household currency choice to monetary expectations and network effects. First, the existing evidence shows that households

[8] By contrast, recent evidence (based on the same survey data we use) also documents that households which are literate with respect to the implication of exchange rate changes issues are less likely to choose foreign currency as opposed to local currency loans (Beckmann & Stix 2013).

with stronger numerical abilities are more likely to successfully process complex financial information and thus less likely to make financial mistakes (Agarwal and Mazumder 2013). In our setting, it is therefore likely that households with higher education and stronger financial literacy predominantly base their deposit currency choices on available and relevant financial information regarding future exchange rate developments. Second, Hong et al. (2004) show that social interaction does affect stock market participation and that this effect is stronger for the better educated and wealthy – i.e. financially sophisticated households. They argue that social interaction may affect investment behavior as (i) households learn about more complex financial assets and (ii) households draw utility from being able to "talk about" holding such assets. In our setting this would imply that the deposit currency choices of financial sophisticated households are more likely to be subject to network effects.

Based on the above evidence we derive our third empirical hypothesis:

Hypothesis 3: Financially sophisticated households, e.g. better educated and financially literate households, are more likely to hold foreign currency deposits. Moreover, the currency choice of financially sophisticated households is more sensitive to exchange rate expectations and network effects than that of households with less financial sophistication.

3.2. The Euro-Survey data

Our household-level data are taken from the Euro-Survey project of the Austrian central bank (Oesterreichische Nationalbank, OeNB) which collects information from private individuals about the role of the euro in ten Central, Eastern and Southeastern European countries.[9] Among the ten countries are six EU members states which are not part of the Euro-zone (Bulgaria, Croatia, Czech Republic, Hungary, Poland and Romania) as well as four (potential) EU candidate countries (Albania, Bosnia and Herzegovina, FYR Macedonia, Serbia). Within the Euro Survey project repeated cross-sectional surveys have been conducted since fall 2007. Our analysis focuses on the surveys from fall 2011 and fall 2012, for which survey instruments have been devised to elicit detailed information about deposit substitution and monetary expectations.

[9] Further details about the survey can be found at http://www.oenb.at/en/Monetary-Policy/Surveys/OeNB-Euro-Survey.html. (accessed March 25, 2014).

For each of the two survey waves we use face-to-face interviews that were carried out with roughly 1,000 randomly chosen respondents aged over 14 in each country.[10] For the estimations in this paper, we only use data for respondents above the age of 18 who are either employed, unemployed or retired. This restriction was chosen to make sure that the sample only includes respondents who face economic choices concerning savings decisions and leaves us with a sample of 16,375 observations. Due to missing information for selected household-level covariates the number of observations in each of our regressions deviates from this number.

The first section of the Euro Survey questionnaire elicits respondents' evaluations and expectations of the current and future economic conditions. From this section of the survey we take indicators of individual expectations regarding future monetary conditions as well as reported trust in the domestic vs. foreign currency. The second and third parts of the survey include questions about saving and borrowing activities of the household. From these sections we yield indicators of deposits in local and foreign currency. The remaining sections of the questionnaire gather information on (i) the role of foreign currencies for incoming and outgoing payments, (ii) personal experience of banking and currency crises, and (iii) indicators of financial literacy. From the survey we further use selected socio-demographic indicators (age, income, education, labor market status, region) to control for and study heterogeneity in the determinants of foreign currency deposits across household groups. All variables that are used in our empirical analysis are defined in Appendix A1, while Appendix A2 presents descriptive statistics. In the following we describe our main dependent and explanatory variables.

3.3. Deposit substitution

The Euro Survey provides us with two indicators of deposit substitution. The first indicator measures the share of foreign currency deposits among households which have savings deposits at a bank. Survey respondents are asked whether they personally (or jointly with a partner) have a current account (transaction account) and/or a savings deposit account

[10] Although details regarding sampling procedures differ across countries, nine countries employ multistage clustered random sampling. Only Bulgaria employs a quota sampling procedure.

(savings book, term deposit) with a bank. The overwhelming majority of the survey respondents are banked with 72 percent reporting that they have an account for transaction purposes. However, less than one in five respondents (17 percent) reports that they hold savings in a deposit account. Respondents who report a savings account are asked whether a share of the savings is denominated in foreign currency, and if yes, what share is denominated in foreign currency. The variable *FC deposit share* takes on the value 0-3 if the household reports that 0%, 1-40%, 41%-60%, 61%-100% of their savings deposits are held in foreign currency. Table 1 shows that 907 of the 2,798 respondents with a savings account (32%) report to hold at least part of these deposits in foreign currency. Among the households which do have foreign currency deposits, the median share of deposits held in foreign currency is 80%. These figures suggest that only few households diversify their deposits to a substantial degree between local and foreign currency.[11]

Table 1 here

Our second indicator of deposit substitution measures household preferences for foreign currency as opposed to local currency deposits. All survey respondents were asked the following hypothetical question: "*Suppose you had [an amount of about two average monthly wages in local currency] to deposit in a savings account. Would you choose to deposit this amount in … (a) [the respective local currency], (b) euro, (c) US dollar, (d) other foreign currency?*". The dummy variable *FC preference* takes a value of one if the respondent prefers any foreign currency and zero if the respondent prefers local currency.

Table 1 shows that 44% of all households in our sample respond that they would prefer foreign currency to local currency deposits. It is noteworthy that the share of households which prefer foreign currency is almost identical among households which have a savings account (43%) and households which do not have a savings account (45%). Importantly, among the households with a savings account stated preferences for foreign currency

[11] Households may of course diversify the currency composition of their total liquid financial wealth (cash + transaction accounts + deposit account) across local and foreign currency. See Stix (2013) for evidence on the use of cash vs. bank deposits as a means of storage.

correspond well with the actual holding of foreign currency deposits: Among households with foreign currency deposits 74% respond to the hypothetical question by preferring foreign currency deposits, compared to only 27% among households which hold only local currency deposits.

Figure 3 here

Our survey based indicators of deposit substitution provide a surprisingly accurate picture of aggregate foreign currency deposit holdings in Eastern Europe. Figure 3 plots the mean of the survey-reported *FC deposit share* (left panel) and *FC preference* (right panel) by country as reported in the survey against the aggregate share of bank deposits held in foreign currency as reported by national monetary authorities. The figure shows that both the share of foreign currency deposits and the stated preferences for foreign currency deposits are highly correlated with aggregate deposit substitution.[12]

Our measure of foreign currency deposit preferences (*FC preference*) has three main advantages over our measure of foreign currency deposit holdings (*FC deposit share*): First, it allows us to examine preferences regarding foreign currency deposits for all households rather than just the small share of those households with a savings account. Second, it provides us with an unbiased measure of household demand for foreign currency deposits, as opposed to the use of foreign currency savings accounts which may be affected by supply factors (i.e. differential minimum balances and fees for accounts in foreign currency). Third, relying on survey-reported savings behavior, rather than administrative data may lead to imprecise results as households do not accurately report their savings behavior. For example, households may underreport their savings if they are reluctant to disclose their wealth to strangers. Our hypothetical question on foreign currency preferences is less affected by disclosure issues than the question on savings incidence.

[12] In the right panel of figure 3 we use responses only for households which have a savings account so that the reported mean is representative for those households which are covered by the aggregate monetary statistics. The latter data are inherently based only on the sample of deposit account holders.

A drawback of the indicator *FC preference* is that it asks households to choose between either foreign currency deposits or local currency deposits. Thus, it does not precisely measure currency preferences for those households who wish to diversify between local and foreign currency deposits. However, Table 1 shows that few households in our sample who maintain deposit accounts do diversify between currencies. This finding suggests that despite its binary nature *FC preference* is unlikely to be plagued by considerable measurement error. Our main analysis is thus based on this indicator.

3.4. Monetary expectations and network effects

The Euro Survey provides us with a range of indicators for monetary expectations at the respondent level. We employ two indicators of medium-term exchange rate expectations. Each respondent is asked whether they think the respective local currency will depreciate, stay the same or appreciate against the euro over the next year. The dummy variable *Depreciation (1-year)* takes on the value 1 for households which report that they expect a depreciation of the local currency and 0 for households which expect no change or an appreciation of the local currency over the next twelve months.[13] Expected exchange rate volatility is elicited with the survey question "*How predictable do you think is the exchange rate of the [LOCAL CURRENCY] vis-à-vis the euro over the next 12 months?*" The categorical variable *Exchange rate unpredictable (1-year)* takes on values from 0 (very predictable) to 3 (very unpredictable). This indicator does not exactly reflect the theoretical concept of the real exchange rate volatility proposed by Ize and Levy-Yeyati (2003) as it measures nominal instead of real exchange rate volatility.[14] On the other hand, this survey based measure is superior to the use of volatilities derived from ex-post exchange rates because it is forward looking and it captures expected volatility even in countries with a currency board and in countries which have had a rather stable exchange rate.

[13] Similar information is available for expectations over the next four years. As all results are qualitatively similar to the one year-expectations we do not report estimates based on four-year expectations.

[14] This also reflects a balance between theoretical precision and what layman can understand, e.g. it would be very difficult to obtain a direct survey measure of real exchange rate volatility in a public opinion survey.

Our two measures of medium-term inflation expectations were elicited similar to those for exchange rates: The dummy variable *Inflation higher (1-year)* is a dummy variable which takes on the value 1 for respondents which expect inflation to increase over the next twelve months and takes on the value 0 for households which expect lower or similar inflation. The dummy variable *Inflation unpredictable (1-year)* takes on values from 0 for respondents who state that inflation is very predictable over the next 12 months to 3 for respondents who state that inflation is very unpredictable.

In addition to our indicators of medium-term monetary expectations, we employ two summary indicators of long-term monetary expectations. These indicators are based on questions which elicit sentiments towards the local currency and the euro respectively. The survey elicits the consent of respondents (on a 6-step Likert scale) to the following statement: "*Over the next five years, the [CURRENCY] will be very stable and trustworthy*". The categorical variable *Local currency unstable (5-year)* takes on values from 0 for households which disagree or strongly disagree to 2 for households which agree or strongly agree with this statement with respect to the local currency. The categorical variable *Euro unstable (5-year)* is defined similarly with respect to the Euro instead of the local currency.

Figure 4 presents the sample means by country for three indicators of monetary expectations: *Depreciation (1-year), Inflation higher (1-year)* and *Local currency unstable (5-year)*. Unsurprisingly, the figure shows that more households expects depreciations in countries with a floating exchange rate regime (e.g. Poland, Hungary, Romania, Serbia) compared to countries with a currency board or a quasi-peg (e.g. Bulgaria, Croatia). However, in line with previous evidence (Carlson and Valev 2008) the figure reveals that expectations of depreciations are prevalent even in countries that have maintained a very stable exchange rate or even a currency board. Figure 4 also shows that - across countries - our sentiment indicator of long-term monetary expectations (*Local currency unstable (5-year)*) is highly correlated with medium-term exchange rate expectations (*Depreciation (1-year)*).

With respect to inflation expectations the figure does not reveal any discernible differences in inflation expectations across exchange rate regimes. Somewhat surprisingly, the individual-level inflation expectations also do not indicate a marked difference for the countries that pursue an inflation targeting regime (Albania, Serbia).

Figure 4 here

The market failure theory of asset substitution and the currency substitution theory suggest that deposit substitution may be driven by network effects: First, the risk of a local currency depreciation is higher if more other households hold their savings in foreign currency. Second, the utility derived from using foreign currency for transactions increases with the share of other people using foreign currency.

We include an indicator for both types of network effects. Network effects with respect to asset holdings are derived from the consent to the statement that "*In [MY COUNTRY] it is very common to hold foreign currency deposits*". The dummy variable *Network savings strong* takes on the value 1 for respondents which strongly agree or agree to this statement (32% of our sample) and 0 otherwise. Network effects with respect to payments are derived from the consent to the statement that "*In [MY COUNTRY] it is very common to make certain payments in euro*". The dummy variable *Network payments strong* takes on the value 1 for respondents which strongly agree or agree to this statement (26% of our sample) and 0 otherwise.

3.5. Financial sophistication and socioeconomic controls

We use two indicators to measure financial sophistication at the household level. Our first indicator relates to the education level of the respondent. The dummy variable *Education high* takes on the value one for households with a higher than primary or lower secondary education. Our second indicator of financial sophistication captures the knowledge of three basic financial concepts: (i) compound interest (ii) inflation and real interest, (iii) depreciation.[15] The variable *Financial Literacy* takes on the value of 0-3 depending on the number of correct answers to the following three questions:

"*Suppose you had [100 LOCAL CURRENCY] in a savings account and the interest rate was 2% per year. Disregarding any bank fees, how much do you think you would have in the*

[15] The questions on compound interest and inflation correspond to those uses in several recent studies for OECD countries (see Lusardi and Mitchell 2011 for an overview) and transition economies (Beckmann 2013; Klapper & Panos, 2011).

account after 5 years if you left the money to grow? (More than 102 LC / Exactly 102 LC / Less than 102 LC / Do not know /No answer)".

"*Suppose that the interest rate on your savings account was 4% per year and inflation was 5% per year. Again, disregarding any bank fees - after 1 year, would you be able to buy more than, exactly the same, or less than today with the money in this account? (More / Exactly the same / Less / Do not know /No answer)*"

"*Suppose that you have taken a loan in EURO. Then the exchange rate of the [LOCAL CURRENCY] depreciates against the EURO. How does this change the amount of local currency you need to make your loan installments … (Increase / Stays the same / Decreases / Don't know / No answer)*"

The Euro-Survey further allows us to control for household-level socioeconomic characteristics which are likely to affect the demand for foreign currency deposits. Throughout our analysis we control for indicators of *Income* level, income source (*Self-employed, Remittances*) and asset holdings (*Homeowner*, *Car*). Moreover, we control for the *Age* of the household as well as a self-reported measure of risk tolerance (*Risk averse*). Definitions and summary statistics of all household-level control variables are presented in Appendix A1 and Appendix A2.

3.6. Crisis experience, current policies and institutions

Several of the countries covered by our sample experienced currency crises during the 1990s. For example, Bulgaria, Croatia, FYR Macedonia, Romania and Serbia all had CPI inflation rates of close to 100% (or higher) for at least one year between 1994 and 2001. Figure 5 shows that the instability of domestic monetary policy was associated with sharp depreciations of the respective currencies during the 1990s. The depreciations experienced by many countries in the recent financial crisis (2008-2012) seem by comparison rather mild. The monetary instability in Eastern Europe during the 1990s was accompanied by a wave of banking crises. Laeven and Valencia (2012) report a banking crisis for each country in our sample during that decade: Albania (1994), Bosnia and Herzegovina (1992-1996), Bulgaria

(1996-1997), Croatia (1998-1999), the Czech Republic (1996-2000), Hungary (1991-1995), FYR Macedonia (1993-1995), Poland (1992-1994) and Romania (1990-1992).[16]

Figure 5 here

The Euro-Survey provides several indicators of how households experienced the financial crises of the 1990s: All respondents are asked the following question: "*If you think back in time to periods of economic turbulences prior to 2008, e.g. very high inflation, banking crisis or restricted access to savings deposits. At that time did you personally incur a financial loss due to such events? …. And what about your close relatives. Did they incur a financial loss due to such events*?" The dummy variables *Crisis experience* is one for households which answer positively to the first question. The dummy variable *Crisis experience (relatives)* is one for those who report crisis experience of relatives but no personal crisis experience.[17] The survey further asks households whether they remember periods of high inflation and sharp devaluations of the local currency. The variable *Memory of Inflation* is a dummy variable which is 1 for all households which remember such episodes.

We use two indicators to capture the households' assessments of current government policies and institutions. The variable *Trust in government* is 1 for households which report that they completely or somewhat trust the government and 0 for households which do not trust the government. The variable *Economy better (5-year)* is 1 for households which agree to the statement that "over the next five years the economic situation of my country will improve".[18] We use this variable as an indicator of households' trust in (current and future) domestic economic policies.

De Nicolo et al. (2005) document that aggregate deposit dollarization across countries is correlated with the general quality of the institutional framework (rule of law, corruption).

[16] The database of Laeven and Valencia (2012) does not include Serbia.

[17] Almost all households who report own experience also report experience of close relatives.

[18] To make sure that we are measuring the respondent's outlook on the general economy and not just their personal situation the variable *Financial situation bad* controls for the household's (self-assessed) personal economic situation.

The Euro-Survey provides two indicators which allows us to capture the respondent-level assessment of broad institutional quality. The variable *Trust in police* takes on the value 1 of the respondent reports that he completely or somewhat trusts the police and 0 otherwise. The variable *Cash used to avoid taxes* takes on the value of 1 if the household responds that people in their country often use cash to evade taxes.

Our data suggests that our respondent-level indicators of past crises do reflect cross-country differences in past monetary performance: The share of respondents which report memories of inflation in our dataset is highest (above 70%) in Bulgaria, Macedonia, Serbia and Romania – all countries which experienced inflation rates close to (or exceeding) 100% during the 1990s (see Figure 5). By contrast, our subjective measures of institutional quality seem hardly correlated with external indicators of corruption and rule of law. For example, the mean value of *Trust in police* for our ten sample countries is not at all correlated with the 2011 corruption perception index published by Transparency International.

4. Monetary Expectations, Network Effects and Deposit Substitution

4.1. Monetary expectations and network effects

Table 2 reports our full-sample estimates of the relationship between deposit substitution, monetary expectations and network effects. In columns (1-3) of the table we report linear probability estimates for our preferred indicator of deposit substitution *FC preference*. In columns (4-6) of the table we present robustness tests, employing our alternative indicator of deposit substitution *FC deposit share*. Panel A reports estimates for our indicators of monetary expectations and network effects. Panel B reports estimates for our socioeconomic control variables from the same regression models. In all models we include fixed effects for each region * survey-wave so that our estimates capture how differences in individual monetary expectations affect household-level deposit substitution within a given economic environment.[19]

[19] The survey covers 75 regions in our 10 countries so that we can account for local economic conditions and the structure of the banking sector. Brown et al. (2013b) show that the use of financial services varies strongly across regions within countries of South-East Europe.

Table 2 here

Panel A of Table 2 documents that deposit substitution at the household level is strongly related to monetary expectations and network effects. The column (1) estimate for *Depreciation (1-year)* points to an economically relevant impact of individual exchange rate expectations: Households which expect a depreciation of the local currency within the next year are 10.3 percentage points more likely to prefer foreign currency deposits than households which expect a stable exchange rate or an appreciation of the local currency. By comparison the mean share of households which prefer foreign currency deposits in this sample is 48 percent. The column (1) estimates for *Exchange rate unpredictable* (1-year) suggest that – controlling for an expected depreciation - the predictability of the exchange rate does not affect deposit substitution.

The column (2) estimates in Table 1 suggest that inflation expectations hardly affect deposit substitution. The coefficients for *Inflation higher (1-year)* and *Inflation unpredictable (1-year)* are economically small and statistically insignificant. This result may seem surprising given the recent evidence which shows that inflation targeting reduces financial dollarization in emerging markets (Lin and Ye, 2013) and that regional variation in consumer price inflation affects deposit dollarization in Russia (Brown et al. 2013a). What our evidence suggests is that low inflation and inflation targeting may affect financial dollarization through their effect on expected exchange rates as opposed to their effect on domestic inflation per se.

The column (3) estimates for *Local currency unstable (5-year)* and *Euro unstable (5-year)* show that long-term trust in the stability of the local currency and the euro strongly affect deposit substitution. Households which view their local currency as not at all trustworthy over the next five years are 10.8 percentage points more likely to prefer foreign currency deposits than those which view their local currency as very trustworthy. Similarly, households which view the euro as not trustworthy over the next five years are 10.4 percentage points less likely to prefer foreign currency deposits than households which view the euro as very trustworthy.

In columns (1-3) of Table 2 (Panel A) the estimated coefficients for *Network savings strong* are positive, statistically significant and sizeable in terms of economic magnitude: Households which agree that it is common to hold foreign currency savings in their country

are 13 percentage points more likely to prefer foreign currency deposits than households. We take this as evidence that in addition to the role of monetary expectations (which we control for) there are strong network effects driving household demand for foreign currency as a medium of storage. [20]

The insignificant estimates for *Network payments strong* suggest that transaction costs in payments do not affect the demand for foreign currency deposits. This result is not that surprising seeing that *FC preference* captures households' preferences for storing a sizeable volume of wealth (two months average wage) which arguably exceeds households' requirements for regular payments. Valev (2012), by contrast, reports evidence suggesting that network effects in payments do affect the preferences of households for holding cash in foreign currency.

In columns (4-6) of Table 2 we examine whether the relation between monetary expectations, network effects and deposit substitution is confirmed in estimates of actual foreign currency deposit holdings for those households which have a deposit account (*FC deposit share*). The results displayed in Panel A of the table suggest that this is the case. The estimated coefficients for *Depreciation (1-year)* and *Local currency unstable (5-year)* are statistically significant and economically large, confirming that medium term and long term expectations regarding local currency stability affect deposit substitution. The positive and significant coefficient for *Network savings strong* confirms that deposit substitution by individual households is associated with the perceived use of foreign currency savings in the country.

In Appendix A3 we report robustness tests of our Table 2 results. In columns (1-4) we verify that the linear probability model is appropriate for the estimation of our binary dependent variable *FC preference* by replicating the analysis with a non-linear (probit) model. In columns (5-8) we verify that the linear model is appropriate for our ordinal dependent variable *FC deposit share* by replicating the analysis using an ordered probit model. We find

[20] In unreported robustness tests we show that the estimated coefficient for *Network savings strong* is robust when estimated in the sample of households which do not have a savings account. This finding suggests that the positive correlation between *Network savings strong* and *FC deposit preference* is not driven by a self-serving bias.

that the estimates from the probit and ordered probit models confirm those from the linear probability model employed in Table 2.

4.2. Financial sophistication and socioeconomic controls

Panel B of Table 2 reports the estimates for our socioeconomic control variables. The results suggest that the demand for foreign currency deposits is strongly related to household income sources and income levels. Incoming payments in foreign currency are strongly correlated with deposit substitution. The regular receipt of cross-border *Remittances* increases preferences for foreign currency deposits by 11 percentage points (columns 1-3). This significant effect of remittances is confirmed in our estimates of shares of foreign currency deposits among those households with a deposit account (columns 4-6). Self-employed households and households with higher income (including those who do not report their income) are also more likely to prefer / hold foreign currency deposits. We also find some evidence that households with higher wealth (as proxied by *Car* ownership) are more likely to hold foreign currency deposits.

The Panel B estimates also document a non-linear relationship between household age and preferences for foreign currency deposits: the estimate for *Age* is significant and positive, while the estimate for *Age squared* is significant and negative. The magnitude of the two coefficients suggest that the marginal effect of age on preferences for foreign currency deposits is positive for respondents of age 18-66 and negative for older respondents. We find no evidence for an association between self-reported risk preferences (*Risk averse*) and preferences for foreign currency deposits.

In Panel B of Table 2 we find mixed evidence for an association between deposit substitution and financial sophistication of the household. Households with high levels of education are 3 percentage points more likely to prefer foreign currency deposits than households with low education levels (columns 1-3). However, we find no correlation between *Financial Literacy* of the household and preferences for foreign currency deposits. The latter result is surprising given that several recent studies have documented a positive correlation between financial literacy and the use of more sophisticated financial products (Van Rooij et al. 2011), financial diversification (Guiso and Jappelli, 2009). Table 3 therefore explores the relation between financial sophistication and deposit substitution in more detail.

Table 3 here

As a benchmark for our investigation into the role of financial sophistication, column (1) of Table 3 replicates the column (1) estimates of Table 2. In column (2) of Table 3 we then drop household-level indicators of monetary expectations. The reason for doing this is that the column (1) estimates omit a large number of respondents (1,613) who did not answer the questions on monetary expectations. Our data shows that these households are significantly less financial sophisticated (as measured by *Financial literacy*), so that the column (1) results may be subject to selection bias.[21] However, when we include these households in our sample, we still fail to find a significant correlation between financial literacy and foreign currency preferences.

In column (3-4) of Table 3 we examine to what extent financial sophistication of households affects the role of monetary expectations and network effects in shaping the demand for foreign currency deposits. We interact our indicators of monetary expectations and network effects with the variable *Financial Literacy* (column 3) and *Education* (column 4). We conjecture that the assessment of future monetary conditions will have a stronger impact on deposit substitution among financially sophisticated households than among less sophisticated households. The column (3-4) estimates show that this is the case: The estimated coefficient *Financial Literacy * Depreciation (1-year)* is positive and significant in column (3). The magnitude of the interaction term suggests that the impact of an expected depreciation of foreign currency preferences is three times higher among households with a financial literacy score of three than among households with a financial literacy score of zero (14.6 vs. 4.1 percentage points). In line with this finding the column (4) results show a positive and significant estimate of the interaction term *Education high * Depreciation (1-year)*. The column (3) results also show that exchange rate volatility (*Exchange rate*

[21] Respondents who did not answer the questions on exchange rate expectations gave, on average, 1.27 correct answers to the three literacy questions. The respective number is 1.77 for respondents who did answer the questions on exchange rate expectations. This difference is statistically significant with a p-value of less than 0.01.

unpredictable (1-year)) impacts stronger on deposit substitution among financial literate households.

The evidence by Hong et al. (2004) on social interaction and household investment behavior suggests that the role of network effects in deposit substitution may also be stronger among the more financially sophisticated households. However, our column (3-4) estimates in Table 3 do not show a stronger impact of network effects among more financially sophisticated households. The estimated coefficient for the interaction term *Network savings strong * Financial Literacy* (column 3) and *Network savings strong * Education* (column 4) are both economically weak and statistically insignificant.

4.3. The role of the exchange rate regime and aggregate euroization regime

In this section we examine whether the impact of monetary expectations and network effects on deposit substitution documented in our full sample (see Table 2) varies according to the exchange rate regime of a country and the degree of aggregate euroization within the country. It is likely that the impact of exchange rate expectations on deposit substitution differs between countries with flexible exchange rates as opposed to countries with a pegged currency: In countries with a pegged currency the likelihood of depreciation is lower than in countries with a flexible exchange rate (see Figure 4). However, the magnitude of a depreciation is potentially larger for pegged currencies if a depreciation does take place. We therefore conjecture that the impact of an expected depreciation on deposit substitution should be stronger in countries with a pegged exchange rate than in countries with a flexible exchange rate.

Our sample covers six countries with flexible exchange rates (Albania, Czech Republic, Hungary, Poland, Romania and Serbia), while four countries maintain a currency board or a (quasi-)peg (Bosnia and Herzegovina, Bulgaria, Croatia and FYR Macedonia). In Table 4 we replicate our analysis in Table 2 separately for these two sets of countries. As Table 2 shows that inflation expectations do not affect deposit substitution we limit our analysis to medium term exchange rate expectations (*Depreciation (1-year), Exchange rate unpredictable (1-year*) and long-term trust in the stability of the local and foreign currency (*Local currency unstable (5-year), EURO unstable (5-year)*).

Table 4 here

The Table 4 results show that monetary expectations affect deposit substitution both in countries with flexible exchange rates (columns 1-2) and countries with pegged exchange rates (columns 3-4). However, an expected depreciation of the local currency has a much stronger impact on deposit substitution in countries with pegged currencies. Comparing the point-estimates of *Depreciation (1-year)* in column (1) to that in column (3) we see that an expected depreciation increases preferences for foreign currency deposits more than twice as much in countries with a peg (16 percentage points) than in countries with a flexible exchange rate (6 percentage points).[22] Thus while less households expect a depreciation in countries with a peg (see Figure 4), those which do expect a depreciation are much more likely to substitute local for foreign currency deposits. It is often argued that policy makers in highly euroized economies which have a (quasi)-peg in place are constrained in the choice of the exchange rate regime. Any deviation from a peg would result in a strong shift towards foreign currency assets. Our results provide support for this view.

In columns (5-8) of Table 4 we conduct separate estimates for countries with a low level of euroization (Czech Republic, Hungary and Poland) and countries with a high level of euroization (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, FYR Macedonia, Romania and Serbia). We are particularly interested in whether the strong network effects identified in our full sample estimates (see Table 2) are independent of the aggregate level of euroization in a country. We find that the estimates for *Network savings* are equally strong in low-euroization countries as they are in high-euroization countries. This finding confirms our interpretation that the variable *Network savings* captures habit effects based on individual experience and is not just a proxy for country-wide financial dollarization.

5. The Role of Past Crises, Policies, and Institutions

Our results so far provide evidence for the portfolio theory and market-failure theory of deposit substitution: household-specific exchange rate expectations as well as network effects

[22] A Chow test rejects the hypothesis that the estimated coefficient of *Depreciation (1-year)* is equal in column 1 vs. column 3 (as well as in column 2 vs. column 4).

strongly affect the demand for foreign currency deposits. In this section we turn to the second part of our empirical framework and examine how monetary expectations and network effects (i.e. the habit of saving in foreign currency) are related to individual experience of past financial crises as well as to respondents' assessments of current policies and institutions.

Table 5 here

In Table 5 we relate a measure of exchange rate expectations *Depreciation (1-year)* and network effects (*Network savings*) to indicators of crises experience (*Crisis experience, Crisis experience relatives, Memory of Inflation*) as well as the assessment of current government policies and institutions (*Trust in Government, Economy better, Cash used to avoid taxes*).

The column (1) estimates in Table 5 support the conjecture that hysteresis effects are present, i.e. that the experience of past financial crises has a persistent effect on exchange rate expectations of households. Respondents which personally incurred losses during crises in the 1990s are 5.1 percentage points more likely to expect a depreciation of the local currency over the next twelve months, while households which remember periods of high inflation are 5.7 percentage points more likely to expect a depreciation. Both of these effects are sizeable, given that 42 percent of the underlying sample expect a depreciation over the next year. The finding that only personal losses and not losses of close relatives affect current monetary expectations suggest that our measures of crisis experience are not just picking up a general negative attitude towards past and current economic conditions.

The column (1) estimates show that household-level trust in current policies and institutions also strongly affect monetary expectations. Households which trust their government are 4.7 percentage points less likely to expect a depreciation over the next twelve months . Households which expect the economic situation in their country to improve over the next 5 years are 10 percentage points less likely to expect a depreciation.

The column (2) results in Table 5 suggest that personal experience of past financial crises hardly are unrelated to households' perceived use of foreign currency savings in their economy. Neither a respondent's personal *Crisis experience* nor his *Memory of inflation* are

related to with *Network Savings*. Interestingly, though we find that households which report a distrust in their country's institutions (as proxied by their assessment of whether it is common to use cash to evade taxes) are also more likely to report that foreign currency savings are common.

The column (1) results of Table 5 confirm that the monetary expectations of households are correlated with past financial crises, current policies and institutions. This finding raises the question of whether our initial estimates of the impact of monetary expectations (and network effects) on deposit substitution (see Table 2) are subject to an omitted variable bias: The estimated impact of expected depreciation on foreign currency deposit preferences may actually be driven by the (in Table 2 omitted) effect of past financial crises. In column (3) of Table 5 we account for possible omitted variable bias by estimating an enhanced model: We add our indicators of past crises, current policies and institutions to our initial specification in column (1) of Table 2.

The regression results for the enhanced model in column (3) of Table 5 suggest that our initial estimates of the role of monetary expectations and network effects are hardly subject to omitted variable bias: The estimated coefficients for *Depreciation (1-year)* and *Network savings strong* are of a similar economic magnitude and statistical precision as those reported in Table 2. The results however also reveal a significant and economically relevant effect of *Crisis experience* and *Trust in government* on foreign currency deposits, even after controlling for our indicators of monetary expectations and network effects. This finding stands in contrast to our empirical framework presented in Figure 2, which does not account for a direct effect of past crises or institutions on deposit substitution. One explanation for this finding is that our measures of monetary expectations, network effects and relevant household characteristics (risk aversion, financial literacy) are imprecisely measured and correlated with these "background" variables.

We conclude our analysis with an examination of how the determinants of deposit substitution vary across household cohorts. Is the impact of past financial crises and network effects on deposit substitution stronger among older cohorts, while current policies and monetary expectations have a stronger effect among younger cohorts? If so what does this imply for the policy alternatives of policy makers in the region? In columns (4-7) of Table 5 we estimate our enhanced model (see column 3) separately for young vs. older cohorts. In columns (4-5) the sample is split based on the median age of respondents in each country. In

columns (6-7) we split households based on whether they were younger or older than 24 in the year that the country last experienced a monetary crisis.[23]

Surprisingly, the results displayed in columns (4-7) of Table 5 show that the determinants of deposit substitution hardly vary between cohorts. Monetary expectations and the assessment of current policies seem to be just as important determinants of deposit substitution among the old as they are among the young: The positive coefficients for *Depreciation (1-year)* and negative coefficient for *Trust in government* are similar in terms of statistical significance and economic magnitude among young and older households. Moreover, network effects and crisis experience do not impact stronger on deposit substitution for older households compared to younger households. The positive coefficient of *Network savings* is almost identical across all four columns. Moreover, the positive coefficient of *Crisis experience* does not differ significantly between young and old households.[24]

6. Policy Conclusions

Policymakers agree that the euroization of bank deposits in Eastern Europe hinders effective monetary policy and increases financial sector fragility. However, they have divergent views on how best to deal with deposit euroization in the region. Some emphasize the need for "dedollarization" and see a credible monetary policy regime as the path to reducing deposit euroization. Others view deposit euroization as an inevitable heritage of past financial crises, and thus embrace a full adoption of the euro.

Our findings suggest that deposit euroization in Eastern Europe can be at least partly be tackled by prudent monetary and economic policy— We show that the demand of households for foreign currency deposits is at least partly driven by a distrust in the stability of their domestic currency. Monetary expectations, in turn, are related to household trust in the policies and institutions of their country. Both can be influenced by policymakers. Our findings are comforting in light of the recent experience in Argentina where the surge in

[23] We define a year of monetary crisis as a year with CPI Inflation exceeding 20% (see Figure 5)

[24] Chow tests do not reject the hypothesis that the coefficients for Crisis Experience are identical in columns (4-5) and columns (6-7).

dollarization has been related to imprudent economic policy. Our results suggest that the impact of policy on dollarization may not only work one way.

However, our findings also suggest that prudent monetary policy may not be sufficient to achieve de-euroization across the region. We confirm that the holding of foreign currency deposits has become a “habit” in the region and that the financial crises of the 1990s continue to have a significant impact on monetary expectations and deposit substitution.

Can policymakers deal with this hysteresis effect by implementing targeted policies (e.g. financial and economic education)? Our results suggest that financial education may contribute to de-euroization in countries with prudent monetary policy: Financially literate households are more likely to base their choice of currency on monetary expectations.

Should policymakers just sit back and wait until the older generation which experienced the 1990s crises no longer account for the majority of bank deposits? Our results suggest that the widespread euroization of bank deposits is unlikely to die out as the banking sector becomes increasingly dominated by younger cohorts: The impact of network effects and past crises on foreign currency deposit demand hardly differs across cohorts.

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Figure 1. Deposit Substitution in Eastern Europe

The figure shows aggregate shares of deposits in foreign currency (in %) for private households (and non-profit organizations) in the 10 countries covered by the OeNB Euro-Survey over the period 1996-2012. Source: National central banks.

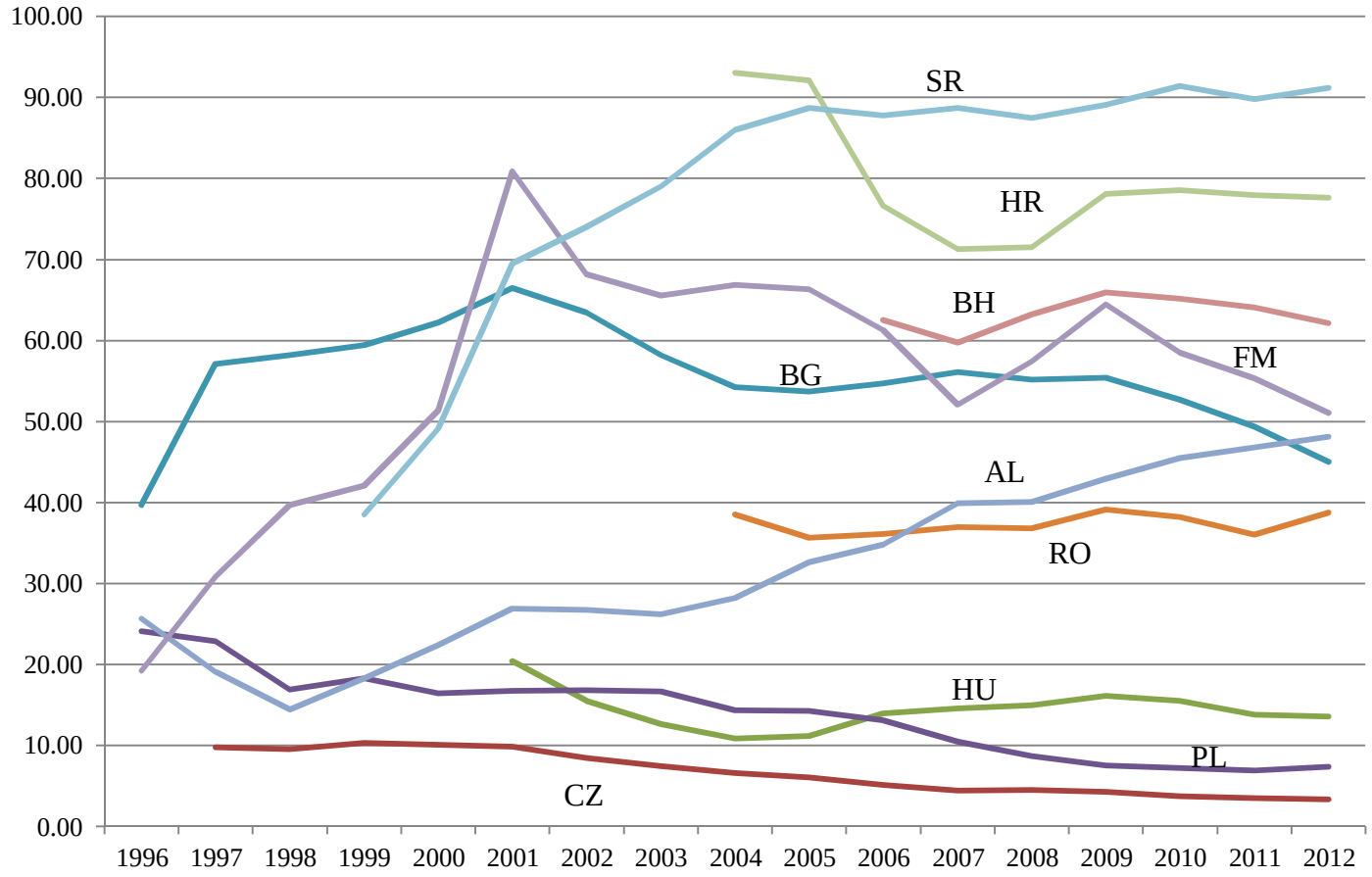


Figure 2. Empirical Framework

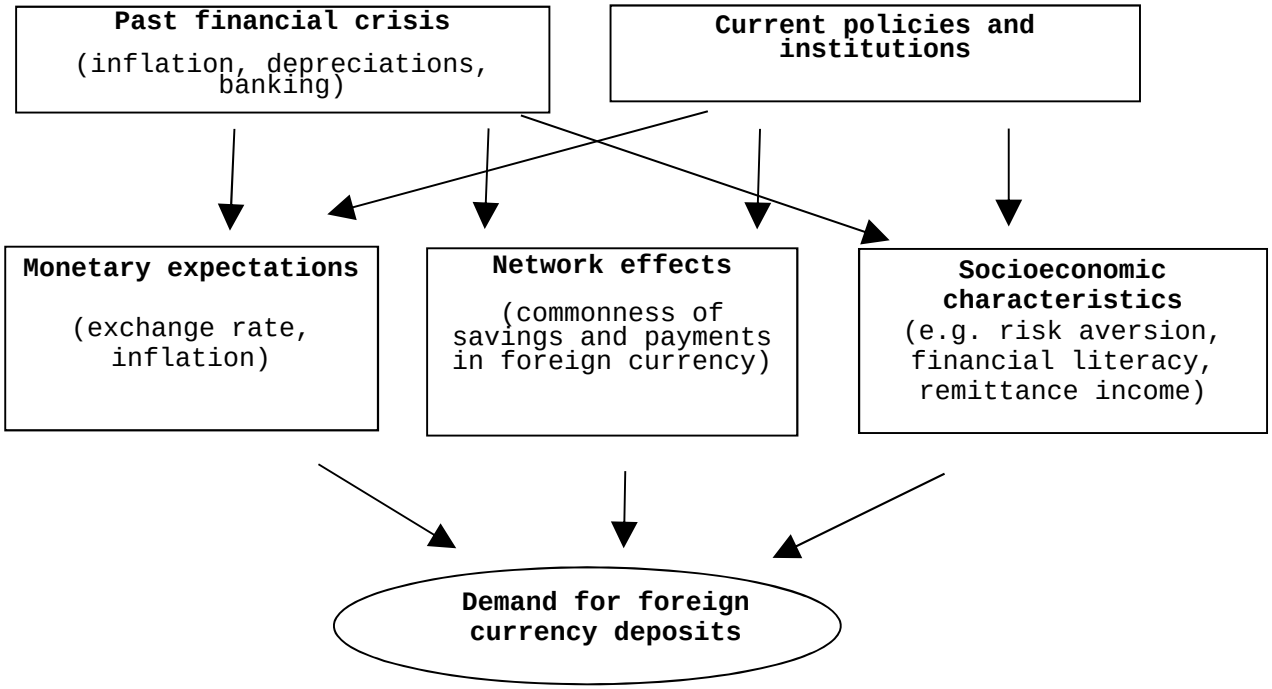
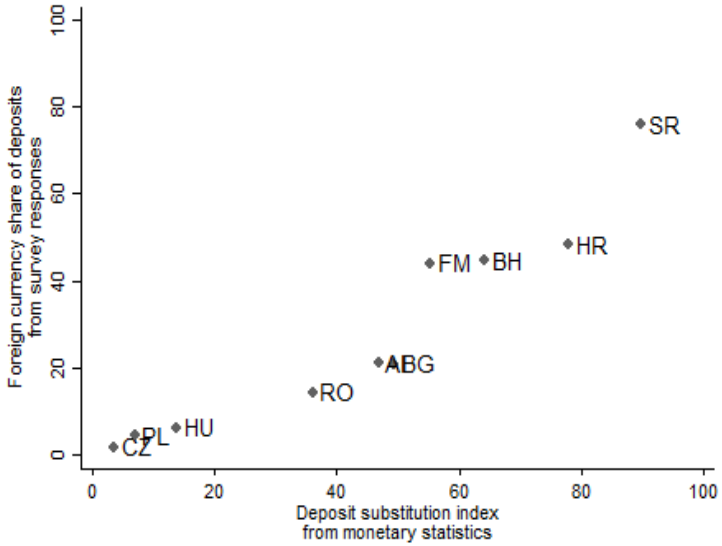


Figure 3. Deposit Euroization: Survey vs. Aggregate Data

The figure compares evidence on the share of foreign currency deposits and foreign currency preferences (among households with deposits) from the Euro-Survey to evidence on aggregate deposit substitution from monetary statistics. Source: OeNB Euro-Survey data from 2011 and 2012, the deposit substitution index is calculated from national central bank data for the year 2011.



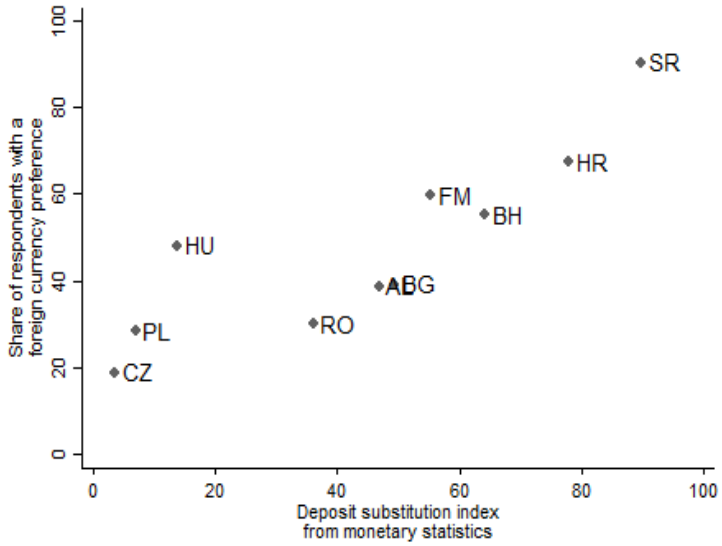
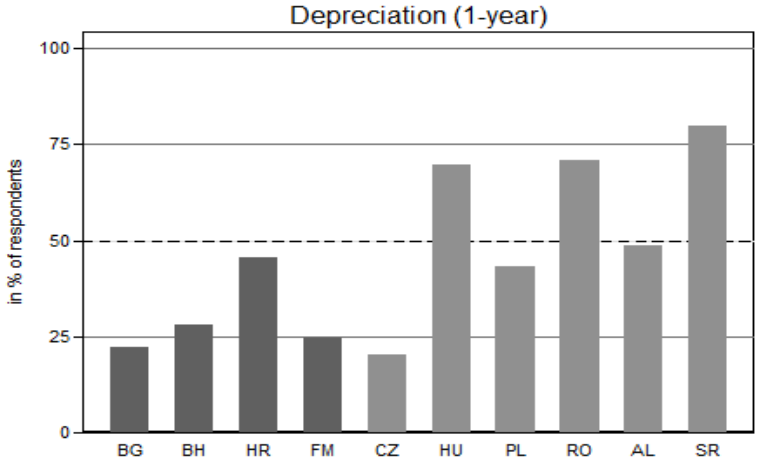
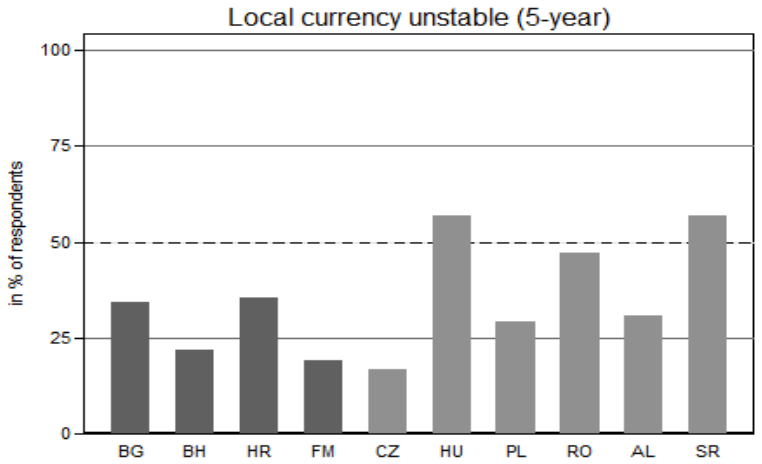


Figure 4. Monetary expectations

The figure displays mean exchange rate and inflation expectations by country. Countries are grouped according to exchange rate regimes (Floating vs. (Quasi-)Peg). Source: OeNB Euro-Survey data from 2011 and 2012.





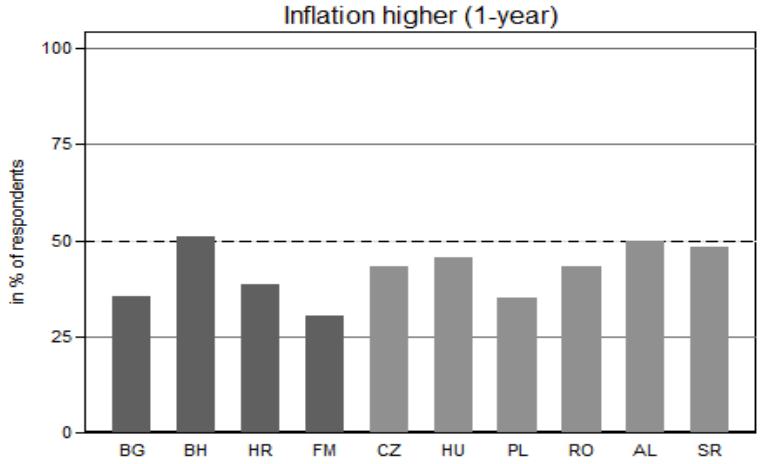


Figure 5. Inflation and Depreciation, 1994-2012

This figure shows the development of CPI inflation and exchange rates per country over the period 1994-2012. The top panel displays annual CPI inflation per country (capped at 100%). The bottom panel shows annual depreciation of the local currency vis-à-vis the US dollar (capped at 100%). Source: World Development Indicators.

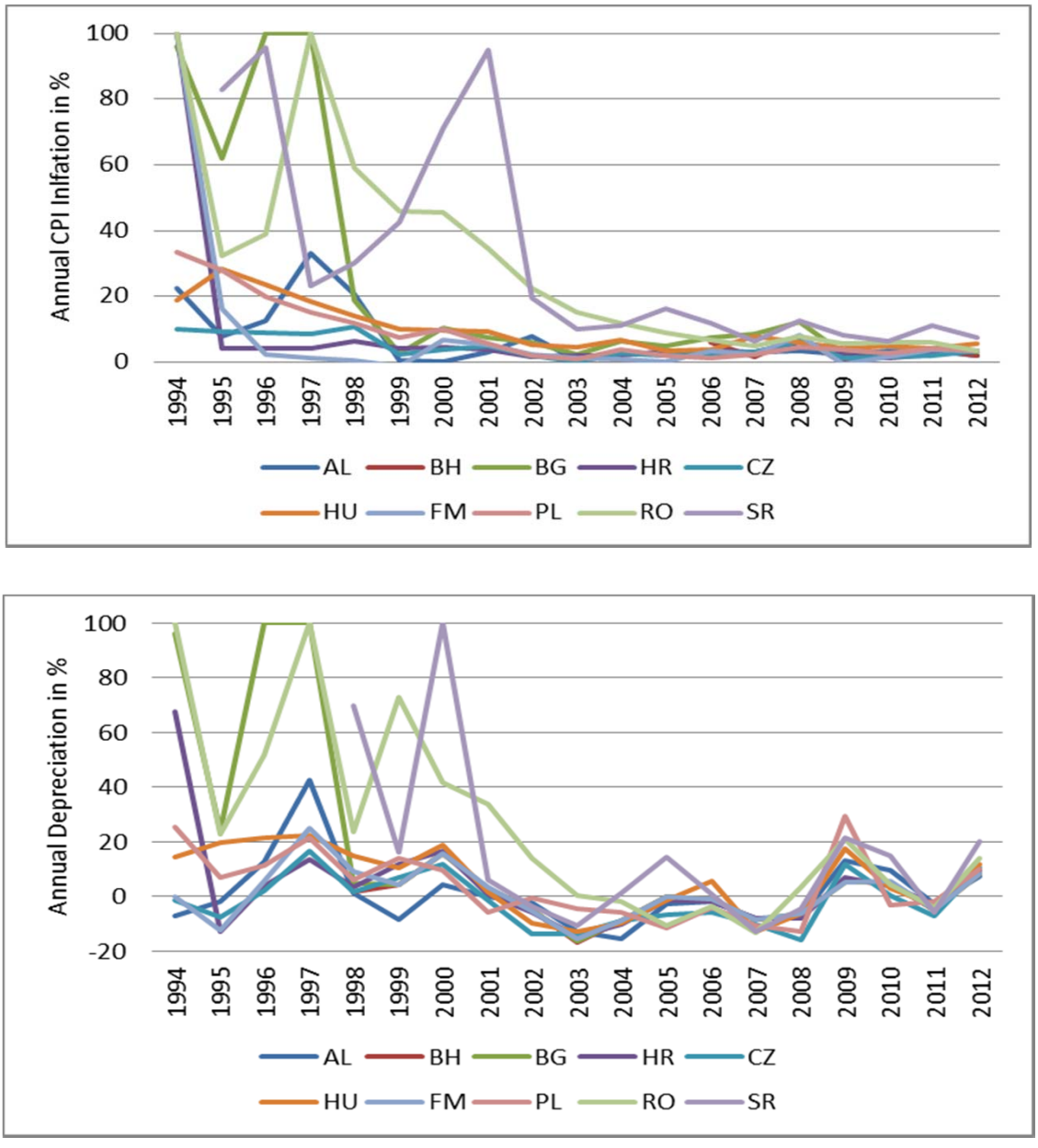


Table 1. Deposit Substitution: Preferences vs. Actual Shares

	Households without a deposit account	Households with a deposit account			All households
		All	Only local currency deposits	With foreign currency deposits	
	(n=13,577)	(n=2,798)	(n=1,891)	(n=907)	(n=16,375)
Mean share of FC deposits [in %]		23%	0%	72%	
Median share of FC deposits [in %]		0%	0%	80%	
FC preference (mean)	0.45	0.43	0.27	0.74	0.44

Note: Results of a t-test of equal sample means for *FC deposit preference* for households with only a LC deposit and households with a FC deposit yields a test statistic of 26.91 (p-value<0.01).

Table 2. Monetary Expectations, Network Effects and Deposit Substitution

The dependent variables in this table are *FC preference (columns 1-3)* and *FC deposit share* (columns 4-6). All models report estimates from linear probability models including fixed effects per Region-Wave. Panel A reports estimates for our indicators of monetary expectations and network effects. Panel B reports estimates for our socioeconomic control variables. Standard errors are reported in parentheses and are adjusted for clustering at the region-wave level. ***, **, * denote significance at the 0.01, 0.05 and 0.10-level. All variables are defined in Appendix A1.

Panel A. Coefficients for monetary expectations and network effects

Dependent variable	*FC preference [0,1]*			*FC deposit share [0,1,2,3]*		
Household sample	All			With a deposit account		
Model	(1)	(2)	(3)	(4)	(5)	(6)
Depreciation (1-year)	0.103***	0.106***	0.100***	0.132**	0.162**	0.146**
	(0.014)	(0.014)	(0.015)	(0.063)	(0.067)	(0.066)
Exchange rate unpredictable (1-year)	0.006			-0.022		
	(0.008)			(0.028)		
Inflation higher (1-year)		0.001			-0.038	
		(0.014)			(0.062)	
Inflation unpredictable (1-year)		-0.002			0.008	
		(0.008)			(0.027)	
Local currency unstable (5-year)			0.054***			0.066*
			(0.010)			(0.034)
EURO unstable (5-year)			-0.052***			-0.006
			(0.009)			(0.046)
Network savings strong	0.138***	0.136***	0.130***	0.497***	0.510***	0.522***
	(0.015)	(0.015)	(0.015)	(0.113)	(0.112)	(0.112)
Network payments strong	0.002	-0.001	-0.002	-0.029	-0.064	-0.046
	(0.015)	(0.015)	(0.015)	(0.086)	(0.086)	(0.091)
Mean of dependent variable	0.48	0.48	0.48	0.90	0.90	0.90
Method	OLS	OLS	OLS	OLS	OLS	OLS
Region*Wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.21	0.21	0.22	0.42	0.42	0.42
# Households	10,735	10,884	10,155	2,042	2,075	1,966
# countries	10	10	10	10	10	10
# regions	75	75	75	72	72	72
# survey waves	2	2	2	2	2	2

Panel B. Coefficients for Socioeconomic Control Variables

Dependent variable	*FC preference [0,1]*			*FC deposit share [0,1,2,3]*		
Household sample	All			With a deposit account		
Model	(1)	(2)	(3)	(4)	(5)	(6)
Remittances	0.112***	0.116***	0.108***	0.438***	0.438***	0.439***
	(0.019)	(0.018)	(0.017)	(0.108)	(0.107)	(0.107)
Self-employed	0.036*	0.035*	0.043**	0.067	0.054	0.061
	(0.020)	(0.020)	(0.021)	(0.069)	(0.071)	(0.077)
Income high	0.009	0.008	0.007	0.204**	0.198**	0.236**
	(0.018)	(0.018)	(0.018)	(0.090)	(0.092)	(0.097)
Income middle	0.019	0.017	0.015	0.104	0.098	0.101
	(0.013)	(0.013)	(0.013)	(0.095)	(0.099)	(0.104)
Income na	0.048**	0.046**	0.045**	0.179*	0.171*	0.219**
	(0.020)	(0.020)	(0.019)	(0.095)	(0.098)	(0.110)
Car	0.014	0.015	0.014	0.155**	0.184**	0.156**
	(0.012)	(0.013)	(0.012)	(0.075)	(0.073)	(0.078)
Homeowner	-0.006	-0.008	-0.012	-0.032	-0.042	-0.031
	(0.018)	(0.019)	(0.019)	(0.071)	(0.072)	(0.074)
Education high	0.027**	0.025*	0.030**	0.120	0.112	0.137*
	(0.013)	(0.013)	(0.014)	(0.077)	(0.072)	(0.073)
Financial literacy	0.001	0.001	-0.001	-0.025	-0.019	-0.037
	(0.007)	(0.007)	(0.007)	(0.031)	(0.031)	(0.031)
Age	0.005***	0.005**	0.005**	-0.010	-0.010	-0.007
	(0.002)	(0.002)	(0.002)	(0.012)	(0.011)	(0.011)
Age sq. (x 1e-3)	-0.075***	-0.071***	-0.070***	0.087	0.083	0.061
	(0.021)	(0.021)	(0.020)	(0.120)	(0.113)	(0.110)
Risk averse	0.015	0.013	0.007	0.047	0.002	0.006
	(0.019)	(0.019)	(0.019)	(0.090)	(0.085)	(0.087)
Mean of dependent variable	0.48	0.48	0.48	0.90	0.90	0.90
Method	OLS	OLS	OLS	OLS	OLS	OLS
Region*Wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.21	0.21	0.22	0.42	0.42	0.42
# Households	10,735	10,884	10,155	2,042	2,075	1,966
# countries	10	10	10	10	10	10
# regions	75	75	75	72	72	72
# survey waves	2	2	2	2	2	2

Table 3. Financial Sophistication

The dependent variable in this table is *FC deposit preference*. All models report estimates from linear probability models including fixed effects per Region-Wave. All models include the following household control variables: *Income, Self-employed, Age, Homeowner, Car, Risk averse, Remittances.* Standard errors are reported in parentheses and are adjusted for clustering at the region-wave level. ***, **, * denote significance at the 0.01, 0.05 and 0.10-level. All variables are defined in Appendix A1.

Dependent variable	*FC preference*			
Sample	All	All	All	All
Model	(1)	(2)	(3)	(4)
Depreciation (1-year)	0.103***		0.041*	0.066***
	(0.014)		(0.023)	(0.023)
Exchange rate unpredictable (1-year)	0.006		0.029**	-0.002
	(0.008)		(0.014)	(0.016)
Network savings strong	0.138***	0.133***	0.111***	0.115***
	(0.015)	(0.015)	(0.028)	(0.026)
Network payments strong	0.002	0.004	0.029	0.012
	(0.015)	(0.015)	(0.026)	(0.024)
Education high	0.027**	0.027**	0.026**	-0.016
	(0.013)	(0.011)	(0.013)	(0.031)
Financial literacy	0.001	0.005	0.004	0.001
	(0.007)	(0.006)	(0.013)	(0.007)
*Financial literacy * *				
Depreciation (1-year)			0.035***	
			(0.011)	
Exrate unpredictable (1-year)			-0.013**	
			(0.007)	
Network savings strong			0.014	
			(0.013)	
Network payments strong			-0.015	
			(0.013)	
*Education high * *				
Depreciation (1-year)				0.049**
				(0.025)
Exrate unpredictable (1-year)				0.010
				(0.016)
Network savings strong				0.031
				(0.024)
Network payments strong				-0.014
				(0.024)
Mean of dependent variable	0.48	0.47	0.48	0.48
Method	OLS	OLS	OLS	OLS
Region*Wave fixed effects	Yes	Yes	Yes	Yes
Household controls	Yes	Yes	Yes	Yes
Adjusted R2	0.21	0.21	0.21	0.21
# Households	10,735	12,348	10,735	10,735
# countries	10	10	10	10
# regions	75	75	75	75
# survey waves	2	2	2	2

Table 4. The Role of the Exchange Rate Regime and Aggregate Euroization

The dependent variable in this table is *FC deposit preference* . In columns (1-2) we report estimates for countries with a floating exchange rate regime. In columns (3-4) we report estimates for countries with a (quasi-)peg. In columns (5-6) we report estimates for countries with low euroization. In columns (7-8) we report estimates for countries with a high aggregate euroization. All models report estimates from linear probability regressions including fixed effects per Region-Wave. All models include the following household control variables: *Income, Self-employed, Education, Age, Homeowner, Car, Financial literacy, Risk averse, Remittances* . Standard errors are reported in parentheses and are adjusted for clustering at the region-wave level. ***, **, * denote significance at the 0.01, 0.05 and 0.10-level. All variables are defined in Appendix A1.

Dependent variable	*FC preference*				*FC preference*			
Sample	Floating exchange rate		(Quasi-)Peg		Low euroization		High euroization	
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Depreciation (1-year)	0.062***	0.062***	0.157***	0.151***	0.062***	0.040*	0.119***	0.122***
	(0.015)	(0.015)	(0.023)	(0.025)	(0.020)	(0.021)	(0.018)	(0.018)
Exchange rate unpredictable (1-year)	-0.005		0.019		0.012		0.002	
	(0.009)		(0.013)		(0.012)		(0.010)	
Network savings strong	0.125***	0.121***	0.150***	0.136***	0.178***	0.154***	0.129***	0.124***
	(0.021)	(0.020)	(0.019)	(0.020)	(0.030)	(0.031)	(0.017)	(0.016)
Network payments strong	-0.017	-0.022	0.024	0.02	0.021	0.021	-0.003	-0.008
	(0.020)	(0.019)	(0.020)	(0.021)	(0.033)	(0.036)	(0.016)	(0.017)
Local currency unstable (5-year)		0.048***		0.060***		0.073***		0.049***
		(0.012)		(0.014)		(0.016)		(0.011)
EURO unstable (5-year)		-0.062***		-0.043***		-0.059***		-0.049***
		(0.012)		(0.013)		(0.017)		(0.011)
Mean of dependent variable	0.42	0.42	0.55	0.55	0.34	0.34	0.53	0.53
Method	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Region*Wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.26	0.27	0.13	0.14	0.22	0.23	0.18	0.19
# Households	5899	5554	4836	4601	2959	2809	7776	7346
# countries	6	6	4	4	3	3	7	7
# regions	46	46	29	29	31	31	44	44
# survey waves	2	2	2	2	2	2	2	2

Table 5. The Role of Past Crises, Current Policies and Institutions

The dependent variables in this table are *Depreciation (1 year)* (column 1), *Network savings strong* (column 2), and *FC preference* (columns 3-7). Columns (1-3) are estimated on the full sample of households without missing data. Columns (4-5) report estimates for households with below vs. above (country-specific) median age. In columns (6-7) we report estimates for households with an age of 24 years or below vs. more than 24 years at the time of the last crisis (annual inflation rate larger than 20%).All models report estimates from linear probability models including fixed effects per Region-Wave. All models include the following household control variables: *Income, Self-employed, Education, Age, Homeowner, Car, Financial literacy, Risk averse, Remittances, Trust in Police, Financial situation bad.* Standard errors are reported in parentheses and are adjusted for clustering at the region-wave level. ***, **, * denote significance at the 0.01, 0.05 and 0.10-level. All variables are defined in Appendix A1.

Dependent variable	*Depreciation (1 year)*	*Network savings strong*	*FC preference*	*FC preference*		*FC preference*	
Sample	All	All	All	Age: below median	Age: above median	At last crisis: young (<=24 yrs)	At last crisis: old (>24 yrs)
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Depreciation (1-year)			0.093***	0.095***	0.096***	0.102***	0.086***
			(0.016)	(0.019)	(0.022)	(0.023)	(0.017)
Exchange rate unpredictable (1-year)			0.011	0.019	0.003	-0.001	0.016
			(0.011)	(0.012)	(0.014)	(0.016)	(0.011)
Network savings strong			0.129***	0.130***	0.130***	0.139***	0.124***
			(0.017)	(0.018)	(0.025)	(0.029)	(0.017)
Network payments strong			0.006	0.019	-0.009	-0.020	0.020
			(0.020)	(0.024)	(0.026)	(0.029)	(0.022)
Crisis experience	0.051***	0.026	0.047**	0.047*	0.041	0.021	0.058**
	(0.018)	(0.022)	(0.021)	(0.026)	(0.032)	(0.035)	(0.026)
Crisis experience relatives	0.001	0.027	0.025	0.028	0.029	0.011	0.038
	(0.019)	(0.023)	(0.022)	(0.032)	(0.028)	(0.031)	(0.028)
Memory of inflation	0.057***	0.010	0.020	0.013	0.020	0.011	0.021
	(0.013)	(0.013)	(0.016)	(0.023)	(0.023)	(0.025)	(0.020)
Cash used to avoid taxes	-0.003	0.074***	-0.008	-0.014	0.002	0.004	-0.011
	(0.014)	(0.014)	(0.018)	(0.022)	(0.024)	(0.028)	(0.021)
Trust in government	-0.047***	0.008	-0.055***	-0.057**	-0.050**	-0.062**	-0.050**
	(0.017)	(0.015)	(0.017)	(0.024)	(0.024)	(0.026)	(0.021)
Trust in police	-0.018	0.004	0.028	0.029	0.019	0.017	0.030
	(0.015)	(0.013)	(0.018)	(0.022)	(0.024)	(0.026)	(0.020)
Economy better (5-year)	-0.103***	0.020	0.026	0.019	0.033	0.034	0.024
	(0.015)	(0.015)	(0.016)	(0.021)	(0.023)	(0.028)	(0.020)
Mean of dependent variable	0.42	0.30	0.45	0.43	0.48	0.46	0.45
Method	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Region*Wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.22	0.18	0.21	0.22	0.21	0.20	0.22
# Households	7,432	7,534	6,468	3,352	3,116	2,333	4,135
# countries	10	10	10	10	10	10	10
# regions	75	75	74	72	74	73	73
# survey waves	2	2	2	2	2	2	2

Appendix A1. Variable Definitions and Sources

Panel A.

Variable name	Definition	Source
	Deposit substitution	
FC preference	Dummy=1 if household would prefer to save (two months average wages) in foreign currency, 0 otherwise. Based on question "Suppose you had [COUNTRY-SPECIFIC VALUES correspond to 2 times average monthly salary] [LOCAL CURRENCY] to deposit in a savings account. Would you choose to deposit this amount in …" ([LOCAL CURRENCY], euro, US dollar, Swiss franc, other foreign currency).	Euro Survey
FC deposit share	Categorical variable measuring the portfolio share of FC in total deposits. =0 if household has no foreign currency deposit account (but a local currency deposit account), =1 if the FC share ranges from 1% to 40%, =2 if the FC share ranges from 41% to 60%, 3= if the FC share ranges from 61% to 100%.	Euro Survey
	Monetary expectations and network effects	
Depreciation (1-year)	Dummy=1 if household expects a depreciation, rather than an appreciation or the same exchange rate over the next year.	Euro Survey
Exchange rate unpredictable (1-year)	Categorical variable measuring if household predicts exchange rate over the next year to be very predictable (0), quite predictable (1), quite unpredictable (2) or very unpredictable (3).	Euro Survey
Inflation higher (1-year)	Dummy= 1 if household expects higher inflation, =0 if the household expects Lower inflation or no change in inflation over the next year.	Euro Survey
Inflation unpredictable (1-year)	Categorical variable measuring if household predicts development of prices over the next year to be very predictable (0), quite predictable (1), quite unpredictable (2) or very unpredictable (3).	Euro Survey
Local currency unstable (5-year)	Derived from consent to statement "Over the next five years, the [LOCAL CURRENCY] will be very stable and trustworthy" (6 point Likert scale from strongly agree to strongly disagree). Categorical variable =0 (strongly agree, agree), 1 (somewhat agree, somewhat disagree), 2 (disagree, strongly disagree).	Euro Survey
EURO unstable (5-year)	Derived from consent to statement "Over the next five years, the euro will be very stable and trustworthy" (6 point Likert scale from strongly agree to strongly disagree). Categorical variable =0 (strongly agree, agree), 1 (somewhat agree, somewhat disagree), 2 (disagree, strongly disagree).	Euro Survey
Network savings strong	Derived from consent to statement "In [MY COUNTRY] it is very common to hold foreign currency deposits" (6 point Likert scale from strongly agree to strongly disagree). Dummy=1 (strongly agree, agree), 0 otherwise.	Euro Survey
Network payments strong	Derived from consent to statement "In [MY COUNTRY] it is very common to make certain payments in euro" (6 point Likert scale from strongly agree to strongly disagree). Dummy=1 (strongly agree, agree), 0 otherwise.	Euro Survey

Appendix A1. Variable Definitions and Sources

Panel B.

Variable name	Definition	Source
	Past crises, policies and institutions	
Crisis experience	Derived from "If you think back in time to periods of economic turbulences that happened prior to 2008, e.g. very high inflation, banking crisis or restricted access to savings deposits. At that time, did you personally incur a financial loss due to such events?" Dummy=1 if "Yes", 0 if "No, I had no savings then" and "No, I did not incur a financial loss".	Euro Survey
Crisis experience (relatives)	Derived from "And what about your close relatives? Did they incur a financial loss due to such events?" Dummy=1 if household report crisis experience of relatives but no own crisis experience, 0=otherwise.	Euro Survey
Memory of inflation	Derived from statement "I remember periods of high inflation during which the value of the [LOCAL CURRENCY] dropped sharply" (6 point Likert scale from strongly agree to strongly disagree). Dummy=1 if household strongly agrees, agrees or somewhat agrees, 0	Euro Survey
Trust in government	Dummy=1 if household trusts completely or somewhat trusts the government, 0 otherwise ("neither trust nor distrust", "somewhat distrust" or "do not trust at all").	Euro Survey
Trust in police	Dummy=1 if household trusts completely or somewhat trusts the police, 0 otherwise ("neither trust nor distrust", "somewhat distrust" or "do not trust at all").	Euro Survey
Cash used to avoid taxes	Derived from consent to statement "In [MY COUNTRY], it is very common that people pay cash to avoid taxes" (6 point Likert scale from strongly agree to strongly disagree). Dummy=1 if household strongly agrees, agrees or somewhat agrees, 0=otherwise.	Euro Survey
Economy better (5-year)	Derived from consent to statement "Over the next five years, the economic situation of [MY COUNTRY] will improve" (6 point Likert scale from strongly agree to strongly disagree). Dummy=1 if household strongly agrees, agrees or somewhat agrees, 0=otherwise.	Euro Survey
	Financial sophistication and socioeconomic controls	
Financial literacy	Number of correct responses to the following 3 questions: “Suppose you had [100 LOCAL CURRENCY] in a savings account and the interest rate was 2% per year. Disregarding any bank fees, how much do you think you would have in the account after 5 years if you left the money to grow? (More than 102 LC / Exactly 102 LC / Less than 102 LC / Do not know /No answer)”. “Suppose that the interest rate on your savings account was 4% per year and inflation was 5% per year. Again, disregarding any bank fees - after 1 year, would you be able to buy more than, exactly the same, or less than today with the money in this account? (More / Exactly the same / Less / Do not know /No answer)”. “Suppose that you have taken a loan in EURO. Then the exchange rate of the [LOCAL CURRENCY] depreciates against the EURO. How does change the amount of local currency you need to make your loan installments …(Increase / Stays the same / Decreases / Don’t know / No answer)”.	Euro Survey
Education high	Dummy=1 if education is higher than primary or lower secondary education (as defined by ISCED 1997), 0 otherwise	Euro Survey
Age	Age of respondent in years.	Euro Survey
Income	Household income: low, middle, high or n/a.	Euro Survey
Risk averse	Dummy =1 if household prefers safe to risky investment, 0=otherwise.	Euro Survey
Self-employed	Dummy=1 if household is self-employed, 0=otherwise.	Euro Survey
Remittances	Dummy=1 if household receives remmittances from abroad, 0=otherwise.	Euro Survey
Car	Dummy=1 if household owns a car, 0=otherwise.	Euro Survey
Homeowner	Dummy=1 if household owns its residence, 0=otherwise.	Euro Survey
Financial situation bad	Derived from consent to statement "Currently, the financial situation of my household is good" (6 point Likert scale from strongly agree to strongly disagree). Dummy=1 if household strongly disagrees, disagrees or somewhat disagrees, 0=otherwise.	Euro Survey
	Exchange rate regime and aggregate euroization	
Peg or quasi-peg	Dummy = 1 if Bulgaria (BG), Bosnia and Herzegovina (BH), Croatia (HR), FYR Macedonia (FM).	National central banks
Floating exchange rate regime	Dummy = 1 if Czech Republic (CZ), Hungary (HU), Poland (PL), Albania (AL), Romania (RO), Serbia (SR).	National central banks
Euroization low	Dummy = 1 if Czech Republic, Hungary, Poland	National central banks

Appendix A2. Descriptive Statistics

This table provides (unweighted) summary statistics for all variables in our analysis. Variable definitions are provided in Table A1.

Variable name	Obs.	Mean	Std. Dev.	Min	Max
Deposit substitution					
FC preference	14268	0.461	0.498	0	1
FC deposit share	2534	0.865	1.249	0	3
Monetary expectations and network effects					
Depreciation (1-year)	15412	0.455	0.498	0	1
Exchange rate unpredictable (1-year)	14401	1.406	0.866	0	3
Inflation higher (1-year)	15148	0.413	0.492	0	1
Inflation unpredictable (1-year)	14872	1.364	0.931	0	3
Local currency unstable (5-year)	14125	1.201	0.669	0	2
EURO unstable (5-year)	13959	0.906	0.691	0	2
Network savings strong	13367	0.320	0.467	0	1
Network payments strong	14239	0.257	0.437	0	1
Crisis experience, policies and institutions					
Crisis experience	13558	0.136	0.343	0	1
Crisis experience relatives	10322	0.125	0.331	0	1
Memory of inflation	13600	0.608	0.488	0	1
Trust in government	15177	0.239	0.426	0	1
Trust in police	15223	0.382	0.486	0	1
Cash used to avoid taxes	13331	0.628	0.483	0	1
Economy better (5 year)	14734	0.308	0.462	0	1
Financial sophistication and socioeconomic controls					
Financial literacy	14895	1.766	1.052	0	3
Education high	15313	0.757	0.429	0	1
Age	15412	46.111	15.187	19	98
Income high	15412	0.264	0.441	0	1
Income middle	15412	0.247	0.431	0	1
Income na	15412	0.206	0.404	0	1
Risk averse	14092	0.850	0.357	0	1
Self-employed	15367	0.072	0.259	0	1
Remittances	15266	0.079	0.270	0	1
Car	15412	0.606	0.489	0	1
Homeowner	15412	0.866	0.340	0	1
Fin. situation bad	15136	0.676	0.468	0	1

Appendix A3. Linear Probability Model vs. Probit

The dependent variables in this table are *FC preference (columns* 1-4) and *FC deposit share* (columns 5-8). Models (1-2, 5-6) report estimates from OLS regressions. Models (3-4) report marginal effects of probit estimates. Models (7-8) report estimates from ordered probit regression. All models include fixed effects per Region-Wave. All models include the following household control variables: *Income, Self-employed, Education, Age, Homeowner, Car, FX literacy, Risk averse*. Standard errors are reported in parentheses and are adjusted for clustering at the region-wave level. ***, **, * denote significance at the 0.01, 0.05 and 0.10-level. All variables are defined in Appendix A1.

Dependent variable	*FC preference [0,1]*				*FC deposit share [0,1,2,3]*			
Method	OLS		Probit		OLS		Ordered probit	
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Depreciation (1-year)	0.103***	0.100***	0.124***	0.122***	0.132**	0.146**	0.162*	0.178**
	(0.014)	(0.015)	(0.017)	(0.018)	(0.063)	(0.066)	(0.085)	(0.088)
Exchange rate unpredictable (1-year)	0.006		0.008		-0.022		-0.027	
	(0.008)		(0.010)		(0.028)		(0.038)	
Local currency unstable (5-year)		0.054***		0.066***		0.066*		0.100**
		(0.010)		(0.012)		(0.034)		(0.047)
EURO unstable (5-year)		-0.052***		-0.066***		-0.006		-0.004
		(0.009)		(0.011)		(0.046)		(0.063)
Network savings strong	0.138***	0.130***	0.163***	0.156***	0.497***	0.522***	0.633***	0.668***
	(0.015)	(0.015)	(0.017)	(0.018)	(0.113)	(0.112)	(0.133)	(0.133)
Network payments strong	0.002	-0.002	0.004	-0.001	-0.029	-0.046	-0.005	-0.022
	(0.015)	(0.015)	(0.018)	(0.019)	(0.086)	(0.091)	(0.112)	(0.121)
Mean of dependent variable	0.48	0.48	0.48	0.48	0.90	0.90	0.90	0.90
Method	OLS	OLS	Probit	Probit	OLS	OLS	Ordered probit	Ordered probit
Region*Wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.21	0.22			0.42	0.42		
# Households	10735	10155	10689	10141	2042	1966	2042	1966
# countries	10	10	10	10	10	10	10	10
# regions	75	75	74	74	72	72	72	72
# survey waves	2	2	2	2	2	2	2	2