

Regulation of Foreign Currency Mortgage Loans:

The Case of Transition Countries
in Central and Eastern Europe

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Abstract

The current financial crisis has had a major impact on the financial sectors of the Central and Eastern European (CEE) region. The impact has been exacerbated in many cases by the presence of foreign currency mortgage loans. The risk is both for the borrower, who has to make loan repayments in a currency different from that of the income he or she is generating, and for the banks, who need to fund themselves in a foreign currency. This study seeks to determine whether foreign currency mortgage loans really represent a major risk to all systems where they are present and then to assess what measures have been taken to deal with it. The optimal regulatory response will be appropriate for the macroeconomic context and also the consumer needs and best interests. A complete ban on the foreign currency product class appears appropriate for low-inflation economies, where consumer benefits from the product are low and the risk of “speculative” demand higher. Within that subset, fiscal support and other steps to further develop funding markets and improve affordability are likely to be required to help support local currency products. Also, these are the economies most likely to access the Euro in the near future, with limited exchange rate risk. Examples are Poland or the Czech Republic. For higher inflation economies facing choices of de-dollarization on one hand and possible imminent access to Eurozone on the other, foreign currency mortgages are likely to remain a part of the product menu for the near future. The challenge is to design a combined support and regulation strategy that creates a fair risk sharing arrangement between consumers and lenders and limits lender liquidity risks.

Abbreviations

ARM	Adjustable-rate mortgage
CCD	EU Consumer Credit Directive
CDS	Credit default swap
CEE	Central and Eastern Europe
CRD	EU Capital Requirement Directive
PTI	Payment to income
EMU	European Monetary Union
Euribor	European Interbank Offer Rate
FCU	Foreign currency unit
FKTK	Latvian Financial and Capital Market Commission
FMA	Österreichische Finanzmarktagentur (Austrian Financial Market Authority)
GDP	Gross domestic product
HFSA	Hungarian Financial Supervision Authority
HUF	Hungarian forint
KFN	Polish Financial Supervision Authority
LCU	Local Currency Unit
Libor	London Interbank Offer Rate
LTV	Loan to value
MFI	Monetary financial institutions.
MNB	Magyar Nemzeti Bank (Hungarian central bank)
NBP	Narodowi Bank Polski (Polish central bank)
NBU	National Bank of Ukraine
NPL	Nonperforming loan
SDR	Special drawing right

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Introduction

Objectives of the study

The current financial crisis has had a major impact on the financial sectors of the Central and Eastern European (CEE) region. The impact has been exacerbated in many cases by the presence of foreign currency mortgage loans. The risk is both for the borrower, who has to make loan repayments in a currency different from that of the income he or she is generating, and for the banks, who need to fund themselves in a foreign currency.

This study seeks to determine whether foreign currency mortgage loans really represent a major risk to all systems where they are present and then to assess what measures have been taken to deal with it. The study will make recommendations as to which measures are most effective in limiting the risks, and whether these products are appropriate for any borrowers and in any markets.

Coverage of the Study

The analysis is limited to four case countries in the CEE region: Poland and Hungary as representatives of the first wave of mortgage markets that emerged during the 1990s and which turned to foreign currency lending; Ukraine and Latvia are mortgage markets launched in the 2000s essentially as foreign currency markets. A fifth market, Austria, which also features a high foreign currency lending share, is analyzed as a developed mortgage market comparator as well as an important originating country for banks entering CEE markets across borders.

Targeted audience

This study is aimed primarily at financial services regulators in the CEE region. The approach taken is to look at the consequences of foreign currency lending and what practical steps can be taken to control, manage, or eliminate the risks associated with such products. In many cases the crisis has already occurred, and the problem is not just about preventing future crises but also about dealing with the current mortgage portfolio. Many lessons can be drawn from recent experiences, and this study seeks to bring some of them together.

Mortgage and housing finance markets are still nascent in many parts of the world, so a wider audience outside of CEE is also targeted. It is notable that in a number of mortgage markets in Africa, loans are currently being offered in dollars, and many of the same temptations will be present in these markets. This study is an opportunity to avoid repeating some of the mistakes that have cost some countries dearly.

Timing of Study

The study field work was done in 2009 and the report largely written in first half of 2010. It therefore does not take account of the very latest developments or discussions which have taken place post May 2010.

Further Reading

For comprehensive regional coverage from different angles, the reader is referred to earlier and contemporary work in the academic and international financial institution sphere. Maechler and Ong (2007) analyze the strong role of foreign banks in funding CEE economies as well as their current account deficits. Gruss and Sgherri (2009) explore the impact of product innovation and lending standards on CEE growth pre- and post-crisis. Rosenberg and Tirpák (2008) develop a basic correlation analysis of some of the drivers of foreign currency lending. As a response to the crisis, the World Bank also published an analysis of the impact on households that delves into some of the issues around foreign currency mortgages.

Our approach differs somewhat from such high-level analysis by focusing first on important institutional mortgage market details that might give clues as to the advisability of specific regulatory action. Second, the modelling used to examine the behavior of banks takes into account some of the mortgage products design features that can have a significant impact on how risks are transmitted to households or retained by banks.

Executive summary

In the last decade, foreign currency mortgage loans grew to dominate in many Central and Eastern European countries. Yet their role and risk profiles differed strongly between financial markets of different development stages and risk environments. The paper analyzes in depth the experiences of five countries, especially selected for the different features of their foreign currency mortgage loan market: Poland, Hungary, Latvia, Ukraine, and, as a mature mortgage market comparator, Austria.

The loans were initially seen as relatively low risk given an environment of rising house prices, strong wage growth and a prolonged appreciation for many of the currencies in the region. The booming property market in particular provided a seemingly perfect safety net for loss free lending if loans ran into any trouble. For many of the former Soviet-bloc countries, there was also the added safety of a gradual move towards joining the Euro-zone. However the current crisis has affected the exchange rates for many of these countries, and has certainly dampened the prospects for a rapid EMU accession.

Causes of foreign-currency mortgage lending

There were both demand side and supply side forces at work. The demand for FC lending can be driven by (1) interest rate differentials based primarily on inflation differentials, or (2) interest rate differentials based on different real rates across currencies. In the case of inflation differentials, a foreign currency mortgage loan can provide a mechanism to smooth the real amortization profile of a loan. A local currency loan in a higher inflation environment would be very expensive at the outset, becoming easily affordable only within a few years as inflation and wage rises erode its repayment burden. Assuming that the exchange rate adjusts to reflect the difference in inflation rates, the real cost is the same but the time pattern of FC repayment permits a larger loan initially. In theory, this use makes sense in an inflationary environment, as long as real devaluation risk is not significant.

There may also be mortgage interest rate differentials based on cross-border differences in real rates. In this case, borrowers are taking a more speculative stance, not correcting for the tilt-effect of interest rates elevated by inflation, but making a direct bet on trends in real exchange rates. Admittedly, many borrowers may not have any idea why interest rate differentials exist, but simply opt for the larger loan. But some borrowers appear not to have been driven by liquidity constraints but rather speculative investment calculations (carry-trade speculation). In any case, in practice, real devaluation risk in the medium-term can be, and has been, material.

In markets characterized by low inflation or small interest rate differentials, the demand side forces should be weak. The foreign currency product proliferated nevertheless, pushed by supply side considerations, specifically foreign entrants who had privileged access to longer-term (or at least more stable) and lower cost foreign currency funding compared to local lenders. This factor was less strong in those countries (Czech Republic and Slovakia) which had sustainably subsidized the development of local currency funding.

High levels of such supply side forces were operative in all four transition markets and led to a number of risks being layered one on top of the other, such as high loan to value ratios, lending without exchange rate or payment caps and the use of ‘exotic’ currencies such as Swiss Franc and Japanese Yen. Borrowers in Hungary and Ukraine also faced significant tilt effects in local currency loans. Borrowers in Austria appear to have been driven by speculative investment potential.

In contrast, we find only limited evidence of high credit risk lending (subprime) in the emerging market context of the region, which prioritized lower-risk borrowers.

Risk realizations

Elevated credit risk resulted from the layering of risk factors, of which devaluation risk was only one. The specifics of the rate adjustment mechanism mattered greatly. The indexing of foreign currency interest rates to policy rates (Poland) reduced the debt service shock considerably, weighed against temporary losses taken by banks. In contrast, where banks could freely adjust rates (hypothetically to pass through their funding cost increases) (Hungary, Ukraine), defaults have risen more as a result of the dual shock of devaluation and a change in the interest rate in the existing contract. The absence of caps on negative amortization combined with volatile house prices (Ukraine) increased default risk further by putting many borrowers into a negative equity position.

In the area of funding risk, the use of loan products denominated in currencies heavily used for carry trades (CHF, JPY) unsustainably increased bank liquidity risk. This finding holds for both local lenders and foreign entrants; local lenders in addition suffered from the breakdown of interbank swap markets and have had to rely almost invariably on central bank lines to fund the existing portfolio. Access to EUR has been an issue due to the initial reluctance of the ECB to support implicit ‘euroization’. Lenders have also temporarily suffered from low or negative margins.

Regulatory responses

The consumer protection responses in Central and Eastern European countries to the specific risks imposed by foreign currency lending have varied from simply information campaigns, (Latvia), lower loan-to-value ratio limits (Hungary and discussed on the EU level), and debt service stress tests (Poland) to product bans (Austria, Ukraine, and most recently Hungary). In the bank regulation arena, portfolio stress testing, tighter liquidity and matching rules (all countries), and greater capital requirements (Hungary) have been the responses thus far.

The regulations enacted so far appear to be responses to local problems, and are torn between the regulator’s desire to terminate the practice and soften the blow to housing affordability. Both the Polish debt service stress test (2006) and Hungarian loan-to-value ratio ceilings (2010) introduce tight limits; experiences in the Polish case, however, suggest incomplete compliance to be the mirror effect of tightness. The Ukrainian foreign currency product ban (2009) also faces credibility problems, given increasing local currency interest rates. Policy lags have been considerable: a 2003 Austrian regulation came into force after the local carry trade product had been firmly established for 4 years, and it took the 2008 CHF liquidity crisis to convince banks to terminate the product. A 2007 Latvian initiative to deflate the housing bubble (non-specific to foreign currency) also was implemented pro-cyclically. There are some successes – Austrian and Hungarian regulations helped to contain potentially more disastrous foreign currency lending in Japanese Yen, and the Polish regulation at least had a temporary disciplining effect on banks.

Is there an optimal regulatory response?

The optimal regulatory response will be appropriate for the macroeconomic context and also the consumer needs and best interests. A complete ban on the foreign currency product class appears appropriate for low-inflation economies, where consumer benefits from the product are low and the risk of “speculative” demand higher. Yet even within that subset, fiscal support and other steps to further develop funding markets and improve affordability are likely to be required to help support local currency products. Also, these are the economies most likely to access the Euro in the near future, with limited exchange rate risk. Examples are Poland or the Czech Republic.

High-inflation economies in Latin America in the course of de-dollarization strategies since the 1980s debt crisis have demonstrated that mortgage markets can exist for decades using non-standard, inflation-linked local currency products. Such products had been in use in Central and Eastern Europe in the early 1990s and due to misspecifications had produced high fiscal costs. At least in the Central European context of Eurozone aspiration, a ‘de-euroization’ strategy also faces psychological barriers. A comprehensive de-dollarization strategy in the mortgage sector along the Latin American lines could be an option for economies of the former Soviet Union.

For higher inflation economies caught in the middle between de-dollarization and possible imminent access to Eurozone, foreign currency mortgages are likely to remain a part of the product menu in the near future. The challenge is to design a combined support and regulation strategy that creates a fair risk sharing arrangement between consumers and lenders and limits lender liquidity risks.

The material protection of consumers against negative amortization and debt service shocks resulting from devaluation and interest rate risk of the foreign benchmark, as well as the choice of a low-risk foreign currency, should top the agenda. A suitable instrument to contain devaluation risk would be contractual negative amortization ceilings up to a statutory maximum (e.g. 120 per cent of the initial loan, as practiced for decades in the U.S.). Rather than selecting borrowers based on extreme stress tests or LTV limits, a protection mechanism could be introduced to the loan product forcing lenders to offer some level of risk mitigation. Interest rate risk could be contained by forcing lenders to reduce rates when their foreign currency funding costs fall.

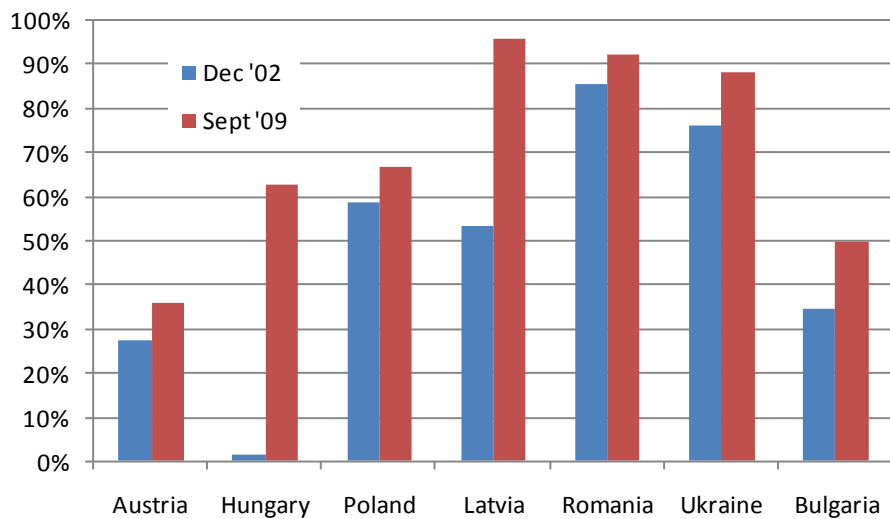
1. Scope and Features of Foreign Currency Mortgage Loans

1.1. Scope of foreign currency lending in the Central and Eastern Europe region

Dollarization¹ in the Central and Eastern Europe (CEE) Region has its historic roots in the high-inflation period that characterized the early part of the transition process after 1990. Some countries, such as the former Yugoslavia, already ran dollarized economies during the communist era, as a result of earlier episodes of hyperinflation. The majority of countries, however, operated their credit markets in the local currency and repressed inflation through price and interest rate controls. When these controls were lifted, high inflation and high nominal interest rates for local currency loans were the result. As the interest rate differential between local currency loans and foreign currency loans widened, they became more attractive to consumers. The borrowers were often new to financial services and had little understanding of the risks involved in taking out foreign-denominated loans.

The mortgage markets of Central Europe originated in the early 1990s. They began either in foreign (Poland) or local currency but with deep subsidies or a mechanism to capitalize inflation.² Many of these capitalization programs ended in financial difficulty for the banks involved. Still, by the early 2000s, a combination of macro policies, housing and mortgage subsidies, together with tax incentives in many cases, helped local currency to dominate mortgage lending in Poland and Hungary. In the Czech Republic and Slovakia, mortgage lending was conducted entirely in local currencies.

Figure 1: Proportion of foreign currency lending in selected CEE transition countries, 2002 and 2009



Source: Central Banks.

Note: Data for Bulgaria and Romania are available only from Jan-07, and for Ukraine from Feb-06.

Yet, beyond the Czech and Slovak exceptions, during the 2000s the share of foreign currency rose significantly. In Poland and Hungary, the early boom in local currency lending was dramatically reversed. New mortgage markets in the Baltic States and South-Eastern and Eastern Europe that started emerging later were dominated by foreign currency mortgage loans from the outset. The foreign currency lending boom was even observed in markets with little recent inflation history, such as Austria.

The growth in the mortgage market in the 2000-07 period coincided with a rapid credit expansion in the broader financial sector, large capital inflows often from foreign banks, and spiralling house price inflation. The growth in these three areas came to an abrupt halt as the financial crisis of 2008 hit. The crisis brought devaluation, liquidity problems, and interest rate increases throughout the region.

1.2. Key features of a foreign currency mortgage

The principal and interest of a foreign currency mortgage loan may be paid either in foreign currency or in local currency with the amount is tied to a foreign currency index. Depreciation off the local currency would cause an increase in the monthly mortgage payments for the borrower as well as an increase in the balance outstanding on the loan, in effect negative amortization of the mortgage.

As an example, consider the scenario described in tables 1 and 2 below. A borrower decides to take out a foreign currency mortgage loan worth 40,000 in foreign currency (FX) that is equivalent to 80,000 in local currency units (LCU) assuming a 2:1 exchange rate for LCU:FX. Let us assume that the property used as the mortgage collateral is worth LCU 100,000, the mortgage loan is for a term of 15 years at a rate of 7 percent, and the annual income of the borrower is LCU 25,000. This would mean monthly mortgage repayments of LCU 719. This all translates into a reasonably standard and safe product carrying an 80 percent loan-to-value ratio (LTV), and a Payment-to-income (PTI) ratio of just under 35 percent. However, if the local currency were to depreciate by 15 percent, the balance of the loan, which is denominated in foreign currency, would increase in value in LCU terms to LCU 92,000, and the monthly payments would increase to LCU 827. The value of the property, however, would remain constant, as it is denominated in LCU. The ratios for the loan would change from a relatively safe 80 percent LTV loan with a 35 percent PTI to a much riskier 92 percent LTV loan with a 40 percent PTI. Larger depreciations, or repeated year-on-year depreciation would result in an even riskier position, as shown in Table 2. A 15 percent devaluation could be considered typical for any given year in a transition economy.

It is worth noting that this scenario does not envisage any changes in housing prices. If a devaluing currency is the result of a slowing economy, rising unemployment, and falling house prices, all of these would compound the risks of a foreign currency loan. The impact would clearly be both on the household, in terms of the owner's ability to pay, and the equity the owner maintained in the home. The lender would also be in a worse position, as the risk of default is increased and the losses the lender might incur in the case of a default would also be higher.

Table 1 Foreign Currency Mortgage Base Scenario – in Local Currency Units

Mortgage Outstanding in local currencyU	80,000
<i>Equivalent in FX</i>	<i>40,000</i>
Exchange Rate LCU:FX	2:1
Mortgage Maturity (years)	15
Annual Income	25,000
Property Value in LCU	100,000
Interest Rate	7.00%

Table 2 Impact of Devaluation on Mortgage Loan-to-Value and Payment to-Income - in Local Currency Units

	Exchange Rate (LCU:FX)	Mortgage Debt Outstanding	Property Value	Monthly Mortgage Payment	LTV	PTI
Par	2.0 : 1	80,000	100,000	719.06	80%	34.5%
after 15% devaluation	2.3 : 1	92,000	100,000	826.92	92%	39.7%
after 30% devaluation	2.6 : 1	104,000	100,000	934.78	104%	44.9%
after 45% devaluation	2.9 : 1	116,000	100,000	1,042.64	116%	50.0%

The example above is of course simplistic. In reality, exchange rates can be very volatile in the short term. Most transition economies also realized a gradual appreciation of the currency over long periods before the devaluations of 2008, and some had realistic expectations of joining the Eurozone soon, which led both lenders and borrowers to believe that the devaluation risk was minimal. In fact, foreign currency mortgages were seen as a way to benefit from lower interest rates and gain from currency appreciation in terms of both lower monthly payments and reducing principal balances.

1.3. Risk factors in foreign currency mortgage lending

The financial press has suggested that CEE countries are harboring a “European subprime crisis.” This is a common reaction to any mortgage lending in emerging markets, but the reality is that the banks in the absence of strong credit histories or underwriting tools start their portfolios by selecting higher-income households as borrowers and those that offer the lowest risks and can put down the largest deposits. Eventually, competitive pressures did push lending right down the income distribution, most notably in the Baltics, and led to much liberalized terms. But this sort of credit risk has not been a major factor in the subsequent crisis.

Aside from the clear foreign currency risk described above, interest rate policies are another potential source of risk. The interest rates on foreign currency loans tend to be set according to short-term foreign currency benchmark rates such as three- or six-month Libor or Euribor rates, but they may also be reviewable at the lender’s discretion, reflecting the changing funding cost. Because the interest rate is linked to a foreign index, it will change independently of any domestic macro developments. This can add another layer of risk to the already significant foreign exchange risk; however, it may also mitigate risk.

Other risks include the interest rate variability, which may come in the form of lower monthly installments for an introductory period that then increase later in the loan cycle, or interest grace periods. Both of these create room for higher and more opaque lender fees and also potentially higher LTV ratios when compared to local currency mortgages.

A noticeable feature common in transition countries is the absence of any form of safeguard, cap or protection against the risks described above. For example, there are very few cases where limits were applied with regard to the level of negative amortization allowable or limits on the variability of the monthly mortgage payment in local currency equivalent.

Risks arising from funding the loans and from liquidity issues can also be significant. It has been shown repeatedly, especially in recent times, that lenders cannot rely on stable access to foreign currency sources of funds, in particular long-term funds. The exception to the funding liquidity risks described above would be if the economy is already fully dollarized. However, in CEE countries there has been no evidence of long-term stable foreign currency funding or of full dollarization of any of the economies.

For most CEE countries it was not just one of the factors above that presented problems, but rather a combination of those factors. This so-called “risk layering” involves the build-up of different levels of exposure to different types of risks. The most problematic risk layering has been associated with inflated house price levels, which hit particularly hard in urban centers, where the reaction of housing supply to the additional demand stimulus of introducing housing finance was low. Riga and Kiev are prominent examples.³

As house price levels increased, low foreign currency interest rates and long amortization periods played a similar affordability enhancement role as adjustable-rate mortgages (ARM) and option ARM did in the U.S. subprime and near-prime sectors.

Finally, the pace of product innovation and structural change in the industry, especially the rise of brokers, has accelerated the pace of growth and development, adding to procyclicality problems.⁴

In Poland, the Swiss franc product was promoted via new entrants and quickly penetrated to lower-income borrowing groups. The main vehicle was the broker intermediation channel, which by 2007 managed 30 percent of new loan originations, exceeding the level of many Western European markets. The savings that resulted from not having to maintain a large branch network were used to further cut margins.

For Hungary there is similar and additional evidence of risk layering. The average share of loans taken out for consumption purposes between 2005 and 2008 was 46 percent of all mortgage lending. This implies that the existing housing stock was systematically used as collateral to generate incomes.

In Ukraine (as well as in other markets with strong price increases, such as Poland and Latvia), loans for speculation purposes created a similar additional risk layer. Price escalation also quickly put Kiev apartments out of reach for the normal population. In response, underwriting was relaxed: underwriting PTI levels of 50 percent were not unusual in the marketplace.

Table 3 Summary of Risks for a Foreign Currency Mortgage Loan

Risk	Description	Risk faced by
FX risk	A depreciation in the local currency will increase monthly payments and may result in negative amortization.	Borrower
Liquidity Risk	Funding of foreign currency mortgages is more difficult to access and is often done on a short-term rollover basis.	Lender
Interest Rate Risk	Interest rates on foreign currency mortgages tend to be variable and shorter term, also largely independent of local macro conditions, which could exacerbate risk position or could act to hedge the risk.	Borrower
Credit Risk	Exposure by the borrower to FX risks increases the probability of default and also the size of the loss in case of default.	Lender
Lack of Transparency	Low levels of financial literacy and the complexity of foreign currency mortgages can lead to hidden charges, and the products are often packaged with low initial payments that change rapidly later in the loan repayment cycle.	Borrower
Procyclicality	Rapid structural change brought on by distribution through broker channels increases competition and pushes lenders to loosen lending criteria. This leads to a deterioration in lending quality and can lead to credit-induced bubbles and subsequent busts.	Borrower and lender
Risk Layering	The risks above and over-reliance on inflated house prices can, in combination, represent an excessive level of risk for lenders.	Lender

2. Foreign Currency Mortgage Lending: What Are the Drivers?

2.1. Demand-side drivers

2.1.1. Interest rate differentials, carry-trade by consumers

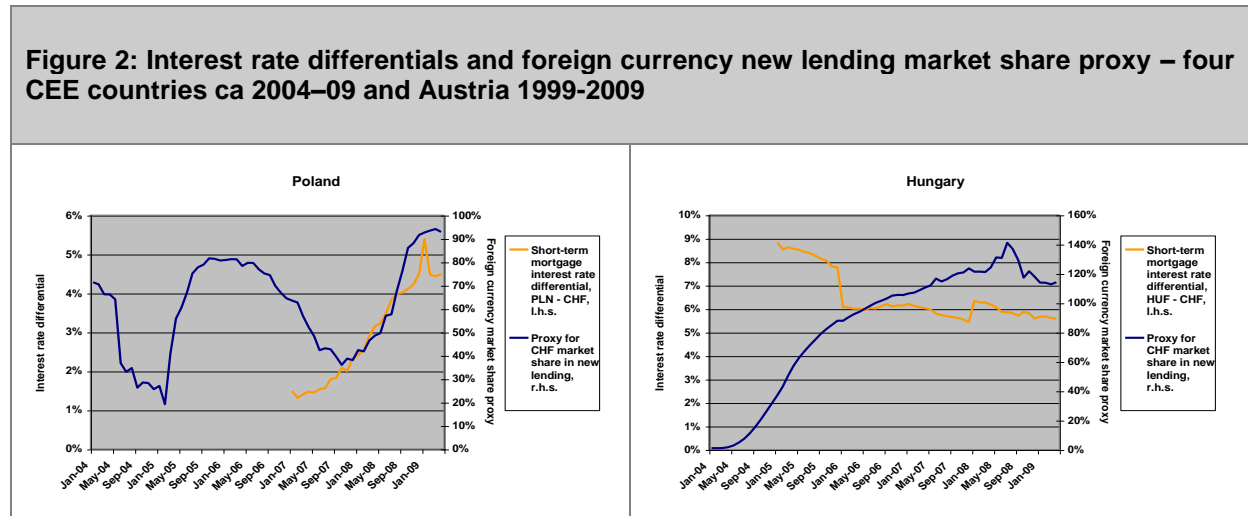
The absolute level of interest rates on foreign currency and local currency loans and the size of the differential between them are key drivers of demand. In addition, the expected direction of both domestic and foreign currency rates will have an important bearing on demand.

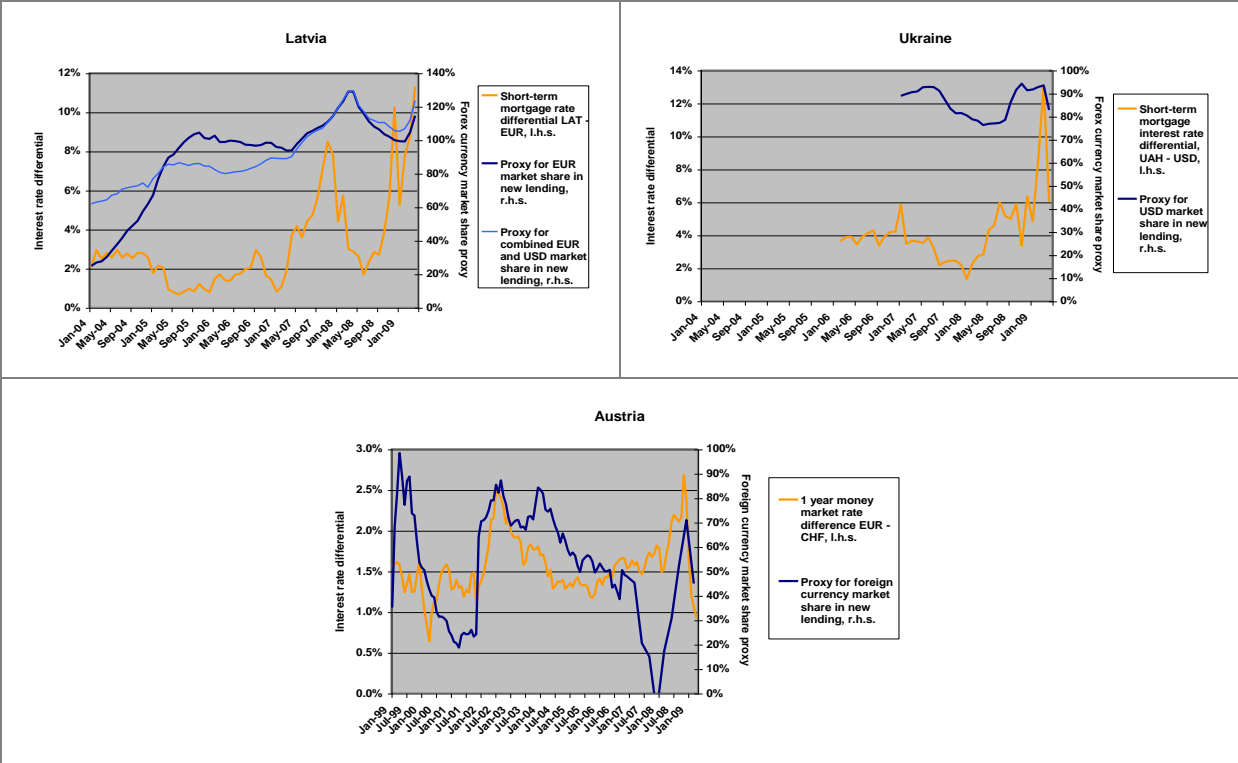
The financial press has dubbed the phenomenon in the case of mortgage lending the “carry-trade of the small man”. The implied rationale here is that the debt service burden under a foreign currency loan can be lower than under a local currency loan, but also that the borrower can make a capital gain from currency appreciation, but also from rising house prices. So there is a speculative aspect to the transaction.

However, is the carry-trade⁵ interpretation realistic, given the long-term nature of mortgage lending? Can debt service and capital gains benefits be reaped by consumers in the long term? Are consumers really that focused on the short term? We argue that a different approach is warranted in analyzing the case of mortgage finance.

Questions have already been raised: for example, Rosenberg and Tirpák (2008) ask why in some cases the correlation between the interest rate differentials and mortgage foreign currency shares is broken.

Figure 2, showing time series data for four CEE case countries and Austria, confirms that the picture in the case of mortgage finance is far from uniform.





Source: local central bank data, Finpolconsult computations

Notes: Gross new lending data are not consistently available for the region. We therefore defined a new lending market share proxy as the year-on-year change in outstanding in foreign currency divided by the year-on-year change in outstanding of total mortgage portfolio. The proxy can exceed 100 percent if local currency outstanding falls in absolute terms. Mortgage lending rate differentials reflect local and foreign currency rates with fixing periods up to 1 year. Where no foreign currency mortgage rate time series was available (Austria), it is approximated by the one-year money market rate differential.

In Austria, the interest rate differentials between the euro and the Swiss franc has been closely correlated with the extent of foreign currency lending. This suggests that Austrian borrowers were very interest rate-sensitive, as the maximum differential in the 2004-09 period was only 2.5 percent and for most of that time only 1.5 percent. The carry-trade argument, in fact, fits very well in Austria given that the predominant Swiss franc product used in Austrian was for interest-only loans where the principal was to be repaid through a separate euro-denominated investment vehicle. This started off as a niche product aimed at those cross-border workers whose salaries were denominated in Swiss francs. It then expanded to borrowers earning in euro and can be seen as the genesis for the growth of foreign currency mortgage lending across the CEE region (Box 1).

In Poland, also in the recent past, demand has been closely correlated with the interest rate differential as both Polish zloty and Swiss franc products co-existed. However, Central Bank interest rate data for Swiss franc lending only started in 2007. In contrast to Austria, Poland has a tradition of foreign currency mortgage lending going back to the early 1990s, when the market was then in U.S. dollars.

Box 1 The Austrian carry-trade product

Starting in the late 1990s in Austria, a new mortgage product rapidly gained popularity. It linked an interest-only Swiss franc mortgage loan with a euro repayment vehicle (for example, an endowment insurance contract) that was supposed to repay the loan upon maturity. The basic strategy for consumers was to invest the difference between a hypothetical euro mortgage loan instalment and the actual Swiss franc mortgage loan instalment into varying levels of savings in the repayment vehicle. This product fitted the Bancassurance strategies of the time—selling insurance contracts through banks, and vice versa—and was strongly promoted by intermediaries that were paid origination fees for two contracts in a single transaction. Consumers liked the idea of lower Swiss franc mortgage interest rate payments and the opportunity of a possible capital gain from currency appreciation and on the repayment vehicle.

In Latvia, interest rate differentials have been relatively small, yet seem to have played an important role in influencing the demand for foreign currency mortgages. During the key expansion phase of foreign currency credit in 2004, interest rate differentials between Lats and the Euro were in the range of 2.00-2.50 per cent. The Lat was and remains pegged to the Euro and is supported by a system similar to a currency board which maintains the stability of the currency. However, as the differentials fell to almost zero in 2005, the market share of local currency lending did not recover. This points towards the dominance of supply-side drivers in the Latvian mortgage market.

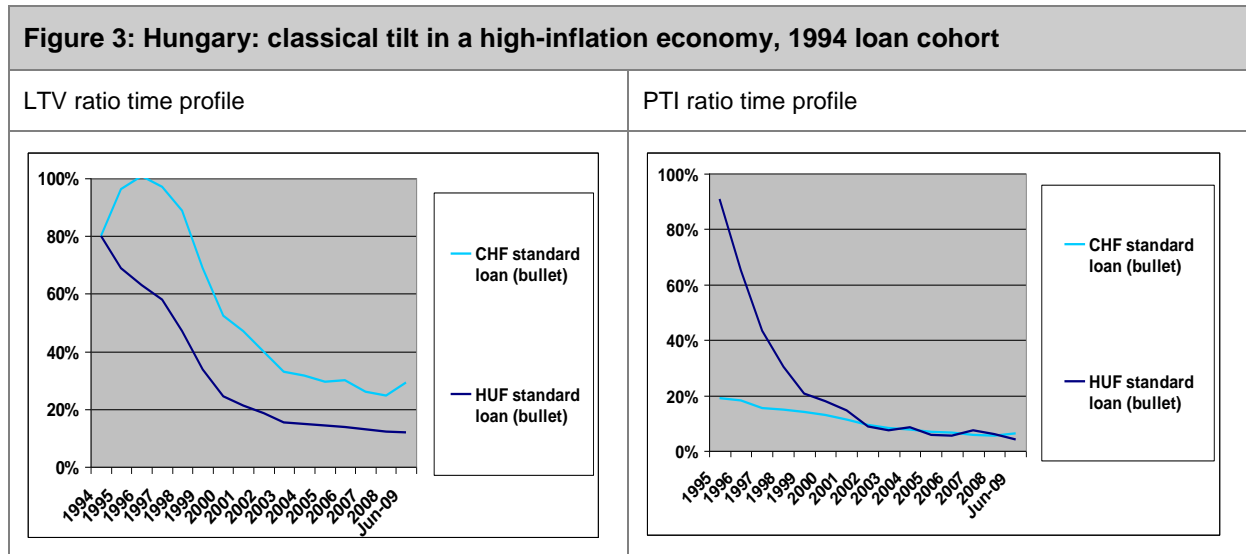
Ukraine also shows that its borrowers had a relatively small level of sensitivity to changes in the interest rate differential. Ukraine's economy had witnessed a high degree of dollarization in its real estate market, and financial sector more generally. Ukraine's mortgage market started as recently as 2005, and after a short spell of local currency lending, saw a steep ascent of foreign currency lending comparable to that seen in Latvia. Despite much higher interest rate levels than in Latvia, the differential between local and foreign currency rates remained moderate, in both absolute and relative terms. The carry-trade motive for taking out foreign currency loans is therefore unlikely to explain much of the structural shift toward their use.

Finally, in Hungary, there appears to have been very little correlation left between the interest rate differential and the market share of foreign currency loans. In this study's sample countries, the Hungarian market is historically the one with the highest interest rate differential between loan types.

2.1.2. The tilt effect, special characteristic of mortgage lending

During periods of high inflation, houses purchased with a standard loan in the domestic currency will show rapid changes in the LTV ratio and the DTI. This occurs because the standard mortgage product payments remain constant, but salaries and house prices will rise at least partly in line with inflation. This can make mortgage loans expensive at the outset, making affordability a real constraint, but as inflation kicks in the loans rapidly become more affordable. This is the so-called tilt effect, where the burden of the payment is ‘tilted’ toward the early life of the mortgage loan.⁶ Tilt is a frequent cause of early payment defaults, or lenders denying credit.

In theory, a foreign currency mortgage loan would adjust to this imbalance by implicitly capitalizing the inflation difference between the local jurisdiction and the jurisdiction of the foreign currency. It would do this if the exchange rate gradually depreciated in line with the changing relative nominal worth of the domestic currency due to inflation. All things being equal, the change in the exchange rate should allow for the inflation differential, so that the amortization of the mortgage loan remains constant. Assuming a steady depreciation, the LTV ratio and PTI ratios of a foreign currency loan falls less steeply than those of a local currency loan. The price for this benefit, however, is offset by a future risk that both the LTV and PTI ratios will increase as a result of a devaluation shock.



Sources: Magyar Nemzeti Bank, FHB, Metropolitan Research Institute, Finpolconsult computations.

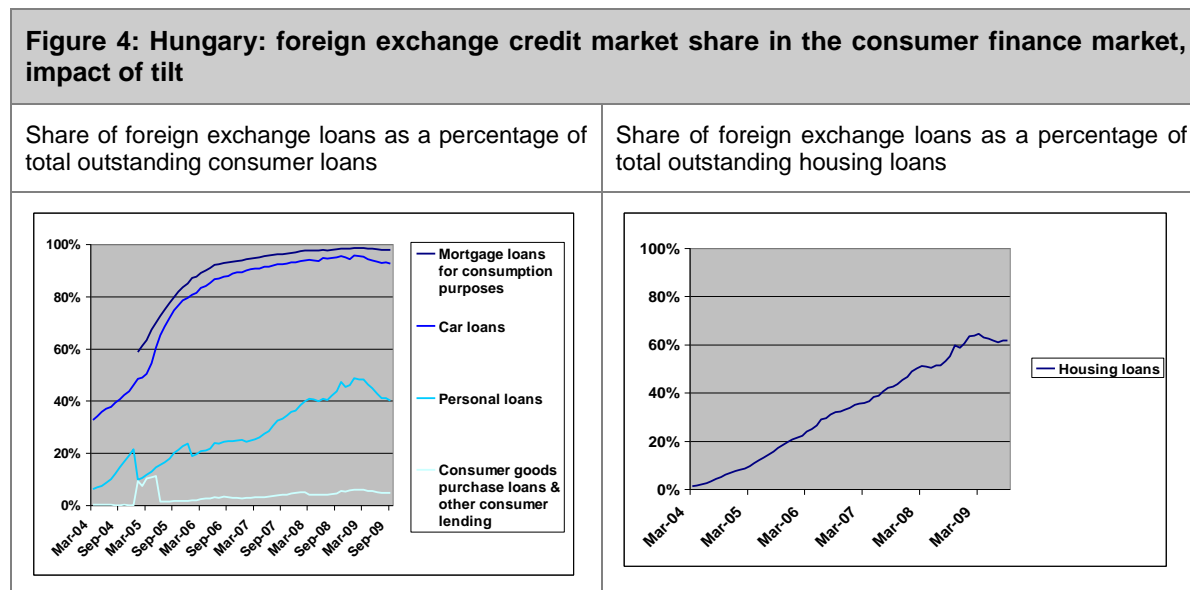
Notes: FHB house price index, Metropolitan Research Institute for 1990s. Income growth assumed to equal nominal GDP growth. Standard loans for simplicity assumed as interest-only (bullet). Four percent real interest plus 1 percent inflation paid on Swiss franc, 5 percent real interest plus CPI inflation paid on Hungarian forint.

Figure 3 above shows the tilt effect using data for Hungary based on a loan made in 1994. In the first chart it is clear that in the initial period of the Swiss franc loan, negative amortization is occurring. The loan balance is actually increasing, and the LTV is rising from 80 percent initially to 100 percent by Year 3 of the loan. This is because high inflation is triggering a series of devaluations, increasing the local currency value of the loan relative to domestic property prices. However, despite the growth in the loan balance, as the second chart shows, the loan is still manageable in terms of affordability. The PTI ratio gradually decreases from the initial 20 percent level. Conversely, the Hungarian forint loan is completely unaffordable initially with a PTI of over 90 percent, but it then amortizes rapidly as inflation fuels higher incomes and property prices, so much so that five years into the loan the LTV has halved to just 40 percent. The charts show two critical spells of devaluation for Hungary: both 1995-06 and 2007-08 were characterized by strong real Hungarian forint devaluation that were not matched by house price inflation.

Inflation tilting is a far less relevant issue for short-term loans. When the loan repayment period is shorter, the tilt effect is much less pronounced (car loans, with typical maturities of three-five years) or absent (overdraft loans). Also, short-term consumer loans will be for much smaller amounts than for a mortgage loan. The tilt effect therefore is likely to be much less of a determinant in the demand for these loans.

Figure 4 shows the respective market shares of different foreign currency loan products in the Hungarian market. Note that the mortgage data are distorted by a phase of heavy subsidies in the early 2000s, which is discussed further below.

Foreign currency (in particular the Swiss franc) is the currency of choice for long- and medium-term finance, that is, mortgage loans and car loans. The forint continues to remain more widely used in short-term consumer lending such as personal loans and consumer goods purchase loans.



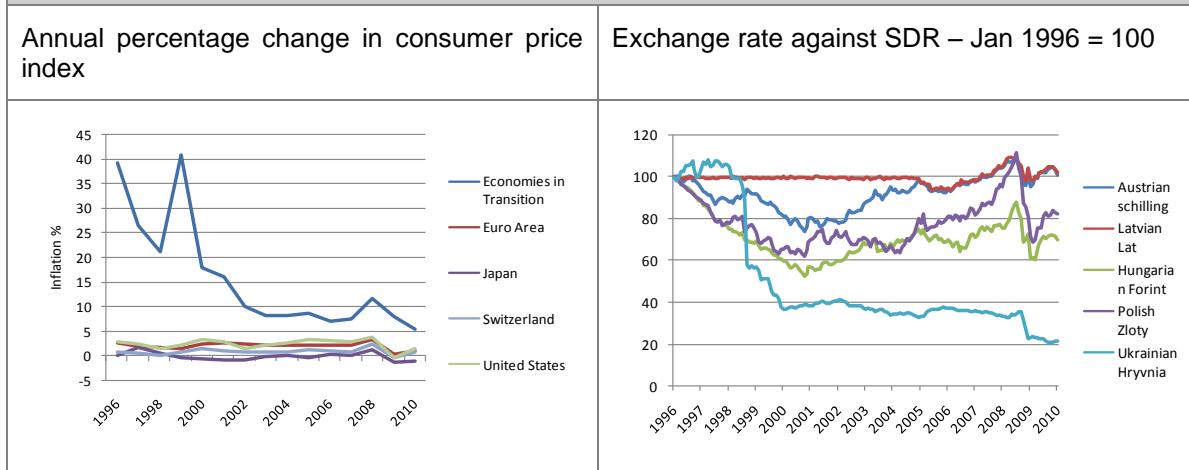
Source: Magyar Nemzeti Bank, Finpolconsult computations.

Notes: In the case of housing, loans carry long maturities, typically 20-40 years. So although new lending from the end of 2004 onward was almost largely in foreign currency, it took some time for the ratio of total loans outstanding to change, given the high level of subsidized forint loans that already existed.

Tilt effects such as those described for Hungary remain present in much of the CEE region but to differing degrees. The chart below shows the inflation differential that is at the root of the effect. Going farther back in time, the differential was even more pronounced. Inflation was as high as 486 percent for transition economies in 1992 and only fell to below 100 percent in 1996. In contrast, none of the countries or monetary unions where the foreign currency originates had inflation rates above 10 percent annually post- 1983.

The second chart in figure 5 shows that, over the last 15 years, on the whole the currencies of the study countries have depreciated when referenced to a Special Drawing Right (SDR), which is made up of a basket of currencies. The worst affected has been Ukraine, where the currency is now worth just 20 percent of its 1996 level. Austria, which is part of the Eurozone, and Latvia, which pegged the SDR and then the euro, have both shown only low levels of volatility and have maintained their value over the past 15 years.

Figure 5: Inflation and exchange rate trends in the CEE region



Source: Economist Intelligence Unit database, International Financial Statistics (IFS) database.

Notes: Economies in Transition include Azerbaijan, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Kazakhstan, Lithuania, Latvia, Macedonia, Moldova, Poland, Romania, Russia, Yugoslavia, Slovakia, Slovenia, Ukraine, and Uzbekistan.

Austria joined the Eurozone in 1999; the index used in the second chart was adjusted for the change.

Returning to the case countries, the tilt effect is less pronounced in Poland because of lower local currency interest rate. Nevertheless, foreign currency loans still represented two-thirds of housing loans by September 2009, but just 7 percent of consumer loans. The tilt effect was more pronounced in Poland during the 1990s, when Polish zloty mortgage rates exceeded 10 percent. In contrast, the tilt effect is almost absent in Latvia and Austria, which have had stable currencies and stable levels of inflation. Last, the tilt effect is still very much present in Ukrainian hryvnia lending. However, in Ukraine the real U.S. dollar interest rate is high enough to reduce the initial payment differential to very marginal levels. This raises additional questions about the cost-benefit balance of foreign currency borrowing for consumers. It also indicates that while the demand-side factors of interest rate differentials and the tilt effect may go some way toward explaining the growth of foreign currency lending, they do not offer the complete story.

2.2. Supply-side drivers

2.2.1. Local currency lending subsidy programs

As mortgage markets began developing in the CEE region, from the mid-1990s onwards, several attempts were made to boost the local currency mortgage market with the use of subsidies and tax breaks. The case countries were no exception. Subsidies programs took the form of tax deductions for borrowers, direct interest rate buy-down programs, subsidies for housing saving schemes, and subsidies and tax benefits for mortgage bonds.

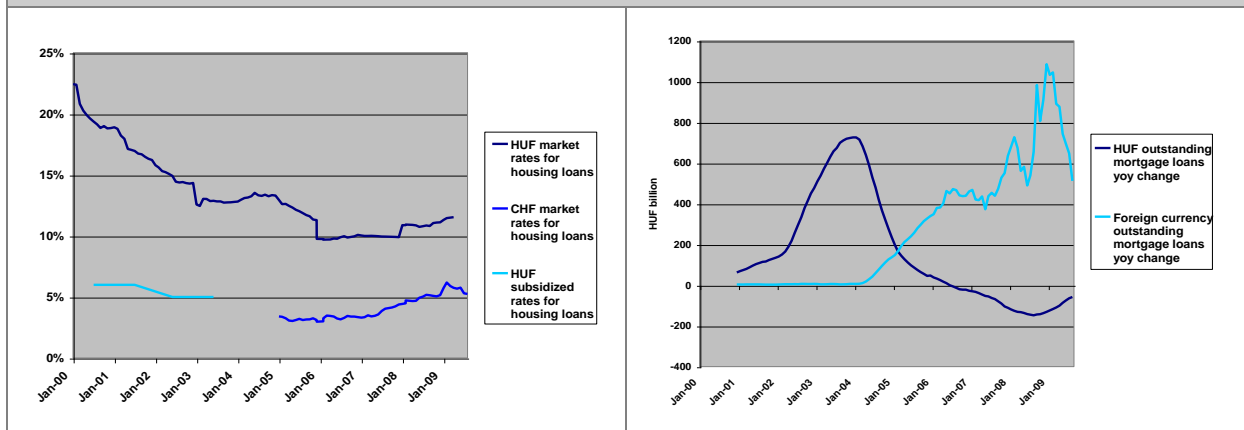
Dübel (2003) reviewed the different mortgage market interventions by governments in the region, in particular the buy-down programs of the Czech Republic, Hungary, and Poland. Just one of those was found to be partly successful; the other two failed, with some damaging consequences for the local currency mortgage market.

In 1996, the Czech Republic introduced an interest rate buy-down program that aimed to keep the koruna mortgage rate at a fixed 7 percent. This compares to a market rate that stood at 11-12 percent. The size of the buy-down was capped at 4 percent. By 2003, market rates reached 7 percent and the buy-down finally became zero and was duly abolished. The fiscal costs of the program were considered moderate owing to a combination of the 4 percent cap and the fact that interest rates in the Czech Republic are typically fixed for just five years at a time, which limits the ongoing cost of the program. Alongside this program, the Czechs also ran other mortgage market subsidies schemes benefiting mortgage bond issuers and contract savings for housing institutions (Bausparkassen). The latter scheme produced a disproportionate level of savings, which by law had to be used to fund housing loans or be invested in mortgage bonds. The combination of these different schemes and gradually falling inflation and domestic interest rates explains why foreign currency lending was not able to get a foothold in the Czech mortgage market.

In 1994, during the initial high-inflation phase, Poland experimented with a local currency mortgage product with negative amortization but without any subsidies. The scheme failed to win over either borrowers or lenders, and the share of foreign currency lending remained high.⁷ When the decision was made in 2002 to try public subsidies in combination with standard, amortizing mortgage lending, a target interest rate of 9 percent was set. That rate, however, was quickly overtaken by the market during the interest rate compression phase of 2002 and 2003. Despite several iterations, the program was never fully implemented. Even after the compression phase, local currency interest rates in Poland remained considerably higher than in the Czech Republic, and foreign currency lending surged during the mid-2000s as foreign banks entered the market and competition intensified.

Hungary committed the opposite mistake to Poland: it offered excessive levels of subsidy and created a wholly unsustainable program.⁸ The forint interest rate buy-down program initiated in 1997 was only one among several initiatives that included a mortgage bond issuance subsidy program and a Bausparen contractual saving for housing program. When the interest-rate buy-down program started, the target mortgage rate was set at 8 percent. This seemed reasonable at the time and in line with what was going on in the Czech and Polish cases. However, by 1999 the target rate had fallen to 6 percent and in 2002-2003 it had fallen further to 3 percent for first-time buyers and 5 percent for those seeking refinancing. After further tax deductions, borrowing costs were actually negative. What made fiscal costs really explode was that the subsidy was legally applicable for the entire life of the loan. This meant that the mortgage loans made in 2002 alone generated fiscal costs equivalent to 1 per-cent of Hungary's GDP in net present value terms.⁹ During this state-supported phase, not surprisingly Hungarian forint lending took a 100 percent market share. This was despite market interest rates in the mid-teens percentage points. On the back of this fiscal giveaway, Hungary displayed the strongest mortgage market growth in Central Europe. By 2003, mortgage debt outstanding reached 8 percent of GDP, while in the Czech Republic it stood at under 6 percent and in Poland at under 4 percent.

Figure 6: Hungary – subsidized forint and market forint and Swiss franc mortgage loan rates, and forint vs. Swiss franc year-on-year changes in outstanding loan volumes, 2000-09



Source: Magyar Nemzeti Bank, Dübel (2003), Finpolconsult computations.

Notes: volume data refer to housing loans to individuals.

Clearly, the Hungarian program was fiscally unsustainable. It had to be given up in 2004, which sparked a rush to claim subsidized mortgages and then a collapse of the forint loan market. The ballooning fiscal deficit also led to rising concerns over the country's ability to meet EMU criteria for possible EU accession. Figure 6 shows how closely related the failure of the forint subsidy program was with new originations in general, and foreign currency market shares in particular. Ironically, the high subsidies spent on the forint mortgage program had raised fiscal vulnerability and made an abrupt devaluation more likely.

Both the Ukrainian and Latvian mortgage markets only emerged during the middle of the decade, and their governments have not made any significant attempts to support local currency lending. This is despite strong interest from domestic lenders in developing the local currency market, especially in Ukraine, where local lenders face difficulties in accessing foreign currency funding. In Latvia, the state-owned Mortgage and Land Bank, which had issued mortgage bonds in Latvian lats to fund itself, tried to compete with foreign entrants by doing lending in euros. Its market share never exceeded 5 percent.

Euro-zone member and long-term low-inflation-economy Austria has his own history of failure to support local currency products. Fiscal support for contractual savings for housing, Bausparen, which plays a far greater role in local currency housing finance in Austria than in Germany, has been tied to a threshold interest rate of 6 percent for decades. When the euro interest rate dropped below that rate in 1998, Bausparen were transformed from a fixed-rate product at 6 percent into an adjustable-rate product with a 6 percent cap. Foreign currency products originated after 1998 carried lower fixed interest rates than the Bauspar adjustable-rate cap and were often used to prepay many old Bauspar loans.

2.2.2. Foreign market entry

In the wake of the corporate lending crises that beset the region in the 1990s, the consumer lending sector became a key strategic target for both domestic and international lenders. This coincided with a large-scale sale of domestic lenders in the CEE region to foreign entrants. In particular, the main savings banks in the Baltics, Czech Republic, and Romania were all sold off to foreign entrants. Large commercial banks were sold in Poland and Hungary, where the main savings banks remained in local ownership or were floated. Foreign entry also took place in the form of acquisitions of smaller banks, as well as greenfield investments that grew rapidly.

The impact of foreign entrants can be seen as one of the drivers for the introduction of foreign currency mortgage loans in many of the CEE markets. The behavior of the foreign entrants in the new market depended first on how entry was made (acquisition of large existing lender, smaller lender, or greenfield investment) and second on the existing level of competition in the market.

(a) Market entry by taking over larger lenders with existing mortgage portfolios: the strategy of foreign entrants has mostly been a conservative product and underwriting policy, and by implication also greater reluctance to do foreign currency lending.

For example, Italian lender Unicredit in Poland as an early entrant took over PekaoSA, the second largest Polish commercial bank.¹⁰ Pekao was offering a conservative retail mortgage product menu and had joined the Swiss franc lending bandwagon very late and reluctantly. As of April 2009, Pekao and leading deposit-taking institution PKO BP were the only two Polish banks enjoying a comfortable liquidity cushion.

Similarly, after Erste Bank's takeover of Czech savings bank Ceska Sporitelna in 1998, the mortgage product menu was kept in local currency, although Erste by that time was already a leader in Swiss franc lending in Austria. However, Erste entered the Czech market aggressively by cutting koruna mortgage rates in what can be seen as a big bang for Czech mortgage market competition.¹¹

(b) Market entry by taking over smaller player or setting up a new institution: the strategies of foreign entrants in this case have naturally tended to be more aggressive to gain market share rapidly. The easiest way to do this was to push foreign currency mortgages. A prominent example is the two Swedish foreign entrants, Swedbank and SEB, that by 2005 dominated retail lending in the Baltics with joint retail market shares of 77 percent in Estonia, 60 percent in Lithuania, and 48 percent in Latvia. Batchvarov et al. (2007) find that by 2005 those banks were virtually the only mortgage lenders in the region. While local currency (as well as U.S. dollars) loans were also offered by Swedish entrants, Euribor-based euro loans became quickly their dominant product, despite only moderate interest rate differences to local currency loans.¹²

These new markets were often subject to weaker consumer protection regulation than was the case in the parent country. This was because of lack of regulatory experience, gaps in the legal and regulatory framework, and the virtual absence of consumer financial literacy. This does seem to have been abused in some cases, with products being offered at terms that would not have been accepted by a home regulator: for example, high LTV loans with interest grace periods, minimal documentation, and clauses allowing the lender to unilaterally increase rates or request more collateral should any problems occur. These sorts of loans were widespread in the Latvian market despite the fact that no credit bureau was in operation, which meant that borrowers often had multiple loans with different lenders. Particularly aggressive market practices were pursued by banks without locally regulated subsidiaries.¹³

Some banks changed their level of aggressiveness in lending practices between countries when they found themselves in a less favorable market position. Figure 7 compares the Austrian and Hungarian Swiss franc products of Erste Bank. It shows that Swiss franc loan underwriting in Hungary was generally less constrained than in Austria, especially with regard to LTV ratios and recognition of the consequences of devaluation risk. Attempts by Hungary's OTP Bank to offer specific exchange rate caps (de facto negative amortization caps) were frustrated by the sharp competition of uncapped Swiss franc offers.

Figure 7 Austrian and Hungarian Swiss franc mortgage products of Erste Bank compared	
Austrian product	Hungarian product
<p>Product features:</p> <ul style="list-style-type: none"> ○ 25-year maturity. ○ Repayment vehicle product (Swiss franc loan amortized by euro repayment vehicle). ○ Underwriting on euro fixed-rate basis. ○ Tighter LTV limits than with Euro loans (80%). ○ Negative amortization cap (110%), triggering conversion offer (optional), additional collateral requirements. ○ Payment caps offered (optional). ○ Indexed. ○ Some risk-based pricing. <p>Borrower motive: home financing and investment (carry-trade)</p> <p>Industry motive: intermediary-insurer-driven, lender kick-backs.</p>	<p>Product:</p> <ul style="list-style-type: none"> ○ 20-year maturity. ○ Standard mortgage product (fully amortizing Swiss franc loan) ○ No comparable Hungarian forint underwriting benchmark. ○ Partly high-LTV underwriting. ○ No automatic negative amortization conversion trigger. ○ No payment caps. ○ Reviewable. <p>Borrower motive: home financing (affordability)</p> <p>Industry motive: lender-driven (refinancing, competition).</p>

Sources: Erste Bank annual report 2008, interviews by the authors.

Perhaps the most striking case for a strategy-driven push to expand foreign currency lending is the entry of Portuguese lender Millennium Bank into Poland. Millennium in 2002 bought a small regional bank in the Gdansk area, which in 2004 introduced Swiss franc lending to the Polish market and within just two years became a key competitor to the then dominant savings bank PKO BP. By 2006, Millennium was the fourth largest bank in mortgage outstanding and the second largest bank in new lending.¹⁴ Other Polish lenders and entrants had to follow the Swiss franc trend in order not to lose market share. Endowed with only a small branch network, Millennium grew particularly strongly via broker networks.

Another common practice is the charging of foreign currency lending fees, which are typically substantially higher. This has been observed in Ukraine by Dübel et al. (2006b), including recurring conversion fees, as most loans are repayable in Ukrainian hryvnia while being denominated in U.S. dollars. A similar observation of higher fee income of foreign currency loans has been made for Austria.¹⁵

In summary, foreign entry has been a major catalyst in the spread of foreign currency lending. The mode of market entry was a determining factor in how aggressive the new entrant was in the mortgage market. Those that bought small subsidiaries or that started greenfield were desperate to gain market share and were willing to take on the extra risk that foreign currency loans presented in exchange for market share and a growing portfolio. The lack of regulatory response from either the host or home countries in many cases allowed the proliferation of products that were in themselves risky but that were also often accompanied by poor lending practices in terms of transparency of fees and terms and conditions. Entrants that went in by buying more established operations with existing portfolios were more resistant and risk averse, but ultimately the lack of competitiveness of local currency mortgages forced them to expand their product line.

2.3. Access to local and foreign currency funding

As our case country discussion so far has shown, easy access to foreign currency funding alone is not a sufficient condition for high foreign currency lending shares. Nevertheless, it is also the case that easy access to foreign currency funding through a parent bank, Eurobond issues, or cheap swaps has been a central driver in the expansion of that market.

2.3.1. Local currency funding

A closer look at the funding structure of foreign entrants reveals that they often possessed limited options for developing local currency products. In many cases they were severely constrained as a result of lack of liquidity of the local currency, as well as by currency-matching regulations (both at home, on a consolidated basis, and in the host country). A typical rule would limit any open position to a maximum of 10 percent of the capital base.

Unless a foreign entrant was lucky enough to have acquired a large local lender controlling a strong deposit base, the options to fund a large and long-term local currency loan book were very limited in most transition countries, even if the demand for such loans was present.¹⁶

Local bond markets in transition countries were illiquid and, despite the introduction of covered bonds, continue to be so to the present day, with a few exceptions. A key problem globally in that regard is the absence of any regulatory capital recognition for the ability of long-term bonds to transfer interest rate and liquidity risk from a bank's balance sheet to investors. This provides banks with an incentive to use deposits and hence mismatched funding for mortgages.¹⁷ Second, the institutional development approach in many transition countries started with the specialized mortgage bank model as issuers of covered bonds. In many ways this is a safe, but also costly and inflexible, approach that was not adapted to these new markets. Hungary reacted to this challenge by implicitly heavily subsidizing covered bonds, which gave them a market share of some 60 percent in the funding of residential mortgages at their peak—second only in Europe to Denmark.¹⁸ The Czech Republic, and to a lesser extent Slovakia, subsidized covered bonds as well. Poland shied away from subsidizing covered bonds for fiscal sustainability reasons.

Long-term savings products that could produce an alternative local currency funding instrument were introduced in the Czech Republic, Slovakia, Poland, and Hungary, with varying models and degrees of success. Again, the most successful case, the Czech Republic, used high levels of subsidies to support a special circuit model copied from Austrian/German Bausparkassen.¹⁹ A local version in Poland that stabilized the deposit base early on was abandoned for fiscal reasons. Slovakia seems to have struck a balance of moderately subsidizing both covered bonds and contract savings for housing. Again, access to that market for foreign universal banks is difficult, as the key institutional approach adopted was a specialized institution.

The main local currency funding option for local currency mortgages for entrants without extensive deposit bases was therefore swaps. As central bank and Bank for International Settlements (BIS) data show, during the financial boom years of the 2000s the cross-currency swap markets for CEE currencies ballooned. Yet, as financial crisis events have demonstrated in parallel, the swap market may rapidly become illiquid as counterparties shy away from any form of interbank risk. In any event, swap market maturities, which only extend to a maximum maturity of 3 years, must be considered too short to hedge the foreign exchange risk for the duration of a mortgage loan, which might be 5 or 10 years.²⁰ Hence, entrants needed to roll over those swap agreements as they matured.

In addition to currency risk, a foreign lender faces index (or basis) risk, that is, the risk that the actual cash flows do not match because typical mortgage market indices vary against the standard indices used in the swap market.

Almost all these problems, and the associated regulatory penalties, disappear when the lender offers a product that is matched to its cost of funds. For most banks operating in the CEE region, the Euribor benchmark achieved this. In the case of Swedish banks operating with euro loans, as in the Baltics, or a Eurozone bank operating with Swiss franc loans, as in Poland and Hungary, only plain vanilla swaps in fairly liquid markets (for example, Swedish krona-euro and euro-Swiss franc) were required.

Returning to the earlier puzzle of why foreign currency lending in Latvia was so high despite a negligible interest rate differential, it becomes clear that it was a supply issue relating to the funding of the lenders. Swedish entrants operating subsidiaries in Latvia were unable to tap local bond markets, could not easily access long term krona:lat swaps, and had to meet local regulatory requirements on open positions. Worse still, the level of local currency deposits in Latvia was very low relative to others in the region. In 1999, when the Latvian market was just starting, Polish deposits amounted to 31.4 percent of GDP, compared to just 15.4 percent in Latvia. In any case, the existing deposit base was already lent out; according to IMF data the loan-to-deposit ratio already exceeded 100 percent in 1999. Right before the collapse of the Latvian market in 2007, the loan-to-deposit ratio had ballooned to 250 percent. In view of these constraints, together with a strong political will for Latvia to join the Eurozone, foreign currency lending was the only remaining option.

2.3.2. Foreign currency funding

Once the new entrants had established themselves and built up their portfolios, including the generation of a steady pipeline of new business, they now faced the problem of funding their foreign currency funding.

One approach was to attempt to stimulate foreign currency deposits from residents. This, however, was on the whole unsuccessful. The problem was that borrowers wanted the lower rates of FC loans, but savers wanted the higher rates of local currency deposits. Latvian data suggest that, despite the presence of a peg, the share of foreign currency deposits held by resident non-monetary finance institutions (MFI) fell owing to the minimal interest rate differentials between the Latvian lat and foreign currency deposits. It was only when the crisis hit that a flight into euro deposits started in anticipation of a possible devaluation. In Ukraine, which has a similar exchange rate policy, the situation was similar, with limited appetite for increasing the share of foreign currency deposits. Before the crisis, both countries had less than 40 percent of resident non-MFI deposits in local currency.

In Poland and Hungary, which both experienced appreciation over longer periods, the incentives for residents to hold foreign currency deposits were even smaller. In 2007 in Hungary, non-MFI held only 20 percent of their deposits in foreign currency, of which virtually none were in Swiss francs, the main currency of lending. In Poland, foreign currency holdings of households dropped below 10 percent in 2008. According to BIS data, the funding needs of banks lending in Swiss francs to nonbanks outside Switzerland dramatically ballooned, from US\$20 billion in 2002 to US\$60 billion in 2008. The euro situation can be considered only as marginally better.

The huge loan-to-deposit gap in the region was closed primarily by institutional deposits from parent banks in CEE subsidiaries, by Eurobonds issued by CEE banks, and by intragroup and external cross-currency swaps.

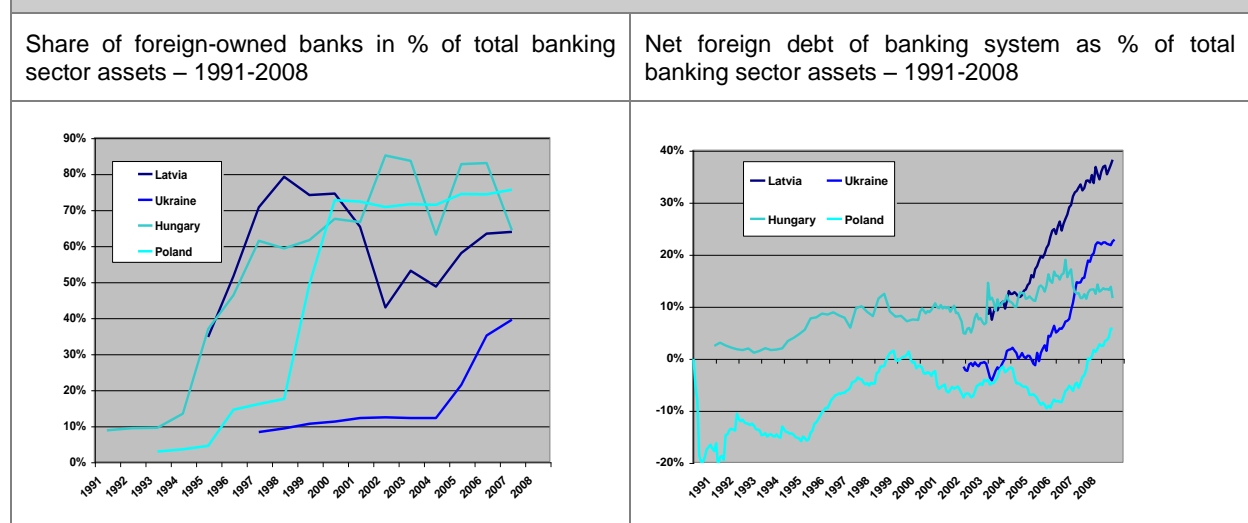
In Hungary, foreign currency deposits by foreign MFI increased strongly, but the main funding instrument of entrants remained local currency deposits combined with intragroup swaps. Domestic Hungarian banks for their part were already Eurobond issuers, with high levels of activity in the 1990s during the housing price boom. The activity is supported by either implicit or explicit state guarantees given to the issuers. Their key swap market activity was in euro-Swiss franc swaps.

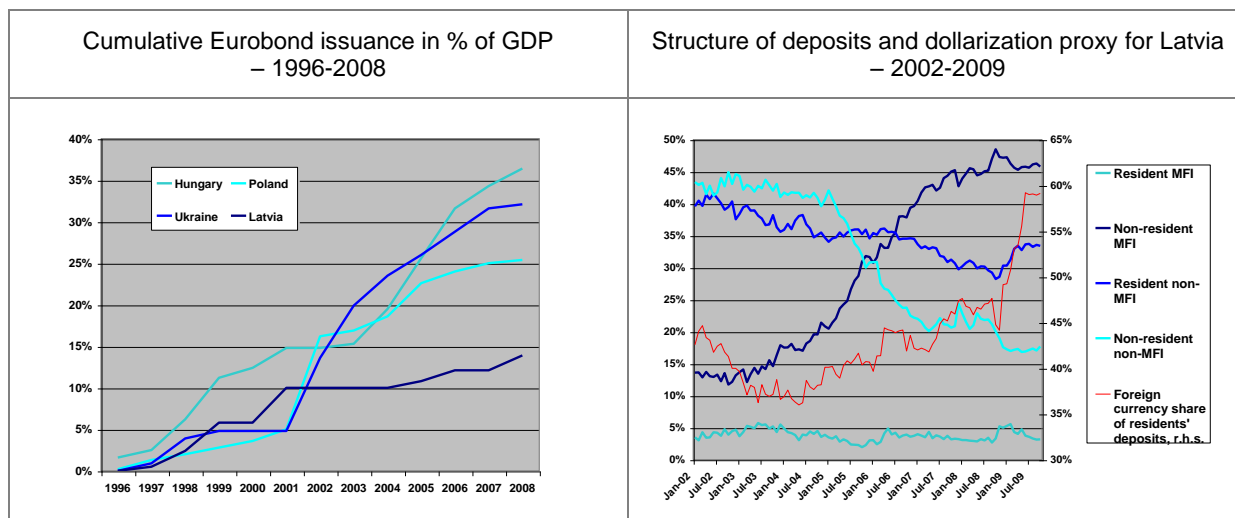
In Poland, foreign entrants ran a similar funding policy. The remaining large local bank PKO BP hedged itself mainly through the swap market. Some local lenders accepted a temporarily reduced market share as a consequence of costs and access issues to foreign currency funding. This appears to explain the less dynamic Eurobond issuance activity out of Poland compared to Hungary (figure 8).

In Latvia, the gap was overwhelmingly closed through euro deposits made by Swedish and other foreign parent banks. Local banks were of less relevance, which explains the low Eurobond issuance activity.

In Ukraine, though, there was equally high Eurobond activity, primarily of subsidiaries of foreign banks, but also of local banks. Access to funding remained a key area of competition as the local banks faced difficulty in accessing international markets (Dübel et al. 2006). International donors tried to assist local lenders in tapping euro and U.S. dollar bond markets; for example, USAID support for euro covered bond issue and pilot securitization deals.

Figure 8: Cross-border market entry and capital imports – four CEE case countries





Source: EBRD, IMF, Latvijas Banka, Finpolconsult computations.

Notes: MFI – monetary financial institutions.

The net impact of the different funding policies discussed above was the accumulation of external debt for the four banking systems, as clearly seen in figure 7. Latvia developed the most precarious foreign indebtedness level, followed by Ukraine. Hungary built up comparatively low net foreign debt levels, and the Polish system is still largely in balance. The data also show a clear correlation between foreign debt levels and foreign bank market shares.

2.4. Summary of findings – drivers of foreign currency use

From the discussion above, it becomes clear that foreign currency market shares are not driven by single factors.

- In Poland, the impact of demand drivers is only moderate, because of moderate local currency interest rate levels, but there is a high impact of cross-border entry strategies and foreign currency funding access on foreign currency market shares. While the systemic impact on the Polish banking has been moderate, the cross-border competition strategies employed by new entrants have heavily distorted the market and raised vulnerability at the individual bank level.
- For Hungary, demand drivers played a much more significant role, especially the tilt effect, which was supported by high local currency interest rate levels. Clearly, new entrants also distorted competition, but they also closed a supply gap left by the failed subsidy program for local currency lending.
- Latvia is probably the case where demand drivers had the least impact, as the interest rate differential between the euro and the lat was low and offered borrowers only a small upside for taking considerable risk. Clearly, this was an illiquid local currency funding market, the equivalent of a currency board policy that promised protection against a devaluation for banks funded in foreign currency. Last, foreign entrants that could not access any form of local currency funding made an aggressive push and opted instead for the plentiful euro-denominated funds.

- Ukraine showed a high tilt effect, but—in stark contrast to Hungary—access to high-priced foreign currency loans did not help borrowers much to solve the problem. The demand driver picture is therefore mixed. Supply-side drivers are strong, such as dollarization and easy access of (late-coming) foreign lenders to foreign currency funding. In terms of vulnerability, it is similar to Latvia.
- In Eurozone country Austria, there has been almost no objective reason for consumers to take out a foreign currency loan, other than entering a carry-trade (and repayment vehicle) speculation. With all other supply factors playing a minor role, here it was in particular competition strategies (first and foremost cross-selling of bank and insurance products under the Bancassurance concept) that drove foreign currency lending.

Table 4: Impact of different drivers on the demand and supply of foreign currency mortgage loans						
Case	Demand drivers		Supply drivers			
	Interest rate differential	Interest rate level (Tilt effect)	General dollarization	Unsuccessful local currency market development	Funding issues / cross-border debt	Competition / entry strategies and lending policies
Poland	Moderate	Moderate	Low	Moderate	High	High
Hungary	High	High	Low	High	High	High
Latvia	Moderate	Low	High	High	High	High
Ukraine	Low	High	High	Moderate	High	Moderate
Austria	Low	Low	Low	Low	Low	High

Source: author's assessment.

Looking at the columns of table 4, the most common denominator has been competition and entry dynamics, followed by access to funding and the tilt effect for transition countries. Outside Austria, the famous “carry-trade of the small man,” a term invented by investment banks, appears to be a myth.

3. Financial Stress and Foreign Currency Mortgages

3.1. Devaluation shock, currency, and monetary policies

The impact of the financial crisis was to create large declines in the real exchange rates of the four transition countries, and even for Austria relative to Switzerland. For households who have foreign currency mortgages, the result is a boost in the outstanding local-currency level of debt and the debt servicing burden. Both of these effects significantly increase the probability of default (a concern that should have made the lenders more hesitant to pursue such lending). In the US, there has long been a clear link between the LTV level and the probability of default. The link is less clear in Europe where insolvency laws are stricter, but nevertheless there is clearly much less incentive for a borrower to make sacrifices and maintain mortgage payments if the property is worth less than the loan. The second effect is driven by the fact that borrowers will receive their pay in local currency which would mean a higher debt servicing ratio in the case of a devaluation.

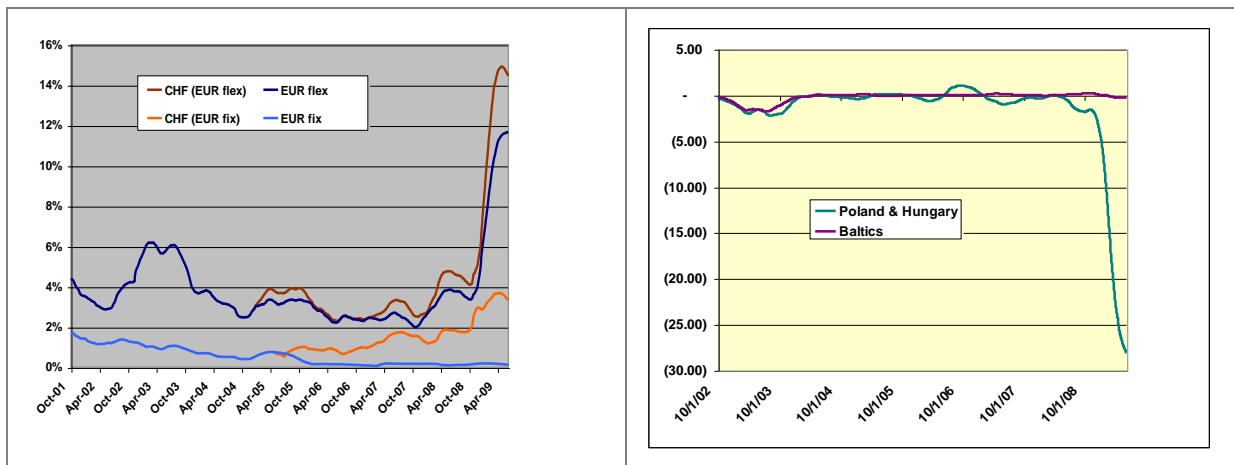
The scale of devaluation risk depends on currency policies and their credibility, as well as the past scale of real appreciation, trade, and capital flows.

- In the flexible exchange rate economies in our study—Poland and Hungary—a long phase of nominal appreciation or stability, leading to real currency appreciation, has helped to induce borrowers and lenders to accept the foreign currency market. Both countries had prolonged appreciation of their currencies between 2001 and 2008, as can be seen in figure 9. This is despite Hungary having a considerably higher inflation rate than the Eurozone or Switzerland. The reason for the appreciation was not linked to changes in the terms-of-trade, which benefited commodity-dominated economies, but rather to autonomous capital imports, especially through cross-border bank lending. The danger here was that the year-on-year appreciation became built into expectations and generated what could be termed “devaluation risk amnesia” by banks and borrowers. The continued appreciation built a growing risk of a devaluation.
- In the fixed exchange rate economies of our study—Latvia and Ukraine—generating devaluation risk amnesia is a direct consequence of official policy. It is almost an intrinsic part of the policy to reduce inflation expectations. Yet, pressures for an abrupt devaluation can still build up based on actual inflation differences, lower growth expectations, and finally a reversal in capital flows. This was the case in Ukraine in October 2008, which devalued by 45 percent after an eight-year-long phase of a stable dollar exchange rate. The defense of the new exchange rate was only made possible by international standby credits. Latvia’s fixed exchange rate policy against the euro since 2005 has also been maintained only thanks to massive international support.

Figure 9: Devaluation risk and foreign monetary policy “hedging” potential of indexed contracts

360-day normalized volatility* of Swiss franc vs. euro exchange rates, stratified by countries pursuing fixed vs. flexible exchange rate policies toward euro – 2001-09

360-day covariance of three-month Euribor interest rates and euro exchange rates with Poland/Hungary and the Baltics – 2002-08



Source: Bloomberg, Finpolconsult computations.

Notes: *360-day moving average of standard deviation divided by mean of the exchange rate. euro fix includes Bulgaria, Latvia, Lithuania, and Estonia; euro flex includes Russia, Kazakhstan, Ukraine, Romania, Poland, and Hungary.

Figure 9 considers the scale of the devaluation impact on mortgage borrowers in three of the case countries. The chart on the left tracks those regimes that are fixed to the euro (Ukraine and Latvia) and those that are floating (Hungary and Poland). The chart shows for each group how volatile the exchange rate is against the euro and against the Swiss franc. The chart shows the “success” of fixed-rate policies by currency—Swiss franc and euro—in terms of reducing exchange rate volatility. This measure could be considered as a proxy for devaluation risk amnesia. The chart on the right shows the degree to which the currencies respond to changes in the Euribor interest rate. As would be expected from the fixed-rate regimes, there is no relationship. In the variable rate regimes, a very strong negative correlation appeared during the financial crisis.

The euro fixed-rate regimes survived the 2008 crisis only thanks to massive international help, while those countries with flexible euro policies suffered from a sudden increase in volatility of the exchange rate following a long phase of low volatility.

This increase in volatility, which can be used as a risk proxy, was more pronounced in the case of Swiss franc than the euro, despite comparable pre-crisis levels. Also, the scale of devaluation vs. the Swiss franc was considerably larger than vs. the euro. Apart from generally higher devaluation risk when using a low (Swiss franc) vs. a moderate inflation (euro) currency, the main reason can be traced to the widespread Swiss franc liquidity crisis of fall 2008 caused by carry-trade investors that sought to repay their Swiss franc debts and unwind their risky investment positions.

The appreciation of their own currencies and the general liquidity crisis in the fall of 2008 prompted foreign central banks such as the Swiss National Bank to lower their official interest rates. While the “negative amortization” effect of a devaluation on outstanding mortgage debt is unambiguous, the effect of the devaluation on mortgage debt service will also depend on the movement of these interest rates. Measured in the right-hand chart in figure 9 is the covariance of euro exchange rates with Euribor, the short-term interest rate benchmark, for both fixed and flexible exchange rate economies.

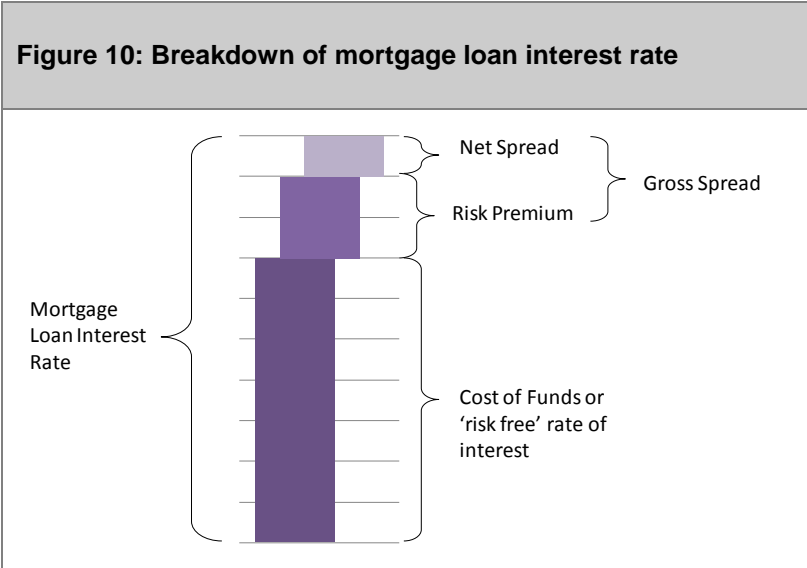
The chart shows what could be dubbed a “policy-hedging” option for transition countries: a sudden negative correlation arising between changes in the exchange rates and changes in the interest rate, a result of foreign central banks lowering monetary policy rates. For the case countries Poland and Hungary, this implied that if loans were indexed to short-term benchmark rates they featured a built-in hedge against the devaluation risk. This would not have been the case if the mortgage interest rates were fixed or reviewable by the lender.²¹ The fixed exchange-rate economies, in contrast, show almost a nil covariance, that is, the exchange rate and foreign currency interest rates moved independently from one another. The effect that the presence or absence of a hedging effect has had on mortgage portfolios is analyzed below.

3.2. Lender behavior and market liquidity

3.2.1. Loan pricing policies

Figure 11 reports central bank data for interest rates on foreign currency housing loans for each of the case countries. It shows outstanding portfolio interest rate data for the four transition countries, but not for Austria where data were unavailable; new lending interest rates were used instead.

To understand some of the pricing dynamics, it is useful to break down the pricing of a mortgage loan into its different components, including the pure cost of funds, a net spread to cover operating costs, credit risk and the necessary return on equity, and a risk premium that represents the amount of interest a bank has to pay over and above the “risk-free” rate of interest. Figure 10 illustrates the mortgage interest rate in its component parts. Using this approach makes it possible to identify the key drivers affecting the pricing behavior of mortgage lenders in the case countries.



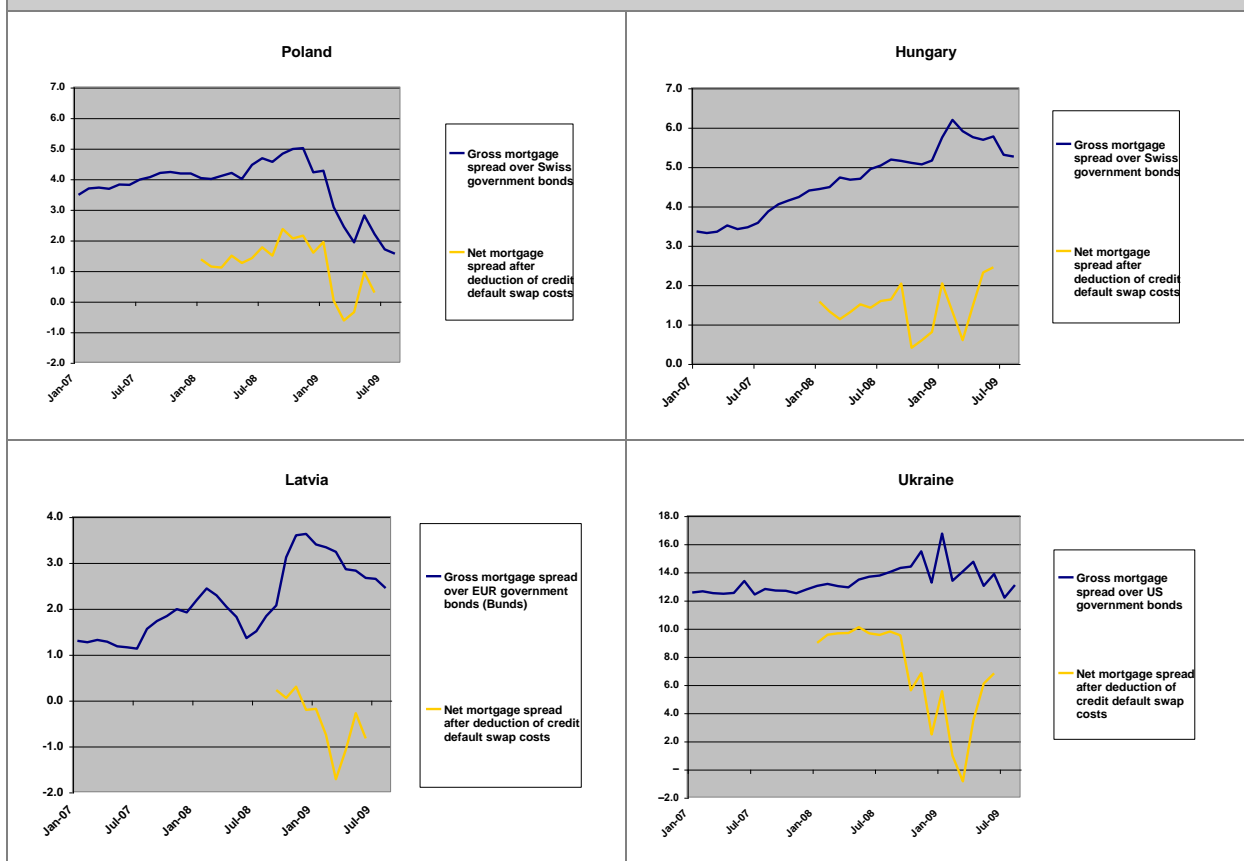
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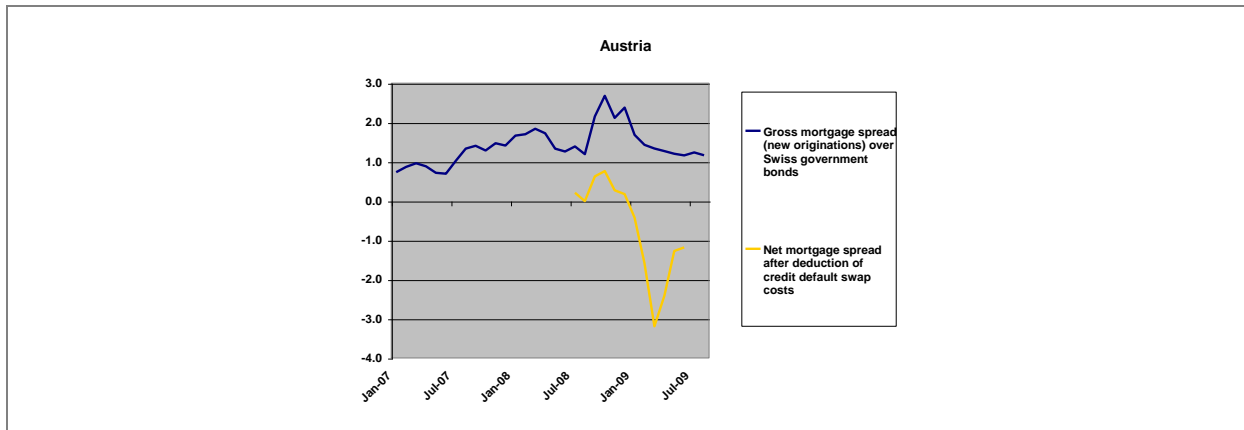
An approximation of the risk premium can be arrived at by constructing a representative credit default swap (CDS) spread time series for each jurisdiction. This is computed as the weighted average by mortgage market share of the years 2005-08 of the CDS spread of the top four-six banking firms in the market. For foreign bank subsidiaries, the CDS spread of their parent institution (for example, in the case of Polish Bre bank, Commerzbank) is used. For domestic banks and where CDS spread data are unavailable, sovereign credit default swap cost is used as a proxy.

The gross mortgage spread can then be defined as the difference between the outstanding foreign currency mortgage interest rate and the “risk-free” interest rate in the foreign short-term government bond market (maturities of one-two years), that is, of the United States, Germany, and Switzerland. A net spread definition for the mortgage market in question is obtained by subtracting the average credit default swap spread from the gross spread. Assuming that lenders are short-term financed and need to re-price their debt according to credit default swap costs, this figure can be interpreted as the cash flow available for financing administration costs, credit risk, and the lender capital account.

Taking credit default swaps as a funding proxy is a highly stylized approach (see discussion below), and it is unlikely that banks actually pay those cost levels or that banks are completely elastic in their responses to changes in the CDS rates. However, the approach allows for comparability across jurisdiction and a general discussion of pricing strategies. Also, some banks in the region have been following credit default swap costs in their pricing policies regarding consumers.

Figure 11: Lender mortgage pricing policies during the crisis for four CEE case countries and Austria, gross and net spread adjusted for credit-default swap cost as funding cost proxy, in %





Source: Local central banks, Bloomberg, Finpolconsult computations.

Methodology: Local lender CDS derived from CDS of main market participants. In the case of public local banks, the sovereign CDS level is assumed. The CDS spread is split into local lender-specific and global component (global benchmark is the average of JP Morgan, Crédit Suisse, Deutsche, BNP, and Santander).

Data used: For interest rates, see note to figure 14. Benchmarks used are one-year government bond rates for U.S. dollars and euros and two-year for Swiss francs.

Because of widespread use of loan indexation going back to the high-inflation phase of the late 1980s, Polish lenders largely tie Swiss franc interest rates for housing loans to the six-month Swiss franc money market index. As figure 9 suggests for the example of Euribor, falling foreign currency benchmarks coincided with the zloty's devaluation. Polish lenders were contractually obliged to pass through falling Swiss franc rates to borrowers. The impact for the lenders was to reduce their net spread, which is measured by taking the gross spread and taking off the CDS cost. While the actual increase in the cost of funds was probably not as pronounced as indicated by the widening in CDS rates, there is no doubt that during this period, Polish lenders suffered a marked contraction in the returns on their mortgage portfolio. Taking administration costs into account, it is likely some lenders' portfolios actually became loss making. Net spreads seemed to be returning to their pre-crisis levels as of mid-2009.

Hungarian lenders offer variable rates with up to one year initial rate fixation. After the initial fixed-rate period, banks have the right to adjust rates, usually on a quarterly basis. Caps limiting the size of interest rate movements are generally not offered. In contrast to consumer lending practices, Swiss franc interest rates on Hungarian commercial mortgages and project finance loans are largely tied to a Swiss franc funding cost index and also often come with Swiss franc-forint caps.

Hence, in contrast to Poland, consumer mortgage loans in Hungary were not tied to a Swiss franc funding cost index before the crisis. The high level of competition in the Hungarian market meant that between 2005 and the August crisis of 2007 Swiss franc rates barely moved, as banks could not afford to raise rates and be out of the market. However, during this period, the cost of Swiss franc funding was rising, which meant that bank spreads decreased considerably, from 2-3 percent to under 1 percent. From August 2007 onward, Hungarian banks were reversing this policy with massive increases in their spreads, which peaked at 6 percent in early 2009. The reason for this change was the lower levels of competition and new mortgage business combined with problems in other parts of their business, in particular commercial lending. As stated earlier, commercial loans were either indexed or came with caps, so the banks had little scope to adjust pricing here and were suffering losses. The ability of lenders to review interest rates on a discretionary basis on consumer mortgage loans meant that Swiss franc mortgage rate level kept increasing for five months following the Lehman crisis, even though the Swiss central bank had already orchestrated a massive decline of interbank rates.

Latvian mortgages were also systematically underpriced during the market's boom phase. Euro loans were tied to the three-month Euribor index over their life. In 2007, at the housing price peak and when competition was most intense, spreads were barely above 1 percent. Such levels did not fully reflect the credit risk being taken. When spreads rose again in 2008 in response to the developing financial crisis and regulatory measures by the Latvian government to curb the house price boom, transactions had already massively declined. Even the higher rates charged for the dwindling new lending did not cover the spiraling funding costs of banks during the crisis.

Ukrainian spread developments stand in stark contrast to Latvia, and are probably explained by the higher share of domestic lenders, later foreign entry, and lower levels of competition in general. Ukrainian lenders enjoyed high net spreads in the 8-10 percent range in U.S. dollars before entering the crisis. Skyrocketing CDS cost led to a collapse in the net spread during the 2008 crisis. A reversal of this process led to a recovery in the first half of 2009—this is net of credit costs, which have substantially increased (see below).

Mortgage rates in U.S. dollars also rose by some 3-4 percent during the peak of the crisis, and have come back to pre-crisis levels since. An important detail on Ukrainian U.S. dollar mortgages should be noted in that regard: as Dübel et al. (2006) find, those mortgages were marketed to consumers as carrying interest rates fixed for life. However, the reality was that contract clauses allowed for arbitrary rate increases in relation to funding cost increases of the lenders. Interviews with Ukrainian lenders for this study indicated that in fact those options for interest rate increases for the existing mortgage portfolio were widely used. Still, given the collapse in house prices combined with a debt service shock for consumers, Ukrainian lenders were unable to push up their net spreads to historic levels again.

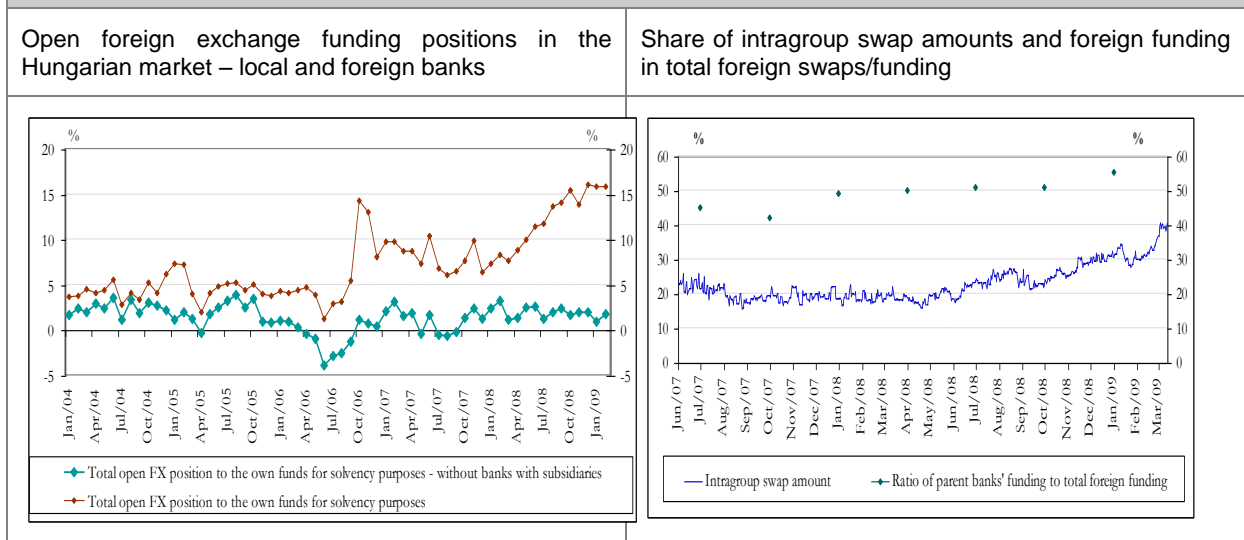
For Austria there are data only for new lending rates, which tend to be more volatile than existing loan rates. Lenders after the Swiss franc liquidity crisis in October 2008 are reported to have attempted to roll over the sharp increase in their funding costs to the existing portfolio, of which some was contracted with reviewable rates. However, as figure 11 shows, new lending rates dropped sharply after their October peak, suggesting that existing borrowers had ample options to switch lenders and frustrate lenders' designs. While Austrian lenders and the central bank reject CDS spreads as being indicative of funding costs, it would nevertheless appear that high levels of competition have meant that at least part of the portfolio has been loss-making. It is also safe to assume, though, that additional fee income from borrowers, as well as intermediaries and insurers, who benefited from the combination of Swiss franc loans with euro repayment vehicles has at least partly compensated for this.

3.2.2. Funding policies and the liquidity crisis

Taking a long-term view, it is clear that re-pricing of the outstanding portfolio was happening more slowly than CDS rates might indicate. The lenders interviewed for this study have emphasized that existing funding instruments were re-pricing only slowly, and central banks have supported the domestic banking system with foreign currency swap lines.

In the short term, however, liquidity risk in the foreign currency market has materialized as the main problem. In October 2008, after the fall of Lehman, the marginal costs of funds rocketed up, in fact approaching infinity, as lender insolvency became a real prospect. In the CEE region, a key liquidity risk was posed by foreign parent bank deposits and intragroup swaps, as the parent banks themselves were facing liquidity threats and strong funding cost increases. Figure 12 shows on the left-hand side how the open foreign currency positions of Hungarian subsidiaries of foreign banks ballooned during the time. This unsustainable situation led to Memorandums of Understanding in several cases²² that parent banks would not withdraw their deposits or swap lines from CEE subsidiaries. Figure 12 shows the impact of the Hungarian agreement on the right-hand side as parent banks slowly raised their funding commitments again.

Figure 12: Hungary – bank foreign currency funding strategies



Source: Magyar Nemzeti Bank.

Note: see product definitions in terminology conventions.

The key short-term problem for domestic banks was rising credit risk perception as counterparties—in the case of bond issuance or as swap counterparty—as well as the disappearance of counterparties in the international market itself. Hungarian banks can be deemed as representative for typically using a synthetic funding strategy for Swiss franc loans combining three elements: short-term forint deposits, a forint/euro swap, and a euro/Swiss franc swap.

Before the Lehman crisis hit, Hungarian banks and their central bank basically agreed that this “synthetic” funding carried only a minor pricing risk, so banks could roll over their derivatives without any problem. During the crisis, swap spreads increased dramatically—in the forint/euro one-year swap from 10-20 bp to 300 bp at the peak, and in the euro/Swiss franc one-year swap from virtually nil to 50bp at the peak. One of the consequences was also that banks were forced into additional margin account requirements to reduce swap spreads. De facto, therefore, counterparty risk became liquidity risk for Hungarian banks, since margin requirements could vary dramatically (in case of one large Hungarian bank the changes were 10-20 billion forints per day at the peak of the crisis). Essentially, the market tried to discourage a rollover of the positions.

Other domestic banks in the region were in a far worse position. For example, Ukrainian domestic lenders such as Alfa Bank and Ukrsofsbank were close to defaults on domestic and Eurobonds and had to be rescued. Fortunately for the region, direct exposure of active mortgage lenders to U.S. toxic securities or unstable Western European markets, which could have led to a cumulation of capital needs, was very limited—for both domestic and foreign lenders (the latter with a few exceptions, for example, ING, Commerzbank, and Société Générale). This resulted in a very low number of direct rescue operations.

²³In the aftermath of the October events, central banks throughout the region introduced domestic swap lines that replaced the failed private swap market for domestic lenders through a system that de facto ignored counterparty risk; that is, it was subsidized. The intragroup swap arrangements made by foreign banks were generally not covered by these central bank agreements; Swedish and Austrian banks benefited from comparable central bank swap lines in their home jurisdictions with the purpose rolling over Swiss franc and euro swaps to fund the existing portfolio. As of late 2009, such swap lines remained in place, although their use declined throughout the year.

The funding problems of both foreign and domestic lenders in the region during the fall of 2008 led to immediate consequences for the supply of foreign currency loans. In Central Europe, Swiss franc new loan supply during 2009 virtually stopped as lenders struggled to roll over the funding of the existing Swiss franc portfolio.

Hungarian lenders, foreign and domestic alike, shifted new lending operations to euro loans, where both types of lenders have access to more stable deposit and bond-funding sources and do not have to rely on the swap market. Access to euro liquidity still remained a problem for Hungarian lenders. This has led to an attempt to issue ECB repo-eligible instruments, especially covered bonds denominated in euro.

In Poland, political pressure was increased by the central bank, which feared strong swap rollover risk for lenders and had to mobilize euro currency reserves during the October crisis to purchase Swiss franc in the open market. In spring 2009, Polish lenders publicly announced an end to Swiss franc lending. This has led to declining foreign currency loan outstanding while zloty lending keeps expanding.

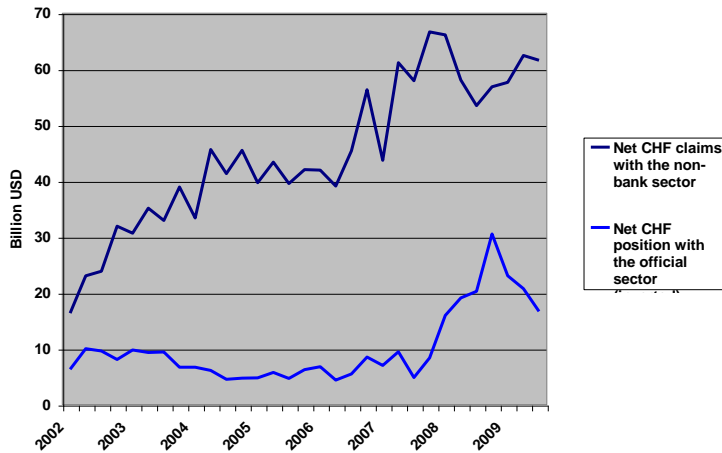
The Austrian Swiss franc market has been reduced likewise to a trickle after banks agreed among themselves to stop foreign currency lending in early 2009 and the Finanzmarktaufsicht (FMA) issued a corresponding recommendation.

In all three Central European markets, new lending activity—now in euro or local currency—has declined dramatically, but not stopped. In the Latvian and Ukrainian markets, in contrast, new housing lending basically stopped during 2009. Available evidence suggests that in the Latvian case, the share of euro loans is increasing as banks restructure Latvian lat loans into euro loans in an effort to improve affordability and stave off defaults. After the devaluation shock, which almost doubled the value of Ukrainian U.S. dollar loans outstanding as measured in local currency, the ratio of foreign currency to local currency has remained stagnant, as has the interest rate differential.

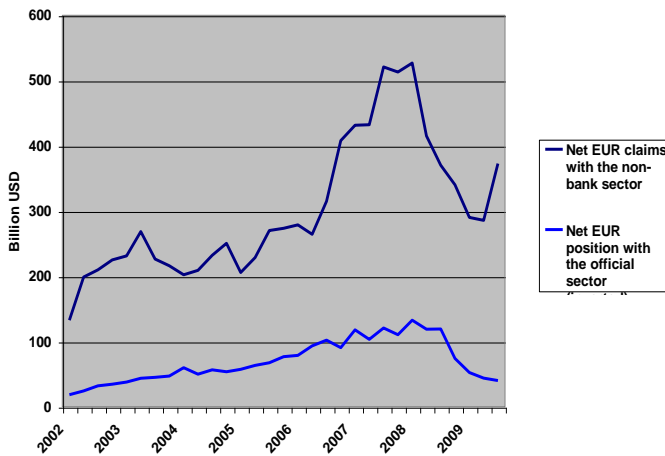
For three of the four transition countries, the European Central Bank (ECB) supports the euro funding base, while in the Ukrainian case the Federal Reserve is providing liquidity. The ECB was initially reluctant to extend swap lines to Central European central banks. It was only during late 2009 that several agreements were put in place.²⁴ Figure 13 suggests a different attitude by the Swiss central bank, which by early 2009 funded almost half of the net Swiss franc funding needs outside Switzerland.

Figure 13: Bank net claims to nonbanks outside Swiss franc and euro jurisdictions* and official funding 2002-09

Swiss Franc



Euro



Source: BIS locational banking statistics. *Net claims outside Switzerland and Eurozone, respectively.

3.3. Portfolio performance and impact on consumers

3.3.1. Payment shock risk realization

Mortgage portfolio performance monitoring is generally problematic, and in the CEE region especially so. A securitization market with corresponding portfolio reporting standards is absent, and specific bank reporting on interest payments and debt service on mortgage or housing loan portfolios is not practiced.

One can therefore only deploy a simulation model for different years of mortgage origination, calibrated with central bank data together with our structural knowledge about contracts and portfolio pricing. The objective is to approximate the payment shock impact of the devaluation stress of 2008. Covering different years of origination, or cohorts, is necessary, as the characteristics of loans will differ according to changes in housing prices and inflation. This means one cannot assume a uniform or “average” portfolio.

We start by assuming 30 year loan maturities (full amortization, rescheduled monthly after each interest rate and outstanding loan adjustment), noting that the impact of a given change in interest rate or exchange rates will increase with the maturity of the loan.

Figure 14 reports the results and yields a remarkably differentiated picture for the case countries.

In interpreting the data, the analysis aims only to show the relative shock suffered by each cohort. It does not provide an indication of the absolute levels of payments, given that over the period covered house prices, incomes, and inflation will have changed. So, for example, in the Hungarian case those borrowers who took out a loan in 2008 will have seen their payments rise by around 20 percent by end-2009. This compares to a change of almost 50 percent for the 2006 cohort. However, it is likely that the absolute levels paid by the 2008 cohort will be higher, reflecting higher incomes and higher housing prices.

For those countries using primarily the Swiss franc, there is a far smaller payment shock for Poland than for Hungary, despite a similar-size devaluation:

- The main reason is the already discussed general practice of tying Swiss franc interest rates to the six-month Swiss franc money market rate in Poland. This has led to a substantial decline in Swiss franc payments, which has counterbalanced the effects of the devaluation (see also figure 9). Payments on Swiss franc loans measured in zlotys at the peak post-Lehman period jumped by 30 percent, but dropped back to pre-crisis levels already in early 2009.
- Hungarian banks in contrast have passed through their substantial funding cost increases to the Swiss franc interest rates on the outstanding portfolio, which created a cumulative effect on debt service with the devaluation effect. A substantial payment shock has been the result—depending on the year of origination, the impact can be between 50 percent and 80 percent. As of mid-2009, debt service was still 30-50 percent above pre-crisis levels.

In essence, Hungarian lenders therefore have bought higher default risk than Polish lenders with this strategy, while protecting themselves against the impact of funding cost increases.

In contrast, the Latvian portfolio is subject only to the changes in short-term Euro interest rates because of the fixed exchange rate policy. Funding cost increases in euro were passed through only partly to new loans, and existing loans were usually tied with a fixed spread to the Euribor index.²⁵ As a result, debt service increases remained modest. The worst affected cohort experienced a 25 percent shock at its peak. Thereafter, debt service declined quickly to pre-crisis levels and below. However, portfolio performance has been severely negatively affected by other factors discussed below.

Figure 14: Debt service time profiles for different borrower cohorts in the mid- to late 2000s – four CEE case countries and Austria, simulation results



Source: Local central banks, Finpolconsult computations.

Methodology: Result of cohort simulation assuming fully amortizing loans (30 years) originated on January 1 of the respective year. Loan interest rates are assumed to reset monthly.

Data used: Transition countries - interest rates for outstanding housing loans to households and nonfinancial corporations in respective foreign currency (Swiss franc for Hungary/Poland, euro for Latvia, U.S. dollars for Ukraine) with maturities > 5 years. Austria - Swiss franc interest rates for new housing loans to households and nonfinancial corporations under or equal to 1 year.

Ukraine experienced the worst payment shock for mortgage borrowers in the sample; at the peak in early 2009 debt service burden doubled and has only marginally declined since. The reason, as in the Hungarian case, was a *positive* correlation between U.S. dollar interest rates and the exchange rate. This aggravated the devaluation effect on debt service made possible by interest rate adjustments despite the fact that loans were marketed as fixed rate.

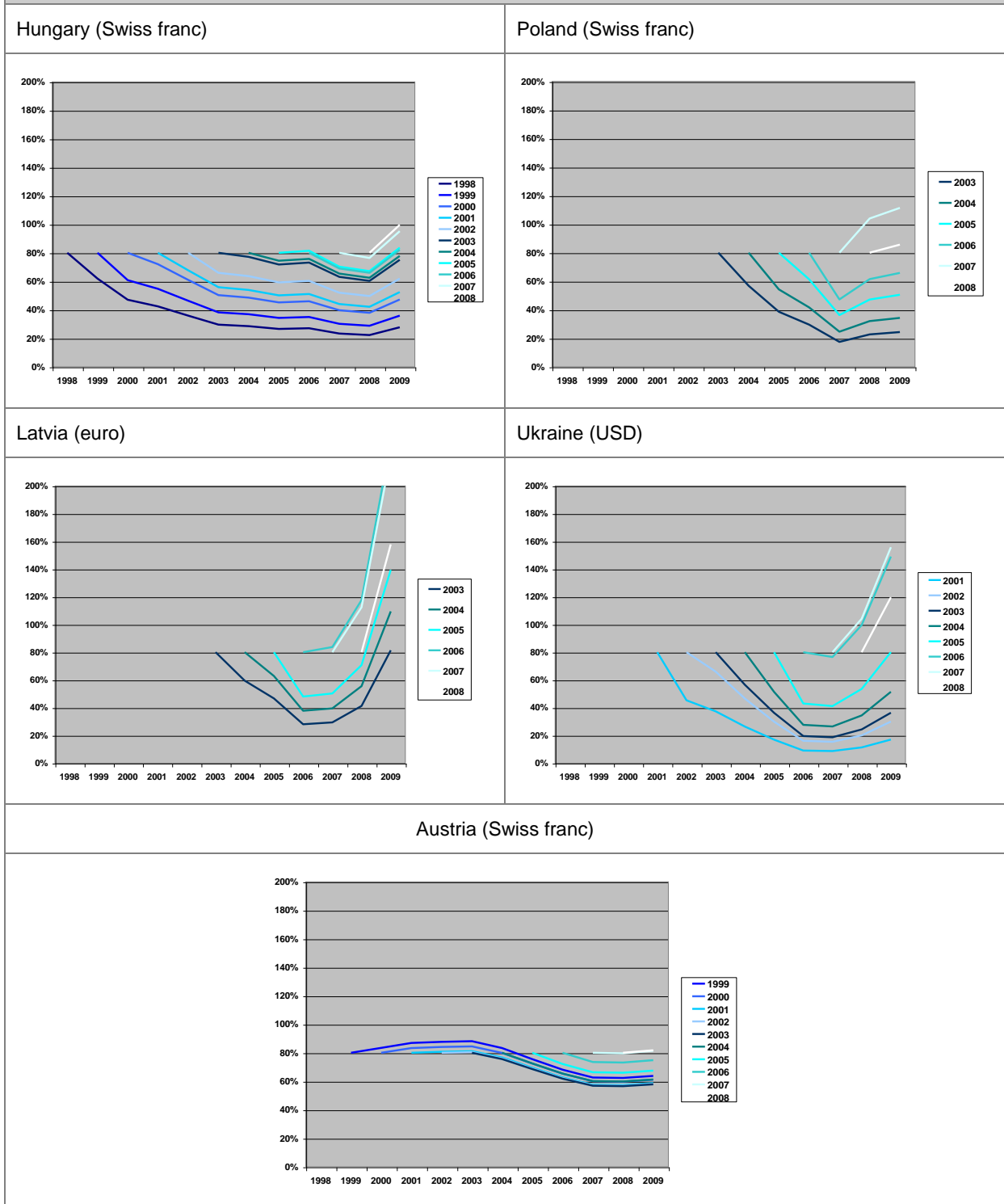
In the Austrian case throughout late 2007 and 2008, the Swiss franc appreciated moderately against the euro, in October 2008, however, it strengthened abruptly by 7.2 percent. At the time, banks made attempts to persuade borrowers to convert Swiss franc loans into euros. This came as the loans were being subjected to negative amortization and hitting a trigger amount (110 percent of the original loan value) that allowed for conversion. Such conversion attempts were denounced by consumer groups such as the Arbeiterkammer as detrimental to consumer interest, as it could deprive them from the upside of a possible re-appreciation of the euro. If new lending rates are taken as a benchmark, the payment shock for Austrian borrowers, especially earlier cohorts of the decade, was quite severe. However, attempts to pass these new rates as well as higher funding costs through to the portfolio failed according to the central bank, and debt service per mid-2009 was back to pre-crisis levels.

3.3.2. Negative equity risk realization

In the aftermath of strong housing price inflation, even borrowers with still sufficient income to service debt will realize gradually that their property values are permanently lower than anticipated and that debt service levels will remain high compared to the opportunity costs of renting. As equity levels remain thin or even become negative, the default option comes into the money, depending on the transactions costs (shame factor, ease of future access to credit, formal consumer insolvency regime). These mechanics have played out in earlier mortgage market crises, such as the UK's in the early 1990s, and are currently unfolding in the United States.

The current housing equity situation of borrowers in case countries can be approximated by simply dividing current loan values in local currency, considering the devaluation effect, by current house price levels for several annual cohorts. The availability of house price data for the region is an impediment. Some data are available for Hungary, where we use the FHB (mortgage bank) index, and for Austria, where the central bank issues an index. For the other countries it is necessary to rely on indices produced by professional real estate agents. The data presented therefore tend to represent the higher end of the market in the higher end of the economies (central cities), and it is safe to assume that they exaggerate the national house price volatility. Nevertheless, they serve as a reasonable approximation, considering also that the portfolios have been quite concentrated in some jurisdictions in the largest market place (all cases, except Poland and Austria). Figure 15 reports the results.

Figure 15: Negative equity risk of foreign currency lending in CEE case countries: LTV ratio time profile of 80% initial LTV ratio loans by vintage



Source: Local central banks, mortgage banks, and real estate market agencies; Finpolconsult computations.

Note: assumes 80 percent initial LTV and no amortization in foreign currency (bullet loan). House price index: Hungary - FHB national price index; Poland – Reas (real estate market consultancy firm), Warsaw apartment prices; Latvia - Arco Real Estate (real estate market consultancy firm), Riga apartment prices; Ukraine – Blagovest (real estate market consultancy firm), Kiev apartment prices; Austria - Österreichische National Bank (central bank), Vienna residential property price index.

There are some important differences with the charts above when compared to the earlier ones on debt servicing. While Hungary suffered from a far greater mortgage debt service shock than Poland, negative equity risk has been broadly comparable in both countries: the greater forint devaluation vs. the Swiss franc is counterbalanced here by the larger scale of the Polish property market cycle. In particular, in the cohorts of 2007 and 2008, Polish mortgages appear to be at a greater underwater risk than the Hungarian. The Polish central bank reports a substantial increase in current LTV ratios for these two loan cohorts over the origination levels: the extreme are loans originated in the third quarter of 2008, originated at just over 70 percent LTV, which by the end of 2009 had reached 95 percent LTV.²⁶

The 80 percent assumption made in figure 15 may understate the underwater risk in both countries, as foreign currency lending often gave lenders an excuse to increase LTV ratios beyond this. Accepting lower borrower equity was a misguided reaction to the lower initial debt service of Swiss franc vis-à-vis zloty and forint loans. In Poland, the ongoing benign debt service situation is mitigating default risk; however, according to interviews with Polish lenders, default caused by negative equity risk is an issue with condominium investors. This is especially the case given that their main residence is not at risk of foreclosure and they would rather just take the loss on their speculative investment.

A further critical factor is the uneven distribution of the portfolio in terms of the size of annual cohorts. For Hungary, detailed data from the central bank reveal that 39 percent of the Swiss Franc portfolio was underwritten at an exchange rate of just 155 forint/Swiss franc and below, which was the prevailing rate throughout 2007. Accordingly, the weighted average current LTV ratio of the portfolio will be higher than a simple arithmetic mean of the different LTV for each cohort.

Nevertheless, the share of underwater mortgages—with current LTVs exceeding 100 percent—is likely to be moderate in Hungary and Poland. This is different in Latvia, which while not experiencing any payment shock has been subject to a large negative equity shock as figure 15 reveals. The 2006 and 2007 borrowers of an 80 percent LTV loan for a Riga apartment by the end of 2009 owed 230 and 220 percent of the current apartment value to their banks, respectively. In combination with transaction activity concentrated in these cohorts, the result is likely an extreme ratio of underwater mortgages in the entire portfolio. Fear of resulting large volumes of residual debt owed by consumers played a prominent role in the country's negotiations for IMF assistance in the summer 2009, in which the Latvian government unsuccessfully proposed to cap borrower debt at the value of the foreclosed home.

Ukraine finally has been hit by a dual shock, payments levels and equity levels, resulting from a combination of a housing price collapse, a large currency depreciation, and interest rate increases in the foreign currency. The 2006-08 loan cohort, which accounts for the majority of origination activity in the outstanding portfolio, is likely to be severely underwater. Estimates by USAID consultant Moody (2009) per September 2009 suggest that the 2007 and 2008 mortgage vintages are running at a current LTV of 115 percent on average.

Owing to fairly low euro-Swiss franc volatility as well as housing price appreciation, the Austrian negative equity picture looks far more benign. However, housing prices had been going through a long phase of stagnation before 2004, but in the past five years have risen in Vienna by 35 percent. The 2009 cohort would appear to be most at risk, especially in view of an ongoing depreciation of the euro versus the Swiss franc—5.6 percent between November 2009 and March 2010 alone. Earlier cohorts seem less vulnerable because of earlier property price rises.

3.3.3. Default performance

From the point of view of a lender, and based on the data available for non-performing loans in the region, it is very difficult to make a definite call regarding the benefits of lending in foreign currency versus domestic currency. Where both types of loans were on offer, they often had different target markets which again make it difficult to isolate the impact of the currency choice alone.

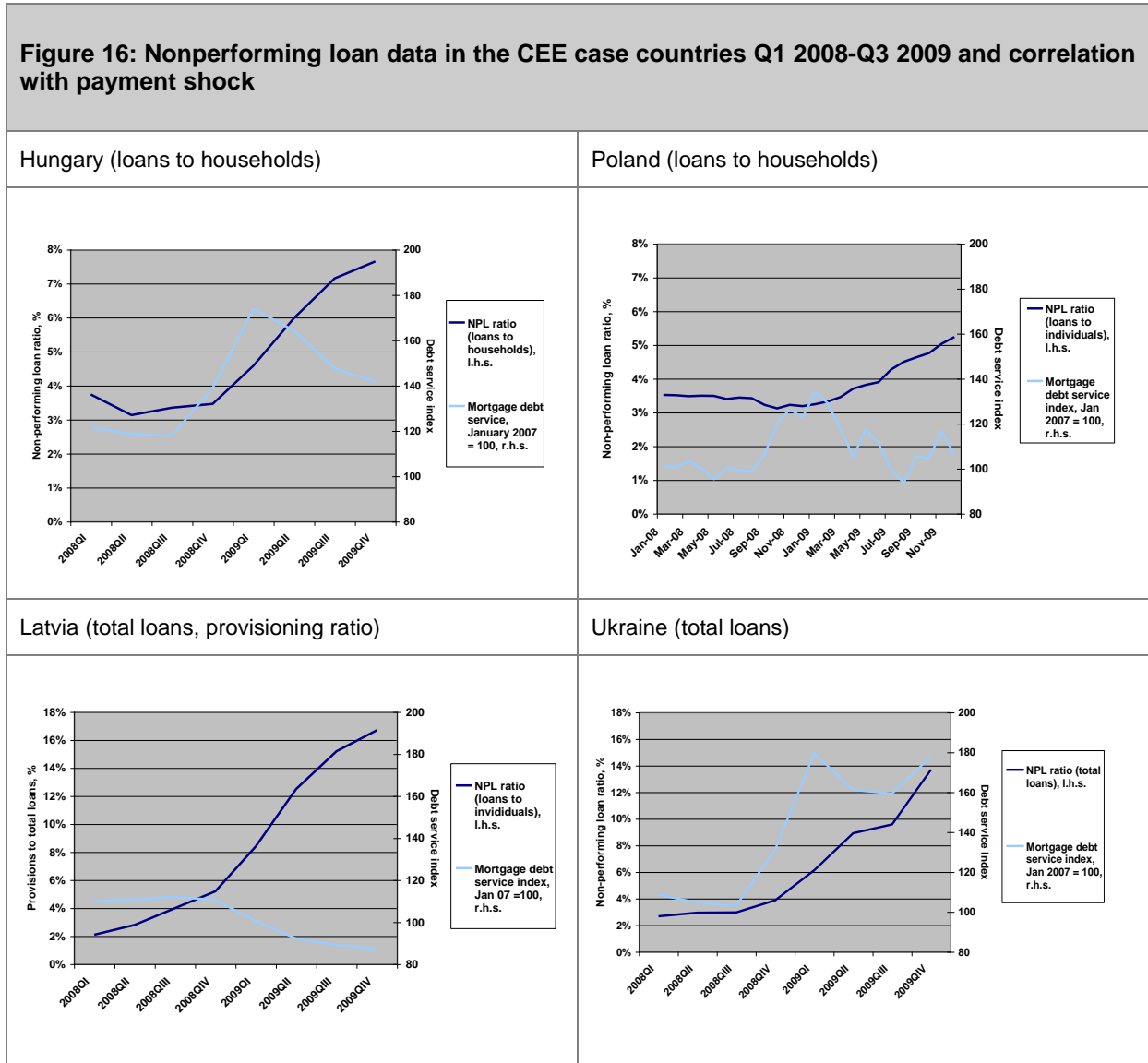
A second important cause of delinquency is a debt service shock that may be the result of higher interest rates, a currency movement in the case of foreign currency loans, or both. A debt service shock will typically have an immediate impact on default rates. Certainly a sizeable change in the PTI would start showing through within two to three payment cycles. In the case countries it has largely materialized, and the delinquency rates thus far will reflect this risk. Generally, lenders are willing to consider some form of restructuring if payments become unaffordable; so as long as the household is still generating some income and able to service the debt at least in part, it may not necessarily result in a default.

The negative equity factor, in contrast, may take time to materialize as experiences from earlier mortgage crisis suggest (for example, the UK in the 1990s). The transmission from trigger into default depends inter alia on the price development; on the terms of restructuring arrangements, if any; on the awareness and shame factors of borrowers with regard to the consequences of default; and on the penalty imposed on defaulting consumers by the consumer insolvency regime and future lenders.

We nevertheless can draw some conclusions from actual default performance. Figure 16 compiles 90-day delinquency indicators and correlates them with payment shock risk for the January 2007 loan cohort. A problem is that narrow indicator time series on mortgage performance are not available, and broader household loan performance indicator time series are available only for Hungary and Poland. We also note that nonperformance data are understating true defaults, as a high proportion of the portfolios are already undergoing restructuring.

- Hungarian lenders reported an abrupt increase in housing loan defaults in late 2008, for example, FHB from 1.2 percent in fourth quarter 2008 to 3 percent by first quarter 2009. Strong increases of default rates are confirmed by central bank survey data (see Figure 17), with Swiss franc defaults in the second quarter of 2009 running at around 4 percent and forint defaults at around 1.5 percent. However, the forint portfolio debt service had been extremely subsidized and—since the program was discontinued in 2004—most forint loans have solid equity positions because of accumulated housing price inflation. This distorts the comparison.
- Poland, according to central bank information, has seen so far only a small increase in housing loan defaults, which seems to be confirmed by the slow dynamics of household loan default data presented in figure 16.

- Default rates in Swiss francs are reported by the central bank to be lower than in the zloty portfolio. However, the trend of defaults in Poland has also been clearly upward. It is likely that house prices in Poland will continue to fall as the market works through the crisis, which may mean negative equity will still be a factor affecting portfolio performance in the coming years.



Source: Local central banks, Finpolconsult computations.

Note: For debt service index assumptions, see figure 14. Varying nonperforming loan proxies resulting from data generation gaps. For Latvia provisioning ratio.

When comparing Poland and Hungary, it is very likely that the payment shock brought on by Swiss franc loan pricing policies in Hungary has contributed to considerably higher default rates. The relative changes in unemployment will also have played a factor, with a much bigger change in Hungary than Poland.

Ukraine has seen an immediate reaction to the dual debt service and negative equity shock, which is imperfectly approximated in figure 16. The official total nonperforming loan ratio rose to 13.7 percent in the fourth quarter of 2009. Anecdotal evidence obtained through the national mortgage association UNIA suggests a mortgage loan default rate in the range of 25-30 percent, and some 15 percent of loans still classified as performing are in fact in restructuring as of early 2010. Such numbers are supported by IMF staff calculations.²⁷ By May 2010, a one-year statutory moratorium on mortgage foreclosures will elapse, and further rises in foreclosure rates are likely for the remainder of the year.

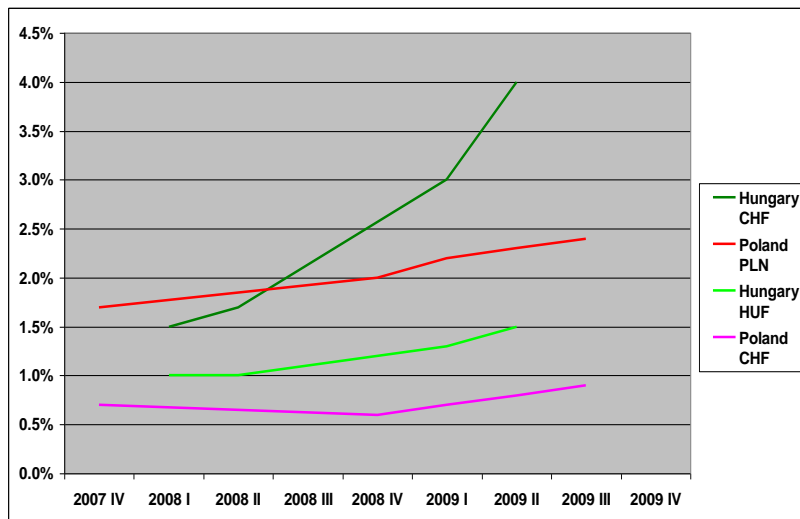
For Latvia, official data indicate a 17.3 percent ratio of nonperforming loans to households as of March 2010. If the threshold is lowered from 90-day arrears to all payment arrears, the ratio is 27 percent. In addition, at end of 2009, some 12.5 percent of loans to private individuals were in restructuring.²⁸ The figures are staggering, given that Latvian debt service levels have actually declined because of Euribor-linked interest rates and the absence of a devaluation shock (see figure 14). They are, however, closely correlated in time profile to the considerable rise in unemployment and public sector wage cuts, as well as the likely rise in the share of underwater mortgages based on Figure 15. The highest default rates are recorded for the loan cohorts made at the peak price levels in late 2006 and early 2007, supporting the relevance of negative equity.

The Latvian shock has been characterized as an “internal devaluation,” where rather than changing the nominal exchange rate, a real devaluation has been engineered. This has been a painful process for Latvia, resulting in massive public and private sector wage cuts and a slashing of public spending. The adjustment process aims to revalue the real worth of the lat versus the euro by creating deflation in Latvia. So although it would seem that no payment shock has occurred as a result of devaluation, in fact Latvia has experienced a dramatic shock in terms of falling unemployment and falling incomes.

The ranking of default experiences based on figure 16 mirrors the ranking of default triggers: the jurisdictions with the highest payment shock, Hungary and Ukraine, experienced an immediate reaction in default rates, while elevated default rates in the low-payment-shock country Latvia are likely because of rising unemployment and the payment shock triggered by falling income.

Interestingly, despite the obvious additional risk potential embedded, no clear ranking of default experiences between foreign and local currency loans is discernable. Data for Hungary are too distorted by the deep historic forint mortgage subsidies (see figure 6) in order to be useful. Polish data seem even to suggest a lower default rate for foreign currency than for domestic currency loans. The data point to the fact that unaffordable levels of *initial* payments in the case of the higher-interest-rate zloty loans are an empirically relevant default trigger. The particular characteristics of the Swiss franc portfolio, with its payments tied to Swiss interbank rates, help to explain the low default rates. Further clarity could be achieved by loan-by-loan default analysis controlled by all relevant factors, such as income levels, price levels, and underwriting criteria. For Latvia and Ukraine, there is no official indication of default rates by currency. Interviews held with banks and the mortgage association in Ukraine suggest greater default problems in the U.S. dollar portfolio resulting from payment shock. The Austrian regulator suggested in an interview that default rates for Swiss franc loans are higher than for euro loans; however, it is an open question as to what extent that result is distorted by the weak repayment vehicle performance during 2008 that heavily affects the overall equity position of the dominating combined Swiss franc loan-euro repayment vehicle product.

Figure 17: Hungary vs. Poland: time profile of housing loan delinquency rates by currency of loan



Source: Loan officer surveys undertaken by Polish and Hungarian central banks.

Note: Delinquency defined as ratio of loans overdue for more than 90 days to total outstandings.

3.4. Summary of findings – financial stress and risk realizations

As of early 2010, the CEE region was still bearing the consequences of the 2008 combined devaluation, interest rate, and house price shocks. If past mortgage credit cycles are any guidance, it will take a few more years for the full impact to show up in portfolio performance.

However, a few conclusions from the findings can be drawn for the regulatory discussion presented below. In terms of choice of currency and funding stability, using the Swiss franc as a major denomination for credits in the region can be seen, in hindsight, as an aberration induced by excessive competitive pressures. Banks promptly abandoned this product as it dawned on them that funding strategies in that currency were unsustainable and kept them beholden to central bank lifelines. This view has been espoused by domestic lenders and foreign entrants alike.

There is also a higher volatility of Swiss franc exchange rates and interest rates compared to euro because of autonomous capital flows generated by global carry-trade activity, and as a result a higher potential payment shock risk. These factors are likely to contribute to a greater use of the euro going forward. Where the euro is already used, as in Latvia, there is an increase in the foreign currency shares.

These findings suggest a continuation or even an increase in dollarization (in euro) except for the most stable countries in the region (Poland, Czech Republic). This has implications with regard to the need for support of domestic bank funding in the euro, the level of foreign currency reserve that might be used to dampen currency shocks, and the general accession strategy of the candidate countries toward the EMU. All three factors call for support, direct or indirect, by the ECB. We also expect other dollarized economies such as Ukraine to keep extensively using the U.S. dollar, which raises the same questions.

With regard to lender interest rate policies, indexed floating-rate arrangements in the region have empirically led to the lowest payment shock as a result of the offsetting effects of exchange rates in one direction and benchmark interest rates in the other. Where lenders have unilaterally reviewed interest rates and attempted to pass through rising funding costs, as in Hungary and Ukraine, payment shock has been largest and portfolio performance has immediately worsened. The Polish lender strategy of accepting short-term losses on an indexed portfolio seems to have been more successful. It is an open question to what extent the experience can be repeated, as it relies on a third party, foreign central banks.

Negative equity as a result of negatively amortizing debt (as a result of devaluation) and collapsing housing prices has proven to be a second major default driver, especially with regard to loans used for investment purposes. House price inflation in general has been a problem exacerbated by high capital inflows, in particular hitting markets characterized by land supply problems (Riga, Kiev), with devastating consequences for portfolio performance irrespective of payment shock.

4. Regulation of Foreign Currency Mortgages

4.1. Mortgage regulation

Based on the analysis in the preceding sections, it is important to look at how the risks identified are regulated or should be regulated. There are two broad areas where regulations can apply to mortgage lending: capital requirements and consumer protection. Capital requirements is often the main weapon of a regulator, as it has the power to affect the economics of a product by requiring more or less capital to be held depending on whether certain conditions are met or not. Consumer protection regulations tend to be more rules based, but can also be implemented on a voluntary basis such as an industry code of conduct.

4.2. Synopsis of current regulations

- Table 5 summarizes the existing consumer protection and bank lending regulations and proposals as of April 2010 for the case countries, adding the European Union as a comparator. In both areas the synopsis focuses on rules that are specifically addressing foreign currency lending practices. General mortgage consumer protection regulation and emergency regulation related to foreclosure or loan restructurings are not covered.
- Elements of foreign currency regulation are already contained in broader banking regulations. In particular, the Basel II framework and the EU Capital Requirements require some currency matching and capital requirements. Attempts to interpret and address the specific risks of foreign currency mortgages in terms of both bank solvency and consumer protection issue have been more recent. However, some rules predate the financial crisis: in the sample they started with Austria in 2003 followed by Poland in 2006 as the first transition economy to put in place rules specific to foreign currency lending. Following the devaluations, which hit some of the case countries during course of the financial crisis of 2008-09, regulatory activity increased considerably. The key regulations reviewed and current plans are listed below.
 - Poland: April 2006 KFN (bank regulator) Recommendation S “concerning Best Practice in Mortgage Lending,” amended in 2008; February 2010 KFN Recommendation T “concerning Best Practice of Risk Management of Retail Credit Exposures.” Additional foreign currency regulations are currently under discussion.
 - Hungary: 2005 consumer information leaflet on foreign currency lending; 2006 HFSA (bank regulator) Recommendation 9 “On the principles of retail crediting provision of preliminary advice to clients and consumer protection”; February 2008 Joint recommendation by MNB (central bank) and HFSA “On the systemic risks of foreign currency lending and institutional and consumer protection requirements relating to the prudent assessment and Management of such risks, with special regard to Japanese yen-based lending”; Decree 361/2009 (entering into force on March 1, 2010) “On the conditions of prudent retail lending and creditworthiness checks.” February 2010 HFSA “Information on high-risk portfolios and on related additional capital requirement as key priorities in the Supervisory Review Process (SREP).”
 - Latvia: 2007 Law on Protection of Consumer Rights; March 2010 FKTK (bank regulator) Regulations on Credit Risk Management. These are general lending regulations. No foreign currency-specific regulation has been passed or is under discussion.

- Ukraine: February 2009 NBU Resolution # 49 “On Some Issues in Bank Activities”; 2009 Law “On Introducing Changes to Some Legislative Acts of Ukraine to Overcome Negative Consequences of the Financial Crisis” #1533-17. By 2010, a law initiative was entered into parliament that could scrap the ban on foreign currency lending under the 2009 law.

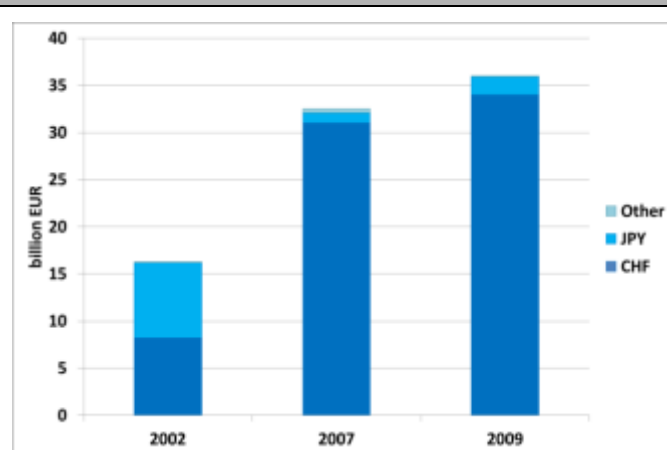
Table 5 – Synopsis of regulations specific to foreign currency lending in selected jurisdictions, per April 2010

Policy area	Regulation	Latvia L 2007 L 2009 <i>Non-foreign currency- specific</i>	Ukraine L 2009 P 2010	Poland R 2006	Hungary R 2005 R 2008 R 2009 L 2010 R 2010	Austria R 2003 R 2003 R 2010	EU CRD P 2009
Transparency, advice	Advertisement constraints					R (2003)	
	Specific risk warnings / risk-adjusted cost of credit disclosure			R (2006)	R (2005) R (2008, JPY)	R (2003) R (2010)	
	Special counseling, advice					R (2003)	
Underwriting constraints	Loan-to-value ceilings	L (2007) L (2009)	L (2009)	R (2006, unspecified) P (2010)	L (2010)	R (2003, unspecified)	P (2009, implicit)
	Debt-service-to-income ceilings			R (2006, unspecified) R (2010)	L (2010)	R (2003, unspecified)	
	Debt service stress testing or income limits (including to income in foreign currency)			R (2006)	L (2010, unspecified)	R (2003, unspecified) R (2010, specific)	P (2009)
	Minimum amortization requirements				R (2010)	R (2010)	
Payment shock protection	Negative amortization thresholds		L (2009)			R (2003)	
	Debt service caps		L (2009)	R (2010)			
	Exchange rate caps		L (2009)				
	Currency conversion option (borrower)	L (2009)	L (2009)		L (2009)	R (2003)	
	Contingent collateral or insurance requirement (lender)			R (2006)			
Product set limitations	Restrictions on sale of new foreign currency mortgages		L (2009, all new lending) P (2010, to lift L 2009)			R (2010)	
	Restrictions on choice of currency			R (2009, Swiss franc)	R (2008, JPY) R (2009, Swiss franc)	R (2003, JPY) R (2008, Swiss franc)	
Lender capital	Additional capital requirements	L (2009)	L (2009)		L (2010)		P (2009)
	Dynamic provisioning / reserve requirements	L (2009)	L (2009)				
Lender risk management	Matched funding strategy	L (2009)	L (2009)	L R (2006)	L	L R (2010)	L (2006)
	Intensified supervisory review				L (2010)	R (2003)	
	Intervention into loan volume or growth				R (2010)	R (2010) C (2010, cross-border lending)	

Legend: R – recommendation; L – law/regulation; C – Code of conduct; P – proposal; local currency – local currency; foreign currency – foreign currency.

- Austria: October 2003 FMA (bank regulator) minimum requirements for foreign currency lending and repayment vehicle lending; 2006 FMA consumer information leaflet on the risks of foreign currency lending; March 2010 extension of 2003 minimum requirements. There are additional plans for a “supervised code of conduct” covering foreign currency lending by Austrian banks abroad.
- European Commission: 2006 Capital Requirement Directive; November 2009 consultation on possible further changes to the Capital Requirement Directive. After the consultation process, the foreign currency-specific proposals made were not restated in the follow-up consultation of February 2010.

Figure 18 Austria: outstanding foreign currency lending to households by currency, pre-2003 regulation phase and latest



Source: Österreichische Nationalbank, Finpolconsult computations.

The most salient of the regulations above are examined in greater detail. It is, however, to be noted that there was a remarkable divergence in policy approaches pre-crisis, followed by a good degree of convergence post-crisis.

Pre-crisis regulation in Austria (2003) was characterized by informational campaigns and general underwriting guidance. Poland (2006) and Latvia (2007) in contrast had enacted specific underwriting constraints directly intended to curb foreign currency lending or to generally dampen the credit boom. Regulations in Ukraine, the least mature market, remained largely undeveloped. These different strategies, which have been in place for some years, can be submitted to a tentative evaluation with regard to their effectiveness.

Post-crisis regulation in all jurisdictions is characterized by a stricter supervisory review of lenders (pillar II) and a greater role for “material” regulatory constraints in the loan underwriting process. This might include income stress testing, LTV ceilings, and product design features. These rules went as far as placing limits on bank portfolio growth and banning certain products and practices. Hungary has moved the most aggressively so far in imposing underwriting constraints, Ukraine actually banned new lending in 2009, and Austria has severely curtailed any new lending in 2010. The question to be addressed is whether these treatments will cure or kill the patient. Has a balance been achieved between the need for continued affordable credit and risk mitigation?

Despite some convergence, the ultimate goals of regulatory intervention still differ vastly by jurisdiction. Low-inflation Austria has moved its focus from a containment policy of limiting the risks to an elimination policy of “reaching a lasting reduction of foreign currency lending.” It has taken some new steps, as discussed below, to achieve this.²⁹ Poland and Hungary have also shifted toward a reduction goal. However, the method for achieving this is by skewing the pricing in favor of local currency lending using regulatory incentives. Regulation in both countries seems supportive of a market in euros. Latvian regulators seem happy with continued euro lending in the wake of the international intervention that protected the country’s currency arrangement. Latvia has passed no foreign currency specific regulation beyond general bank regulation.³⁰ At the other extreme, the situation in Ukraine remains in limbo, as the 2009 ban on new foreign currency will be possibly repealed in 2010 as a result of high local currency mortgage rates.

Diversity also persists in the legal character of regulations: Hungary and Latvia have moved from recommendations to law, while Austria and Poland have kept their approaches to use regulatory recommendations. Austria is also still promoting self-regulation in the area of cross-border lending, although it is self-regulation undertaken on terms set by the regulator that formulates the framework, approves the final concept, and monitors the adherence.

4.3. Evaluation of regulations

Given the nature of the extreme approaches taken in Latvia, where no specific foreign currency regulation exists, and Ukraine, where an absolute ban of foreign currency lending was put in place, this study concentrates on evaluation of Poland, Hungary, and Austria.

4.3.1. Low-intensity interventions (risk transparency, general underwriting rules)

The two recommendations issued by the Austrian financial market agency FMA in October 2003, despite being innovative at the time, suffered from both policy lags and low regulation intensity. They sought to address both foreign currency lending and the attached repayment vehicle for the loan. This product combination was present in more than three-quarters of all foreign currency mortgage loans in Austria.

More than four years elapsed between the initial diagnosis of a problem and the passing of a recommendation. As early as 1999, the first Swiss franc loans were issued outside the Swiss border regions. At the time, the Ministry of Finance issued a warning about the risks and costs for consumers. Regulatory action was called for subsequently, in particular by the specialized Bausparkassen, which did not possess a foreign currency funding options. However, these calls were in vain. In April 2003, the central bank warned in detail about the risks, including underperformance of the repayment vehicle, currency and interest rate risks, as well as some of the extraordinary fee levels.³¹ As figure 19 shows, during the time it took for action to finally be taken in October 2003, foreign currency loans doubled in volume. In addition, the loan products moved away from Swiss francs to the even lower rates of Japanese yen loans, which carried an even greater negative amortization risk.

Under the 2003 recommendation, a set of material constraints were formulated. Banks were asked to limit downside risk to consumers (for example, through Swiss franc-euro conversion offers), with such limits differentiated by personal credit rating. In addition, banks were directed to undertake risk-based pricing and restrict individual loan and total portfolio size. Loans also had to be underwritten based on the assumption of higher monthly installments following a devaluation scenario. As decisive as these measures sound, setting specific values for payment ceilings, stress tests or credit ratings were avoided. This left lenders with discretion over how to apply the rules and shifted the regulatory burden to ad hoc supervisory reviews. The recommendation failed to reach its main objective, as the share of foreign currency lending to Austrian households continued to rise, reaching a peak three years later in late 2006. It was lenders themselves who decided after the October 2008 Swiss franc funding crisis to stop new Swiss franc lending to consumers. FMA finally passed a revision of the 2003 recommendation in March 2010 that introduced more specific material constraints for foreign currency lending in Austria (see discussion below).

The new regulation also contains the legal obligation for banks to demonstrate that they informed borrowers about the risks related to foreign currency loans. One partial success of the 2003 regulations was the use of information leaflets to be given out to consumers, informing them of the risks associated in particular with Japanese yen loans. The leaflets contained historic worst-case stress examples and risk-adjusted effective interest rates, which demonstrated the high effective costs for Japanese yen lending.

The Polish Recommendations S and T of 2006 and 2010 and the subsequent Hungarian combined recommendation of February 2008 take the same route of demanding “risk-adjusted” cost of credit quotes, using synthetic stress formulae. Recommendation S obliges lenders to provide cost of credit information, assuming that the foreign currency interest rate equals the Polish zloty interest rate and that a 20 percent devaluation has taken place; historic values are also considered in a parallel quote, assuming exchange rates and interest rates varying between the minimum and maximum levels over the past 12 months.

Hungary had introduced requirements specifically to inform consumers about foreign currency product risks in 2005 through a consumer information document developing risk-adjusted costs of credit examples. The 2008 recommendation formulates stress values for Japanese yen lending, and in the yen context chose an interest rate increase of 100bp combined with a 20 percent devaluation scenario. Japanese yen lending had reached almost 10 percent of new lending market share in Hungary during the fall of 2007, but quickly became less relevant again. No specific measures were taken for Swiss franc lending. Underwriting guidelines remained unspecified.

In terms of the onus in case of disputes about the sufficiency of risk transparency provided, there were different approaches. The new 2010 rules in Austria put the burden of proof on lenders to demonstrate that borrowers have been specifically educated about foreign currency lending risks. In Poland, the borrower must confirm in writing that he or she understands the additional risk before receiving a loan; getting such a signature tends to protect lenders against mis-selling claims, but it is questionable whether the consumer becomes fully aware of the risks.

4.3.2. Moderate-intensity interventions (stress-tested underwriting)

Debt service ceilings

Polish Recommendation S of April 2006 opted for a strong intervention into foreign currency loan underwriting practices at a time when the Swiss franc market share had unexpectedly risen again (see figure 2). This experience had frustrated Polish policy makers, who had hoped to firmly establish local currency lending in the wake of lower domestic interest rates in the early 2000s.

The heart of the recommendation is an extreme form of debt service stress test that combines the assumption of 20 percent devaluation with the assumption that foreign currency interest rates rise to the same level as domestic rates. It thus implicitly assumes that the devaluation risk comes with no interest rate advantage whatsoever. In practice, for a Swiss franc loan it meant assuming an interest rate 2.5 times the actual level, and in addition a 20 percent devaluation. This stress scenario implied a PTI ratio up to 2.5 times higher than the unstressed value.³² Even allowing for some room for higher PTI ratios of foreign currency borrowers, the income of a foreign currency borrower would have to be up to fifty percent higher than a local currency borrower for the same loan amount.

Figure 19 Poland's Recommendation S: average borrower income at the time of loan origination following implementation, II 2006 – II 2009



Source: Polish central bank.

Notes: estimates based on data from additional question to senior loan officer opinion survey.

The November 2009 Financial Stability Report (see figure 20) of the Polish central bank reveals an immediate improvement of the borrower income profile for Swiss franc lending for the remainder of 2006 and into 2007: at the peak in the third quarter of 2006, average Swiss franc borrower incomes exceeded zloty borrower incomes by 18 percent. However, even this improvement did not quite match the stress-test assumptions. Moreover, the differential disappeared altogether in late 2007 and early 2008, a phase that coincided with a new rise in the Swiss franc market share and another round of strong housing price inflation, especially in the Warsaw apartment market (see figure 2 above and figure 21 below), implying pressure on affordability. In contrast, the 2006 spell of conservativeness seems to have led to a slowdown in both the use of Swiss franc and housing price growth. Income differentials finally made a strong comeback with the Lehman and Swiss franc liquidity crisis in the fall of 2008 and the resulting credit tightening.

Considering this evidence, it is likely that Recommendation S was only partly and only temporarily implemented by Polish lenders and that there were substantial deficiencies in compliance. The compliance gap may have been the result of the draconian nature of the stress test, which was considered untenable when faced with inflating property prices. The benign Polish Swiss franc default rate suggests that banks in hindsight read the market correctly. Yet the picture could have been very different if banks had not tied Swiss franc loan rates to the

Swiss interbank rates and the Swiss National Bank had not lowered benchmark rates. A rate increase could have cumulated with the devaluation, as happened in Hungary. Poland took another step in February 2010 with Recommendation T, which limits the PTI ratio to 50 percent of net income for clients with income not exceeding the average and a 65 percent absolute limit. When applied in combination with the stress-testing requirements, it should confine foreign currency debt service levels to the range of 20-30 percent of net income, depending on income level. This is more realistic but, given the low interest rates on foreign currency loans, may still allow for high household debt levels; further steps limiting the LTV ratio are therefore being considered.

Underwriting by simply assuming that foreign currency rates equal local currency interest rates will not be feasible when these interest rates are squarely unaffordable, for example in the Hungarian and – after the crisis - also in the Latvian and Ukrainian cases. The alternative is to impose an arbitrary debt service ceiling, either for both local and foreign currency loans or for foreign currency loans alone. Hungarian Decree 361/2009 that came into force on March 1, 2010, requires that euro debt service cannot exceed 80 percent of the initial Hungarian forint debt service limits (differentiated by income), and Swiss franc and other foreign currency debt service cannot exceed 60 percent. The euro 80 percent ratio is slightly less conservative than what is implied by Polish regulations; the Swiss franc ratio is far more conservative.

These debt service buffer levels imply an interest rate differential—assuming again 1 percent amortization—of 27 percent of Hungarian forint versus euro and of 75 percent versus Swiss franc for a same-size loan. Current forint rates are some 40 percent higher than euro, thanks only to a recent increase in euro interest rates, which is likely to be temporary. Therefore, the euro buffer appears as not binding, as are Swiss franc limits. See also figure 22 below, which portrays the historical extreme case of the 1994 loan cohort.

Another approach is to introduce foreign currency income-matching requirements. Austria in March 2010 moved to confine new foreign currency lending only to households that are matched by income in foreign currency, expect foreign currency windfall payments, or are member of a specifically defined class of “wealthy private clients.” Cases of full currency matching of income enjoy derogations from the discussed debt service rules also in Hungary, where they are treated under Hungarian forint regulations.

Loan-to-value ratio ceilings

LTV ratios seem to be more plausible candidates for regulation than debt service limits because of the low initial debt service on foreign currency lending and the relatively high income levels of borrowers in the typical emerging market context. LTVs also directly address the negative equity risk stemming from a potential devaluation as well as housing price risk. As mortgage crises in the UK (early 1990s) and United States (current) have shown, prolonged spells of negative equity may lead to ballooning defaults in the entire mortgage market, including in the prime segment, which is not as vulnerable to cash flow stress as nonprime.

This study has presented evidence for the relevance of negative equity as a default driver in Latvia and Ukraine above. However, only in Ukraine the devaluation contributed to the increase in the current LTV into negative equity territory. An LTV regulation therefore needs to address two areas: first, the general risk issues of housing prices and to allow for a sufficient risk buffer, and second, for foreign currency loans, it needs to consider the risks associated with negative amortization.

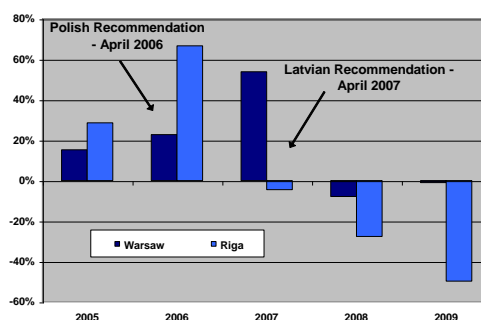
In this context, even though the regulation is not specific to foreign currency lending, Box 2 discusses an example of regulation in Latvia. The Latvian regulatory and tax initiative of April 2007 introduced an initial LTV ceiling of 90 percent. The goal of the intervention was clearly to cool down an overheated market in which prices had grown in the previous year by 65 percent. In this regard, the combined measures appear to have succeeded. Yet, as our negative equity simulation in figure 15 has shown, the initiative clearly came too late to avoid the massive negative equity realization and subsequent default wave. If the rules had been imposed a year earlier and defined more conservatively (for example, at a 70-80 percent rather than 90 percent LTV ratio) to address the scale of housing price inflation and the tight real estate market conditions in Riga, and monitored strictly, a Latvian regulation could possibly have helped to avoid the worst excesses.

Box 2 Latvia's anticyclical regulation and tax measures taken in early 2007

In April 2007, Latvia implemented a Recommendation and further tax measures designed to reduce credit and house price growth. A maximum LTV of 90 percent was set, land registry and mortgage registration fees were raised, and real estate speculation taxes were introduced. In addition, mortgagors were required to henceforth submit official certification of their income.

The measures coincided with a first peak in Latvian interbank funding costs and in combination reduced transactions by 14 percent in the usually strong second quarter of 2007 over the first quarter, long before Latvian house prices peaked and the U.S. subprime crisis developed in the summer of 2007.

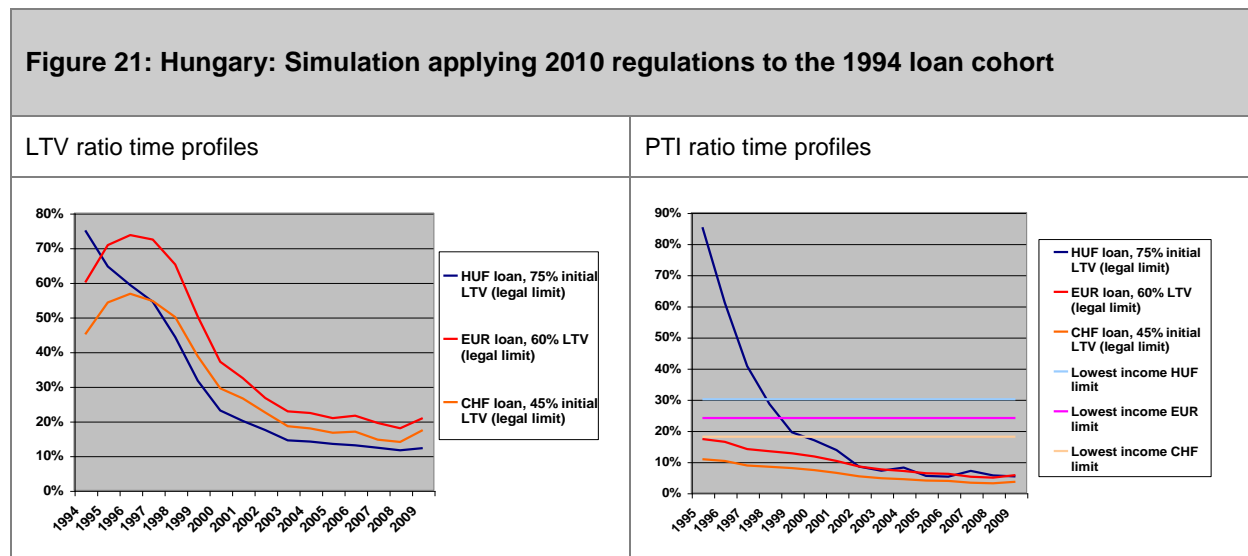
Figure 20 Apartment price inflation in Warsaw and Riga, regulatory interventions



Source: Arco Real Estate, REAS, Finpolconsult computations.

The package was contested: the industry argued that it destabilized the market, while a comparison with Poland, which had passed Recommendation S already in early 2006 and had experienced far lower price inflation in 2006-07, suggests that the measures came a year too late. However, even the Polish measures had only a temporary impact on price growth, as the data in figure 17 suggest.

As of early 2010, several specific regulations addressing foreign currency lending LTVs have been proposed. Aside from the Ukrainian ban, the most drastic so far implemented is the Hungarian Decree 361/2009. Hungarian regulations had already asked lenders in February 2008 to operate with “sufficiently low” LTV levels for foreign currency loans, mimicking the Polish 2006 regulations. The March 2010 implementation of the 2009 decree severely curtailed initial LTVs: for euro mortgages to 60 percent and for non-euro foreign currency mortgages, including Swiss franc-denominated, to 45 percent. For Hungarian forint loans, an LTV limit of 80 percent has been put in force. Figure 21 simulates the effect of the new Hungarian limits for forint and Swiss franc loans for the historical worst-case stress.



Sources: Magyar Nemzeti Bank, FHB, Metropolitan Research Institute, Finpolconsult computations.

Notes: FHB house price index, Metropolitan Research Institute for 1990s. Income growth assumed to equal nominal GDP growth. Standard loans for simplicity assumed as interest only (bullet). Four percent real interest plus 1 percent inflation paid on Swiss franc, 4 percent real interest plus 2 percent inflation paid on euro, 5 percent real interest plus CPI inflation paid on Hungarian forint. Regulation tested: 75 percent maximum LTV ratio for Hungarian forint loans, 45 percent maximum LTV ratio for Swiss franc loans, 60 percent maximum LTV ratio for euro loans.

Even taking a worst-case perspective as shown in figure 22, the newly regulated Hungarian LTV ceilings look extremely cautious. A 60 percent euro LTV ceiling on a bullet loan originated in 1994 would have sufficed to ensure that the LTV never exceeded 75 percent during the loan lifetime. An amortizing requirement would have further lowered the LTV. The 45 percent Swiss franc LTV ceiling shifts that curve by 20 percent downward put lending out of financial reach, especially for young borrowers. Even though Hungarian forint rates have come down compared to the 1994 extreme discussed in figure 22, they are still not an alternative: the current rate differential to euro loans per April 2010 is still 4 percent, despite a considerable, yet likely only temporary, increase of euro rates to around 8-10 percent.

Even if the foreign currency product range is limited to euro-denominated lending, the regulation will have a severe impact on affordability. Previously, most Swiss franc loans were given with starting LTV ratios of 70-75 percent. Lower-income or younger households with insufficient savings will henceforth have no option but to take out a 60 percent LTV euro loan and top this up with a second mortgage, available in Hungary under the Bauspar (contract savings for housing) system, in forints. Under Decree 361/2009, the additional debt service burden arising from Bauspar loans will be applied to the debt service limit, while the loan amount will not be applied to the LTV limit. This is specifically designed so that this affordability gap can be met using a local currency product.

Very tight LTV regulations for foreign currency lending had been proposed in a consultation document issued by the European Commission in November 2009. The document had proposed to accept foreign currency loans for standardized approach risk weighting under the Capital Requirements Directive only up to 50 percent LTV, or if the borrowers were sufficiently hedged. Exposures above 50 percent LTV would have attracted penal additional capital requirements. The proposal was rejected by stakeholders as too rigid and was not pursued in February 2010 follow-up consultation.

Hard LTV ceilings have been criticized for their procyclicality. Recent UK experience would seem to contradict this. There are encouraging signs that lower LTVs have the potential to reduce borrower incentives to default. Defaults in the current property market downturn so far have turned out lower in the UK than in the early 1990s, which were characterized by high LTV lending. Average LTV ratios in the Brown housing boom of the 2000s were some 5 percentage points lower than during the Lawson housing boom of the 1980s.³³

A second critique is the question of calibration of debt service stress tests and LTV ceilings. The first issue is the choice of parameters: debt service and LTV constraints tend to be based on stress tests of income and currency values, but not house prices. Would applying a more complete model of the housing market by regulators, including house price stress, be an option? Second, would such a model then be calibrated with historic data or using modelled stress-test assumptions? Using modelled assumptions may be preferable, as historic data may be missing, too short, or misleading.³⁴ Also, the financial crisis has produced extreme historical values that are hard to interpret, given that one of the main features of the crisis was a shortage of liquidity and hence low market turnovers.

Poland's Recommendation S (Nr. 14) has tried to get around these issues by requiring lenders to set LTV ceilings without prescribing specific values. The regulation calls in turn for an annual monitoring of the current LTV, implying an annual property price benchmarking, and asks the lender to deploy contractual options—ranging from additional collateral requirements through renegotiation of contract terms to contract termination—to heal a shortfall. While current LTV monitoring appears a sensible approach for general bank risk and capital management purposes, ex post unilateral lender options such as these would probably be in breach of a consumer's rights and unenforceable.

4.3.3. High-intensity interventions (foreign and domestic currency product design)

Foreign currency product design

It can be difficult to get the right balance when trying to limit the number of borrowers for a potentially risky product using stress testing. If the criteria are too strict, the danger is to create an access problem, and despite a greater buffer consumers will still be exposed to downside risk if no further steps are taken. A possible solution is to consider product design and building in some protection that also prices in the risk. The aim would be to internalize the cost of protection and effectively close the gap between risk-adjusted and non-risk-adjusted cost of credit. The benefit would be to allow some relaxation on access restrictions. Despite the potential of such interventions to rebalance access and protection, rules addressing the design of foreign currency loans are widely regarded as being high-intensity interventions in the market. This is because they directly force lenders to change the nature of contracts offered and thus cross a legal barrier.

Currency conversion option (borrower, lender)

Austria's FMA has been torn between two differing concepts for loan conversion—one where it is the borrower's right to exercise the option and one where it is the lender's. The Austrian regulator intended to use these options to reduce the foreign currency mortgage portfolio as quickly as possible through euro conversions. The language chosen in 2003 asked lenders to "take expedient measures" once threshold values were met, which suggests that conversion was intended to be a lender option. Threshold values were interpreted as "early warning indicators," that is, set in such a way that they were below the maximum permissible value under internal guidelines, given the credit rating of the borrower. A typical threshold applied by Austrian lenders was the outstanding loan hitting 110 percent of the initial loan amount in euro. Foreign currency loans are also invariably interpreted under Austrian law as adjustable-rate, in which case prepayment penalties are legally prohibited.

However, the right of conversion in Austria by law is an option belonging to the borrower, not the lender. Where conversions were enforced by the lender, the legal trigger used was "insufficient backing by collateral," or the lender made a threat to increase the interest rate as the threshold was exceeded. These cases were met with great resistance by both individual borrowers and consumer groups and therefore remained low in numbers. Consumer groups also successfully preempted a broader conversion initiative launched by the FMA, with lender support, during the Swiss franc appreciation and liquidity crisis in October 2008. The argument was made that a forced conversion would deprive consumers of the upside of a coming readjustment of Swiss franc/euro to "normal" levels.

Polish Recommendation S indirectly allowed the lender to put conversion pressure on the borrower through contractual clauses. In particular, it permitted lenders to rectify situations where the LTV was deemed excessive. Such insufficiency will arise automatically when loans are pushed toward a negative equity situation as a result of a devaluation. At least one mid-size bank has tried to use the available options—it is unclear whether a conversion proposal was among them—but the bank was rebuffed by consumer groups and a media campaign. Larger banks shied away from using the conversion options in order to limit reputational damage.

Conversion initiatives were also launched to support broader portfolio workout initiatives. In Hungary, in November 2008, banks and the government signed an agreement that offered consumers the option to convert foreign currency loans into Hungarian forint loans. Laeven and Laryea (2009) point out that the interest differentials between forint and Swiss franc loans were still large enough to exceed any future expected forint depreciation risk.³⁵ A similar workout option was introduced in Ukraine in February 2009 through NBU Resolution # 49 “On Some Issues in Bank Activities” was unsuccessful for the same reasons; clearly, borrower resistance was stiffened and encouraged by the public determination of both the government and international financiers to defend the Ukrainian hryvnia-U.S. dollar exchange rate at the new 8:1 level.

A borrower conversion option has also been a legal feature in Latvia since 2009. However, the conversions there have tended to work in the other direction as part of restructuring agreements. Borrowers experiencing difficulties have been encouraged to convert their loans into euro and benefit from the lower euro rates to help them stay current with their loan payments.

It is interesting to note that a simpler alternative to a conversion option—exchange rate caps—has been largely ignored in the sample countries for new foreign currency lending. There are also elements of ex post introduction of caps in various foreign currency portfolio workout initiatives. If the product carries sufficient amortization, an exchange rate cap over the first five years of a standard foreign currency mortgage product should help to contain the worst negative amortization risk.

Minimum and accelerated amortization, repayment vehicles

Amortization is, as demonstrated above, a major factor in the pass-through of risk, in terms of debt service (as a higher share of amortization in total debt service reduces interest rate or foreign currency shock risk) as well as in terms of current LTV (by creating an additional buffer protecting against negative equity risk).

An alternative to the politically difficult lender conversion options is to have contractual amortization acceleration requirements when certain thresholds are hit. These have been a standard feature in adjustable-rate mortgage markets: in the U.S. market, for example, a 120 percent threshold (current loan vs. initial loan) was the typical trigger in so-called option ARMs causing a so-called ‘recast’ of the loan, a rescheduling of amortization. In the case of foreign currency lending, thresholds for recasts could be staggered, which would allow amortization to increase step by step or to decrease in line with the amount of negative amortization accumulated. While such auto-restructuring features are not helpful during an extended crisis, which will require some principal write-off, they may work during a short-lived exchange rate crisis and generally help to raise the awareness of payment shock risk. Underwriting in this case would be constrained to the highest threshold full amortization debt service level. A U.S. interagency guidance passed in late 2007—belatedly—introduced precisely this requirement for ARMs.

In practice, the sample countries so far have moved to tighten standard amortization requirements. Austria in March 2010 de facto prohibited nonamortizing foreign currency loans when tied to repayment vehicles, out of concern for underperformance of the vehicles. In the crisis year 2008, 85 percent of Austrian loans had been nonamortizing and of these 88 percent were backed by repayment vehicles. Full amortization over the contractual loan maturity is now required as a standard for all remaining permissible foreign currency lending. Hungary also now requires full amortization over contractual maturity through HSFA regulation passed in March 2010: nonamortizing loans are considered as “loosening of credit conditions, which may attract higher capital requirements.

Improving foreign currency base rate pass-through

As shown above, in the Hungarian case it is likely that the banks contributed to the higher levels of mortgage default by passing on a disproportionate amount of the rise in their funding costs to their retail customers rather than their corporate portfolio. Defaults were more moderate in the Polish case, where such adverse selection of consumers was absent because the loans were indexed to foreign currency interbank rates. The pricing policy was undertaken in Hungary even though lenders had indirect access to foreign central bank swap lines at preferential rates, ignoring their individual CDS costs, thus implying a considerable subsidy to Hungarian lenders.

Neither Poland nor Hungary has a regulation in place that would force lenders to tie adjustable-rate mortgages to interbank or base rates. However, consumer protection regulation in a number of Western European jurisdictions has limited the power of banks to adjust rates on a discretionary basis. Base-rate indexation is compulsory for adjustable-rate loans now in France, Spain, Portugal, and Italy; high-level court rulings exist in Germany that limit the lenders' discretion over lowering rates when base rates have declined. At the other legal extreme, the important British market has empirically moved to base-rate indexation while keeping the traditional reviewable-rate product "standard variable rate" legally intact.³⁶ It is likely that CEE countries will be subject to similar rules at some point in the future.

Arguments against statutory indexation go both ways: indexation may help to create house price excesses, but also—once base rates are lowered in response to looming defaults—help to avoid a foreclosure crisis, as current developments, for example in Spain, seem to suggest. Statutory indexation may also further depress lender profits and create solvency risk. However, moves—possibly including regulation—in favor of greater pass-through of emergency measures, or at least a more explicit steering of the incidence of those measures, should be in the best interest of government, lenders, and borrowers.

Interest rate and payment caps

An immediate follow-up question to the indexing issue is whether instead of short-term rates the use of longer-term foreign currency interest rates or interest rate caps should be required in order to avoid a possible dual shock (of rising short-term rates and exchange rates). Such a move could indeed narrow the gap between risk-adjusted and non-risk-adjusted costs of foreign currency lending. A drawback would be the loss of the "hedging function" seen between short-term rates and the devaluation effect during crisis in Poland; however, ballooning foreign currency rates as in Ukraine and Hungary would also be avoided, and transition country policy makers cannot rely on a hedging event (that is, a foreign central bank lowering the base rate to avoid a portfolio crisis in a transition country).

A problem with such measures is the lack of creditworthiness of transition country lenders in the long-term cross-currency swap or foreign currency bond markets (exceptions being, for example, the Hungarian FHB bank). Access to these markets would be needed to limit the related interest rate risk. The central bank could possibly assist in rolling shorter-term swaps. Prepayments of capped or long-term fixed rate foreign currency mortgages would have to be curbed through prepayment penalties, which may conflict with the goal of easing conversions in the event of a devaluation.

The FMA 2003 recommendation and further initiatives had forced Austrian banks to offer borrowers a monthly payment cap insurance product, which combines an interest and an exchange rate cap. However, the use of such additional insurance was not mandatory and for a time was denounced by consumer groups as a price driver. Attempts by Hungarian lender OTP to introduce payment caps were frustrated in turn by foreign competitors offering “cheaper” uncapped products. If the provision of payment caps is feasible in a cost-effective way, regulation should promote such safe practices, for example, through capital requirements or by discouraging loans without payment caps.

Restrictions on reference currencies

Reducing the volatility of the exchange rate between local currency and foreign currency lending, or the interest rate in the foreign currency, or even the local lender refinancing risks has been the key priority of the regulatory initiatives in the sample countries. In particular, the impact of Swiss franc liquidity risk in October 2008, which had been used as a wider currency for carry trade deals, was a defining moment. Liquidity risk speaks in favor of the euro or U.S. dollar.

Figure 9 above also shows that the volatility of the Swiss franc has been historically higher compared to the euro for flexible exchange rate countries in the region. Japanese yen volatility has been even higher than that of the Swiss franc. Exchange rate volatility to the euro or U.S. dollar will remain an issue going forward, however.

De facto, Hungary and Poland have been switching to euro lending from Swiss franc lending—through regulatory tools on both consumer (LTV regulation) and bank regulation (liquidity regulation) side. No change of the benchmark currency is on the horizon for Latvia and Ukraine.

Local currency product design

As shown in figure 6 with the Hungarian historical example, standard amortizing mortgages are unaffordable in a moderate- to high-inflation context. Therefore, transition countries have the choice of either subsidized local currency products or developing a local currency product, permitting the negative amortization needed to generate affordability in what one hopes is a more controlled fashion than foreign currency with abrupt devaluation risk. For this to succeed, however, it is likely that some support in the form of regulatory or even fiscal incentives will be used.

Subsidies for standard mortgage products

Local currency mortgage product subsidies are an alternative to taxing foreign currency products for their risks in the ways described before. To the extent that subsidies are providing commensurate benefits to lenders for their lower systemic risk and avoiding future bank recapitalizations and guarantees, a social case can be made in their favor. Local currency subsidies are particularly useful, therefore, in the presence of major permanent devaluation risk.

Section 2.2.1 reviewed the Central European experience in subsidizing standard local currency products (fixed-rate or adjustable-rate amortizing mortgages). The approach used by the Czech Republic of high general mortgage market subsidies accompanied by otherwise conservative fiscal policy seems to have worked. In neighboring Hungary, where monetary policy was looser and fiscal indiscipline was closely related to high mortgage market subsidies, it has not. Even in low-inflation Austria, local currency product subsidies have not kept the market from tilting toward foreign currency products.

Also, with macro conditions such as in the Czech Republic, the question arises whether the cost-benefit balance in terms of fiscal costs today versus tomorrow (reduced systemic risk) is positive. This is questionable for at least parts of the Czech subsidy menu as described.

The subsidy policy itself therefore needs a long-term strategy and detailed optimization. The Austrian case shows that a parallel increase in the risk-adjusted costs of credit for foreign currency lending is also needed.

The subsidy design is also important, along with the amount. Interest buy-down subsidies would only be need for the initial two to five years, depending on the local currency interest rate level, before inflation and nominal income growth make higher interest rates affordable. To see this point, consider the debt service-to-income profiles displayed in figure 22: even under the extreme Hungarian forint interest rates of the 1990s, 1994 forint loans became affordable by 1999. An alternative to interest buy-downs as subsidies are buy-down loans that claw back the subsidies in later years of the financing: while the concept has failed in the Polish case as a result of implementation problems, in German social housing it has worked successfully for decades. Another alternative is downpayment or savings subsidies that also help to reduce the LTV gap that has arisen in a number of countries under new regulation. The disadvantage here is that they do not change the PTI profile, so there may still be a considerable incentive to take out a foreign currency loan because of continued high initial payments.

Alternative lending and funding instruments

Countries without the credible prospects for introducing subsidized local currency lending and that have limited options to join or piggyback a stable currency zone, such as the euro or U.S. dollar, could consider introducing inflation-linked instruments as an alternative to foreign currency lending.

These products are tailored to the affordability constraints imposed by the tilt effect. The two main alternatives that have been tested in practice over longer periods are the PLAM or DIM instruments (see Box 3 for a description). The main difference is the use of a single (inflation only) or two indices (for salaries and inflation). The two products carry different risk profiles.

Box 3 Local currency mortgage product design for high-inflation countries and empirical examples

Main instruments:

- PLAM – price-level-adjusted mortgage: loan balances are adjusted by an inflation index; payment due is the real interest rate times the adjusted balance. Main benefit: loan always amortizes, simplicity. Main risk: mismatch of inflation with salaries. PLAM has been the standard mortgage product in Chile for decades. In Colombia, a long-standing PLAM market collapsed in 2004 as a result of accelerating mismatch between the underlying index and salaries.
- DIM – dual-indexed mortgage: loan balances are adjusted by an inflation index; payment due is fixed initially and adjusted by a salary index. Main benefit: payments rise only with salaries, minimizing default risk. Main risk: may not amortize if initial payment is too small and indices mismatch. DIM is the standard mortgage product in Mexico, supported, however, by a government index swap program as lenders do not accept salary indices. The political manipulation of salary indices has contributed to the fiscal and inflation crisis in Brazil in the 1980s as a result of large non-amortizing loan portfolios assumed and financed by government.

Products with greater contractual flexibility include DPM – deferred payment mortgage, a standard mortgage with arbitrary deferment of portions of instalments, comparable to “option ARM” in the U.S., Hungarian, and Polish savings banks used a deeply subsidized DPM product in the early 1990s.

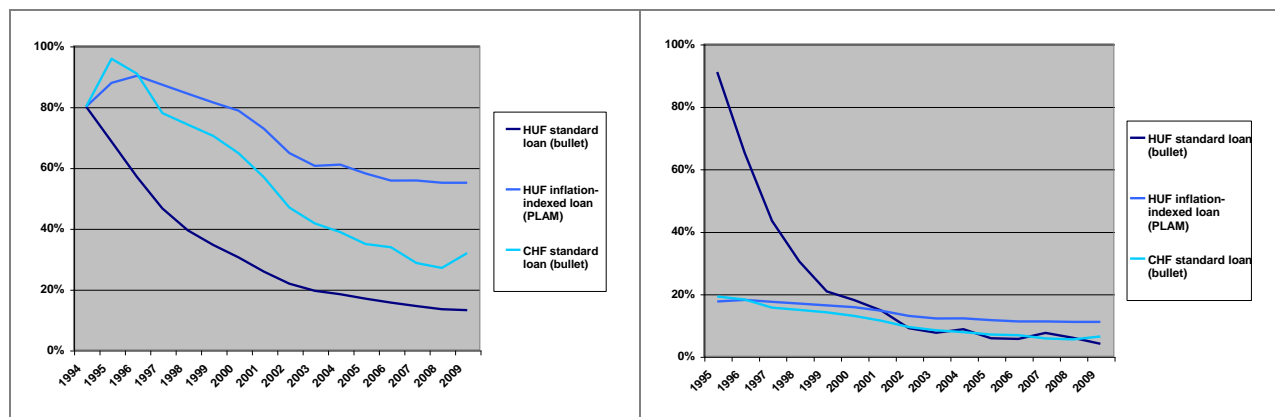
The short-lived Hungarian and Polish experiments have been discussed above; they are recorded in greater detail by Struyk (1996). Transition country products were quickly replaced by foreign currency loans, or deeply subsidized local currency loans. Apart from the World Bank project in Poland, there is no specific local regulation or subsidy initiative for these products. Long-term information is available only for Latin America, where in many countries inflation and lack of trust of investors in nonindexed local currency products has been an issue for the past 40 years.

In particular DIMs have been plagued with political interventionism. Dübel and Alberdi (2000) show that individual cohorts of Brazilian mortgage borrowers, because of political intervention into salary indices, paid back as little as 10 percent of their housing loans; the assumption of nonamortizing loans by the government was a major contributor to the Brazilian hyperinflation of the 1980s. DIMs are therefore hardly digestible for investors. In order to mitigate this risk, the Mexican government has supported its domestic DIM product by the public provision of an index swap through the housing finance agency SHF.

A public commitment can also be helpful in the case of PLAMs, which are also at risk of assuming the character of DIMs when mismatches between inflation and salaries become too large and courts intervene. This was the case in Colombia, where the Supreme Court in 2003 ruled that the use of a price index that had strongly departed from general (salary) inflation levels was unconstitutional.³⁷

Figure 22: Hungary: LTV and PTI ratio time profiles simulated for the 1994 vintage: Hungarian forint bullet vs. Hungarian forint PLAM vs. Swiss franc loan

LTV ratio time profiles	PTI ratio time profiles
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Sources: Magyar Nemzeti Bank, FHB, Metropolitan Research Institute, Finpolconsult computations.

Notes: Price-level-adjusted mortgage constructed with CPI index and 5 percent real interest rate. For other notes see figure 22.

Figure 22 demonstrates the mechanics of the PLAM for the Hungarian worst-case vintage of 1994 by simulating LTV ratio and PTI time profiles. An inflation-linked price-level adjusted mortgage product in Hungarian forints would have applied a fixed real rate (in the simulation, 5 percent) on the outstanding loan balance which would be adjusted periodically (in the simulation, yearly) with Hungarian consumer price index inflation. As the Swiss franc loan, the Hungarian forint PLAM would have addressed the initial affordability problem effectively, keeping PTI ratios low.

However, the amortization profile of the Hungarian forint PLAM would have been smoother than that of the Swiss franc foreign currency loan. Especially, the strong 1995 forint depreciation effect on the outstanding loan would have been more muted: based on 80 percent initial LTV, the maximum LTV of a PLAM reached over its life would have been 90 percent rather than 96 percent in the case of the Swiss franc loan. Such seemingly small differences in the equity position of borrowers have drastic consequences in terms of default rates, which rise exponentially for LTVs over 80 percent. In the long run, the long-term real appreciation trend of the forint would have rendered the Hungarian forint PLAM amortization profile flatter than that of the Swiss franc. Amortization could have been accelerated by adding an amortization component to the real interest rate applied.

PLAMs thus create a stable mortgage loan “currency” purely based on domestic indices. Obviously the choice of indices is crucial, not just in order to minimize salary-inflation mismatches, but also to limit distortions embedded in inflation indices (such as terms-of-trade effects and the effects of administrative price or tax changes). PLAMs require, moreover, some education of bond investors, although the increasing global demand for inflation-linked bonds in the presence of very limited supply should be supportive. Finally, PLAMs require somewhat greater asset-liability management capacities in banks than standard mortgages; Latin American experiences show that these are generally present in moderate- and high-inflation economies.

Clearly, there is danger that a pervasive system of inflation indexing could support higher inflation through wage push; some jurisdictions thus have prohibited or limited index-linked products (for example, Germany). An option to limit the proliferation of products through the credit markets could be to restrict the system to long-term loans only.

4.4. Intermediary risk management

Portfolio risk management

With the exception of Latvia, regulations in the sample countries are demanding specific risk management and are intensifying supervisory review for foreign currency portfolios.

An example of intensified supervisory review is the increasingly deep and low-frequency reporting requirements established by Austria's central bank (see Box 4) as a response to the foreign currency lending problems. Lenders are asked to move from general descriptive reporting to aggregate indicator reporting and cross-tabulation; going forward, disaggregate loan pool reporting (for example, typical rating agency analysis of MBS default performance) might help to gain further precision in the identification of risk factors.

At the core of risk management rules are the designation of special management and internal review inside banks (Poland, Austria) and the conduct of stress testing to map the potential impact of devaluations, housing price declines, and interest rate increases on default and loss-given-default risk (Poland, Hungary, Austria). Portfolios with high realized default rates, such as the foreign currency portfolios of Ukrainian banks, are currently subjected to extraordinary stress tests in order to help recapitalize the banks. The consequences of stress testing are increases in general provisioning ratios for the portfolios in question.

Periodicity of stress test requirements is shortening considerably, from at least once a year to quarterly. Internal bank stress-test parameters generally match those introduced in the area of consumer risk transparency and underwriting stress tests. Ukraine is adding house price stress of 25 percent to the devaluation and interest rate parameters.

Foreign currency concentration risk is on the radar of bank regulators in the entire sample: Austria, Poland, Hungary, Latvia, and Ukraine.

Additional capital requirements

Capital requirements serve as a tax instrument on the perceived greater risk of foreign currency loan portfolios. They may replace or add to hard regulatory constraints on certain practices (for example, LTV ceilings) and address existing portfolio risk where hard constraints can legally only be imposed ex ante to new lending.

Poland has been using this instrument, even though Polish foreign currency default rates so far are lower than local currency rates. Within the options available under the EU Capital Requirements Directive (CRD), the risk weight for foreign currency mortgage loans in Poland under the standardized approach has been increased from 35 percent to 75 percent.

Box 4 Austria special foreign currency loan portfolio survey parameters

Since 2005, foreign currency loan surveys in Austria have been performed semi-annually. Reporting intervals were changed to quarterly in Q1 2009. Reporting contents are:

- Loan portfolio split by currency and by sectors (private households, corporations)
- Risk provisions and collateral, nonperforming loans, restructured loans, collateral split up according to Basel II and IRM

Planned extensions

- Private household lending split (including Foreign exchange and credit risk dimensions) into consumer credit, mortgage credit
- Mortgage loan specific risk assessment (e.g., LTV, DTI)
- Residual loan maturities (to supervise reduction of foreign currency loan portfolios)
- Idiosyncratic products such as foreign currency leasing

Source: Oesterreichische Nationalbank (2009b)

Austria has been pondering the same measure,³⁸ but so far has not taken any action. After the EU initiative of November 2009 to amend the CRD with capital requirements for foreign currency mortgages differentiated by LTV has been discontinued, the likelihood of additional of individual action has risen. This could lead to a great variety of capital requirement solutions, for which Hungary and Latvia are examples.

Hungary, through the Hungarian Financial Supervision Authority's (HFSA) "information on high-risk portfolios" implementing Decree 361/2009, has announced steep additional capital requirements under pillar II for foreign currency mortgage portfolios, without the benefit of grandfathering existing loans. These have been announced on three levels (reference is the standardized approach risk-weight):

- HFSA will define "high-risk" portfolios, which will entail a special supervisory review of risk management and underwriting practices. Up to 100 percent additional capital requirement will be demanded for such portfolios under pillar I, depending on risk management quality of such portfolios.

- Independently from the character of the portfolio, certain products, activities, and practices could bring capital requirement add-ons in the range of 50-100 percent. Unsound practices according to HFSA include: LTV exceeding 80 percent, absence of equity capital by borrower in the financing (for example, a second loan fills the 80-100 gap), PTI ratio exceeds 50 percent, the loan is not amortizing over its contractual maturity, and absence of income documentation.
- Additional capital requirements of 100 percent can be placed on a portfolio, if the institution is not in compliance with various codes of conduct in addition to the conditions set out in relevant laws.

Since 2009, the Latvian regulator demands capital deductions in cases where the supervisory provisioning result (based on expected loss of portfolio) exceeds the International Financial Reporting Standards (IFRS) provisioning results. Additional capital requirements under pillar 2 are set for concentrations of foreign currency portfolios with borrowers without foreign currency income or collateral. This seems to be the most tangible foreign currency-related regulation in Latvia currently.

Dynamic provisioning

The IMF has proposed introducing higher-risk provisions for foreign currency lending as an alternative to higher capital requirements. These risk provisions could, for example, be calculated on the basis of the spread between local currency and foreign currency interest rates or on the basis of a compulsory insurance against the extra default risk of foreign currency loans.

Latvia applies the closest to a dynamic provisioning approach under the latter of the two proposed metrics by requiring capital deductions in case IFRS provisioning is found insufficient. However, that approach is not foreign currency-specific. A problem is that so far systematic credit risk differences between local currency and foreign currency loans cannot be identified; where foreign currency is a risk driver, it comes together with idiosyncratic contract design features (Ukraine, Hungary where lender discretion led to parallel large lender spread increases; see figure 11). Taking simply local currency-foreign currency interest rate differences ignores the empirical trade-off between early payment default (higher in local currency lending) and payment shock and negative equity default (higher in foreign currency lending).

Limiting foreign currency loan growth and cross-border business

Domestic foreign currency loan growth limit or reduction goals have so far been expressed by Austria and implicitly, through the foreign currency product ban, in Ukraine. Hungary and Poland pursue an implicit taxation route through underwriting and product constraints. An option that has been discussed and is backed by Spanish practices that have been internationally proposed as a model could be to enter loan growth or portfolio size as a factor into capital or provisioning requirements.

Also important in limiting (house price) inflation risk associated with loan growth are interventions into the expansion of cross-border lenders. Austria and Hungary have been taking steps in this area.

Austria plans to act under a “supervised self-regulation” approach to reduce the volume and share of foreign currency loans in central and southern Europe “in order to diminish the vulnerability of Austrian banks—ensuring their ability to perform their local market functions—and avoid the rebuild of imbalances.”³⁹ The central bank intends to reach this goal by reduction of flow and is “opposed” to forced conversions.

Hungary intends to address the same issue by imposing additional capital requirements for operations in economies where country risk is considered elevated. An example would be OTP's involvement in Ukraine. Banks may either determine the additional capital under the internal capital adequacy assessment process (ICAAP) or are forced to hold 30-100 percent surplus capital calculated on the basis of the ICAAP provisions. Hungary also has formulated minimum capital requirements for domestic banks wishing to open branches abroad, depending on institution-specific characteristics.

Currency and interest rate risk matching, liquidity stress

Currency risk-matching requirements are already a core feature of international bank regulation under Basel I. Countries in the region have partly tightened the ability to run open currency positions from the standard 20 percent of capital to 10 percent. Preferred treatments of euro open positions in expectation of swift Eurozone access were scrapped after the crisis (Latvia, 2008).

After the acute refinancing problems that arose in 2008 for banks in the region, including Austria, that needed to be addressed by official credit and swap lines, foreign currency liquidity requirements are being tightened. The main initiative here comes from the EU Commission, which in February 2010 proposed a liquidity coverage requirement to match a 30-day period of acute stress. The Commission would like to apply liquidity requirements currency by currency, fearing potentially limited convertibility of currencies in a financial stress situation. Liquidity coverage would imply an "adequate" currency distribution of buffer assets to be left to institutions, subject to supervisory review. Currency-by-currency matching would be another argument for CEE banks to limit their portfolios to the euro.

Amidst the tightening trend and the heightened currency risk perception, an open question is whether bank regulation has not enforced too much currency risk matching and left too little room to intermediation, especially on the side of cross-border entrants. The home currency bias implied by strict matching rules could be co-responsible, together with illiquidity of the local currency funding markets, for the heavy bias toward offering foreign currency lending by cross-border lenders.

Foreign entrants are hedged by definition when doing foreign currency lending (ignoring counterparty risk of their borrowers, and ignoring that many need additional swaps—for example, Swedish banks when offering euro and Portuguese or Austrian banks when offering Swiss franc), while domestic banks seek hedging (and many of them failed during the crisis, so central banks had to step in). Currency risk-matching regulation for foreign banks in their home countries could make matters worse with regard to their operations in transition countries.

4.5. Summary of findings - regulation

While the intensity of regulation increased after the devaluation risk realization of 2008 and 2009, the goals of interventions in the case countries still differ vastly. Low-inflation Austria has moved its focus from limiting the risks to "reaching a lasting reduction of foreign currency lending" and de facto has banned new lending. While Poland and Hungary have been formulating a reduction goal, too, the main thrust of intervention is rather to change pricing by tilting regulatory incentives toward local currency lending. Regulation in both countries is supportive primarily of a market in euro, especially in Hungary. Latvian regulation even treats continued euro lending as not much of a risk issue after international intervention has rescued the country's currency arrangement. At the other extreme, the situation in Ukraine remains in limbo as the 2009 ban of new foreign currency lending awaits a possible revision in 2010.

Information campaigns and general underwriting requirements were prioritized before the crisis in order to minimize political costs. An information campaign can be credited in both the Austrian and Hungarian cases to have reduced Japanese yen lending, but not Swiss franc lending. An effective tool in particular in these countries as well as Poland seems to have been the demonstration of risk-adjusted cost of credit under synthetic stress or historical extreme value assumptions to consumers (and lenders).

Greater regulation intensity was introduced already pre-crisis, with specific debt service stress test parameters by Poland in 2006, which seems to have had a temporary disciplining impact on the market. However, by 2007-08 income differentials between local currency and foreign currency borrowers in Poland disappeared again, which suggests supervision gaps. In Latvia, early 2007 LTV regulation combined with income documentation standards and tax increases had a drastic deflating impact on the market. In hindsight, these bold measures came at least a year too late, however. Hungary in 2010 has drastically limited LTVs in the foreign currency market and in particular on further Swiss franc lending. Poland's strategy to avoid LTV regulations through ex post collateral and contract term changes is likely legally not feasible.

Product regulations: borrower conversion options are now statutory in all sample countries, except Poland. They appear a useful tool; however, in crisis they are not exercised as a stop loss if further exchange rate downside risk is limited. Exchange rate interventions and forced conversions by lenders appear mutually exclusive as long as high interest rate differentials and the tilt effect persist. Lender conversion options are generally legally dubious as they are imposing high costs relative to income and wealth.

Despite lenders being forced to offer costly conversion options to borrowers, simple exchange rate or negative amortization caps are not required by regulations. Such caps in combination with a local currency LTV maximum and a negative amortization maximum could replace rigid foreign currency lending LTVs with a price mechanism. Minimum amortization rules have instead been introduced in Hungary and Austria in order to contain (imperfectly) negative amortization risk. Accelerated amortization as negative amortization deepens could be a contractual alternative (for example, U.S. ARM).

Requiring the pass-through of lower foreign currency base and bank refinancing rates can assist market stabilization in reaction to devaluation, as demonstrated by the Polish case, and rules helping to preempt delayed rate adjustment by banks would be helpful. In Western Europe, Roman or case law almost universally demands pass-through to consumers; however, not so much in the case countries (except Austria). A greater diffusion of fixed-rate or capped foreign currency rate arrangements as well as payment caps is so far not supported by regulation. In contrast, Poland and Hungary have provided strong incentives to switch the benchmark currency from the Swiss franc to the euro in order to minimize volatility as well as bank liquidity risk.

Local currency product subsidies have been tried in Hungary, with disastrous results. They can be justified (in this context) only if they are designed to moderate the tilt-effect and contribute to commensurate lower contingent fiscal liabilities through the systemic risk impact of foreign currency lending. The Czech Republic's relative "success" story with subsidies is difficult to replicate; its own and Austria's failures suggest better design, limitation in time and scope, and application only in combination with "taxing" foreign currency lending to further narrow the cost of credit gap. In a high-inflation context the experiences in Latin American countries using inflation-linked price-level adjusted mortgages, such as in Chile, Mexico, and Colombia, support the notion that mortgage markets can exist for decades using adapted products. The advantage of such products over foreign currency lending is that negative amortization is less volatile (depending on inflation rather than on exchange rates). Yet, typical risks of such products in high-inflation economies, such as mismatches between salaries and inflation or between different inflation measures, persist, as well as volatility in real interest rates, may cause intermittent investor or borrower loss of trust in the system.

Case countries have invariably tightened intermediary regulations in the case of foreign currency lending, especially by intensified supervisory review, higher capital requirements, and tighter liquidity and matching rules. Default stress testing of foreign currency portfolios has been universally required and reporting standards have been tightened. Poland has proceeded with generally higher capital requirements for foreign currency lending, even though foreign currency default rates are lower than local currency default rates, and Hungary has followed with a differentiated set of capital requirement add-ons. Minimum liquidity for 30 days has been proposed by the EU Commission, and may become part of BIS III. An unsolved question, however, is whether currency risk intermediation by foreign entrants should be stimulated by their home regulators as a tool to reduce the pressure to offer foreign currency loans. Home regulators in Austria and Hungary have taken steps to limit cross-border lending in foreign currencies.

The regulations reviewed in this study appear generally to react to short-term issues, and are often severely delayed. For example, the Austrian 2003 recommendation came four years after the first problems arose in the market, and Latvian 2007 regulation acted procyclically. While rules have been often detailed, implementation has been suboptimal—Poland's Recommendation S lost market impact a year after implementation. While regulators in the region start comparing notes, transparency over the set of rules applied by neighbours is still low, and some appear to be the result of activism rather than empirical test. There is generally an extreme scarcity of empirical evaluations of the effectiveness of individual rules. A coordinated work program involving regulators across borders to compare notes empirically and conceptually appears as a high priority.

5. Policy Recommendations

5.1. Ban vs. regulation of foreign currency mortgages

Elevated credit risk in foreign currency mortgages has empirically resulted from layering of risk factors, including devaluation risk, rate risks associated with changes in foreign currency rates (downward) and local currency rates (upward due to heightened sovereign and bank risk), and impacts on real economy (unemployment, decreases in real wages (Latvia)). In our sample of four CEE countries, mortgage credit risk has been further heightened by house price risk which may occur in both local currency and foreign currency dominated mortgage markets as a result of excessive credit growth and lax underwriting standards.

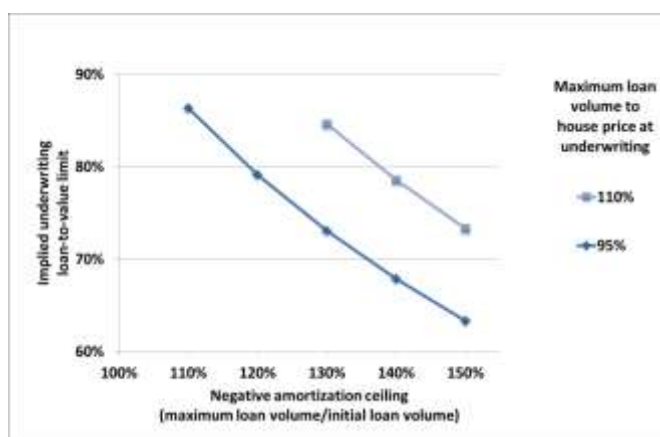
While causality typically runs from mortgage credit growth to both future devaluation and credit risk, denominating mortgages in foreign currency has other contributions to risk levels: via supporting credit growth through low non-risk-adjusted interest rate levels, via encouraging speculation in combination with repayment vehicles in local currency, and via enhancing bank liquidity risk. There is a follow-on risk of wider macroeconomic destabilization, especially if countries hold insufficient reserves to stabilize bank funding in an emergency. The use of the product should therefore be minimized to cases where it is essential to keep a mortgage market intact and supportive measures mitigating risk can be put in place.

- In high-inflation economies, foreign currency mortgages are likely to be an essential element of the product set, or even the only feasible product option, because developing the local currency alternative there requires substantial, and potentially even more costly, public intervention. In these cases, there is a case for retaining foreign currency mortgages under a strict regulatory and support regime detailed below.
- In low-inflation economies, the social case for foreign currency loans is largely absent: they have been pushed by foreign banks as market entry instruments, preferred by consumers as a seemingly less expensive alternative to local currency loans on a non-risk-adjusted basis, and in isolated cases have even been used as a tool for carry-trade speculation and bank fee maximization. In these cases, we advocate for limiting the product to specific cases (for example, matching borrower income) or banning it.

5.2. Optimizing foreign currency lending consumer protection

If foreign currency mortgages remain a part of the product menu, a fair risk-sharing arrangement between consumers and lenders should be the goal.

Figure 23 Implied underwriting LTV limit as a function of devaluation risk protection adopted contractually



Source: FinPolConsult

Notes: Negative amortization = cumulative devaluation minus cumulative amortization. Simulation assumes setting a) a maximum ratio of the potential (future) loan volume to the

The protection of consumers against negative amortization and debt service shocks resulting from devaluation and interest rate risk of the foreign benchmark, as well as the choice of a low-risk foreign currency, is a high priority. The detail should be ideally determined by law.

house price at underwriting time and b) a negative amortization ceiling limiting the potential loan volume. Values would be set contractually within statutory limits. If the negative amortization ceiling is set to 100 percent this would be equivalent to a local currency loan. The higher the contractual negative amortization ceiling, the higher the devaluation risk exposure of the borrower and the lower must be underwriting LTV.

A suitable instrument to contain devaluation risk would be a negative amortization ceiling in local currency. With this, the potential outstanding loan volume would be limited to a certain percentage of the underwriting loan volume. For example, in the United States, until the late 1990s a maximum of 120 percent of the underwriting loan volume was regulated as the potential outstanding loan volume limit.

A negative amortization ceiling effectively limits the devaluation risk: in the case of the historic U.S. ceiling value, cumulated devaluation minus cumulated amortization would be limited to 20 percent. In higher-inflation economies a statutory ceiling value of 30-50 percent could be conceivable.

The maximum permissible underwriting LTV could then be derived from the maximum potential loan volume established by the contract within the set statutory limits. For example, the regulation could postulate that the ratio of potential, that is, *maximum future*, outstanding loan volume to the house price at the time of *underwriting* should never exceed 95 percent. In combination with a 130 percent negative amortization ceiling, the permissible underwriting LTV for the foreign currency loan would be 73 percent.

In this way, rather than sorting out borrowers through uniform low LTV (and vice versa, high equity) requirements, an exchange rate risk protection and pricing mechanism through an interest rate mark-up for the protection offered would be created.

The interest rate mark-up would be higher, the lower the maximum negative amortization limit offered by the lender is, and vice versa. At the one extreme, full protection against devaluation risk (a full cap of the exchange rate risk offered by the lender) in a high-inflation economy would result in an interest rate similar to the one on a local currency loan. At the other extreme, with the contract offering only the statutory negative amortization limit, borrowers would be exposed to a limited devaluation risk against paying a somewhat reduced interest rate compared to a local currency loan. However, that interest rate level, which internalizes devaluation risk protection cost incurred by the lender, would substantially exceed the low levels subjecting the borrower to unlimited devaluation risk.

Interest rate risk can be contained by enforcing downward adjustment of foreign currency interest rates paid by consumers when bank refinancing costs decline. Additionally, interest rate caps or greater use of fixed-rate lending should be encouraged. These instruments are relatively low-cost for lenders to offer in liquid currencies such as euros or U.S. dollars. Because of the risk-reducing effects of nominal income growth, statutory requirements for caps could be confined to the first (for example, five) years of financing.

If no such material product restrictions can be imposed by regulation, a second best is suitable capital requirements that incentivize contractual risk protection and de facto tax the distribution of risky products. Such capital requirements should be based on an actual default risk analysis, however. Simple capital add-ons (or reductions for protections) translating easily under the standardized approach into a cost add-on (or reduction) to be quoted by lenders appear preferable to complex differentiations.

In the absence of product restrictions materially reducing downside risk, stricter borrower selection mechanisms are justified, including adequately calibrated debt service stress tests, in order to pre-empt adverse selection (of apparent lower-cost mortgages to lower-income borrowers), and equally stress-based LTV limits.

Lenders should finally be held to advertise foreign currency loans on a risk-adjusted cost-of-credit basis to consumers, especially when in direct comparison to a local currency loans. One tool would be to enforce the quoting of swap rates, that is, the devaluation risk protection cost charged by the market. Advertising and contracts should contain easily understandable warnings against the risks of the product.

5.3. Developing the domestic currency alternative

Unless accession to a wider currency zone with deeper mutual liquidity support mechanisms is realistic within a short timeframe, the development of a local deposit and bond market base suitable to stem dollarization should be given priority. Given the scale of mortgage funding needs and the volatile relative demand profile, local and foreign currency funding markets cannot easily co-exist, and a conscious policy decision about the desired direction needs to be made.

Latin American economies such as Chile, Mexico, and Colombia have done so and demonstrated that mortgage markets can exist for decades using inflation-linked local currency products, such as price-level-adjusted mortgages. The advantage of such products over foreign currency products is that negative amortization risk is better behaved, as influences beyond inflation differences—such as short-term capital flows—do play a lesser role. Yet, typical risks of high-inflation economies, such as mismatches between salaries and inflation or between different inflation measures, persist and may cause investor or borrower loss of trust in the system. This may warrant government support, for example, through index swaps or credit insurance.

Subsidizing the interest rate of standard amortizing local currency mortgages is an option, too. However, this seems fiscally responsible only if accession to a wider currency zone is in sight or monetary policy is highly disciplined. Negative experiences in the early 1990s in the case of CEE countries suggest that tight fiscal controls are needed in such cases.

5.4. Optimizing foreign currency lending bank regulation

If foreign currency mortgages remain a part of the product menu, official lenders of last resort of the currency zone that is piggybacked on should provide sufficiently large and accessible liquidity support lines as insurance against a disappearing interbank market. Local foreign currency deposits and Eurobond issuances should be stimulated in order to reduce dependence on both interbank and official sources. The need for cohesive and comprehensive liquidity support suggests limiting the range of admissible currencies not only from a consumer protection, but also a bank regulation, point of view.

Depending on the degree of material product constraints and risks borne by consumers, special portfolio risk management, stress testing, and supervisory review procedures remain a priority. Foreign currency open positions by banks should remain limited to capital. In addition, rollover risk of funding and hedging should be more accurately considered in capital or liquidity requirements, as is partly being proposed under Basel III. However, such regulation should reflect actual risk and not lead to discouraging banks from offering exchange rate caps and other protections in order to mitigate default risk.

Regulation to improve portfolio and asset-liability risk management, and material public support initiatives to mitigate liquidity risk, are complementary elements of the same strategy.

Capital requirements should vary with the specific downside risk and risk protection content of the foreign currency product, as described, to help further correct the risk-adjusted cost of credit balance with local currency products. Dynamic provisioning elements penalizing both risk and fast credit growth could help to contain adverse competition dynamics or at least bolster the capital base. Foreign bank home country regulators should assist host countries by monitoring and penalizing the credit growth of their cross-border lenders, in their own interest as capital providers of last resort and in the interest of host country stability.

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¹ Dollarization refers to the practice of using any foreign currency for the means of pricing an asset or for making payments. The countries covered in this study use a range of currencies: Swiss francs, Japanese yen, euros, and dollars.

² As inflation and interest rate rose, the monthly payments remained constant, with the extra cost being added to the outstanding balance on the mortgage.

³ Dübel (2008) shows that Latvia by 2005 was an outlier in a country subset including Central Europe and the Baltics when comparing construction activity with the mortgage finance stimulus. Activity in Latvia picked up later in the decade before it came to a halt during the crisis.

⁴ See also Gruss and Sgherri (2009)

⁵ A carry-trade can be defined as a transaction in which a sum of money is borrowed and interest paid on it in order to invest in an asset that yields a higher rate of interest. In this case, the lower interest is available by taking out a foreign currency loan, while the higher interest is to some extent a speculative position on the direction of house prices and of the exchange rate.

⁶ The term was coined during the 1970s when many markets were suffering from high levels of inflation. See Follain and Struyk (1977) for a detailed discussion of the impact of inflation on mortgage borrowing for house purchase. The United States provides a stark example of the tilt effect given the standard 30-year fixed rate mortgages. Follain and Struyk consider the use of alternative products such as graduated payment mortgages (GPMs), price-level-adjusted mortgages (PLAMs), shared equity mortgages (SE) or the more common variable-rate mortgage (VRM). We discuss some of those products further below.

⁷ The new “dual-indexed” mortgage loans (DIM) were tied to both salary and inflation indices. These loans were refinanced by a mortgage fund with World Bank funding. The product had inter alia to compete with deeply subsidized indexed PLN loans offered by the publicly owned savings bank PKO BP.

⁸ See Hegedüs et al (1996) for a detailed account of the Hungarian mortgage market development during the early 1990s.

⁹ See *The Economist* (2003).

¹⁰ After the takeover of HypoVereinsbank, the owner of corporate finance bank BPH, Unicredit has further consolidated its leading market position.

¹¹ Erste’s move was hotly contested by competitors at the time, who alleged that Czech government subsidies protecting the takeover deal had been abused to cross-subsidize the bank’s retail market offensive.

¹² See Batchvarov et. al. (2007) for deep technical detail of lending practices of ca 2005/2006.

¹³ Latvian regulators interviewed for this study offered the explanation that small markets such as theirs did not seem material for foreign regulators responsible for regulating cross-border lenders.

¹⁴ See Furga (2007).

¹⁵ See Boss (2003).

¹⁶ Brown, Kirschenmann, and Ongena (2009) analyze loan-level data from a Bulgarian bank containing information about the currency desired by borrowers in their loan application and the currency in which loan contracts were actually closed. They show that borrowers of large and long-term loans demanding local currency became systematically rationed by the bank, most likely because of its funding constraints in local currency.

¹⁷ Various studies have attempted to estimate the ratio of retail mortgage loans funded by deposits, which is technically difficult to assess because, for example, covered bond pools are multi-collateral multi-jurisdictional. ECB (2009) suggests the ongoing validity of the rule of thumb of >60 percent of deposit funding share for the Eurozone.

¹⁸ See International Monetary Fund (2005).

¹⁹ See Dübel (2003) for a detailed evaluation of relative subsidies of contract savings for housing and covered bonds in the Czech Republic and Slovakia.

²⁰ The duration of mortgage loans is shorter than their maturity. Prepayment penalties, which are de facto universal in Central and Eastern European markets, tend to lengthen duration and worsen the mismatch problem.

²¹ The effect is more pronounced for Poland than for Hungary.

²² All major foreign-owned banks in Hungary signed a Memorandum of Understanding that the parent banks would support their Hungarian subsidiaries. In Latvia the large Nordic banks also made public statements committing themselves to a long-term presence in the country.

²³ Another extreme example is that of Kazakhstan, where banks had borrowed heavily on the Eurobond market for short maturities and at low rates. The money raised was used to fund a big expansion of long term foreign currency mortgage loans and construction loans. When the crisis hit, liquidity dried up and the banks were no longer able to roll over their short term funding. The banks were put into a position of trying to recall those loans that they could, with a devastating impact on the construction sector, and a put a freeze on any new lending, which led to a collapse in house prices. Eventually a government bail-out was necessary, making use of some of Kazakhstan's oil revenue reserves.

²⁴ A guest post written at FT Alphaville by BNP Paribas economist Shahin Vallee compares ECB and Fed swap policies: <http://ftalphaville.ft.com/blog/2010/03/30/191041/behind-closed-doors-at-the-ecb/>.

²⁵ The Latvian Financial and Capital Markets Commission reports that banks have been attempting to alter the agreed fixed spreads, when contractual clauses allow them to. This has caused consumer complaints. They have been successful in cases where consumers have had other undeclared loans, but not in the general case.

²⁶ See Narodowy Bank Polski (2009), chart 3.21.

²⁷ See Barisitz and Lahnsteiner (2009).

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- 28 Reported by Latvian Financial and Capital Market Commission (2010).
- 29 See Österreichische Nationalbank (2009b).
- 30 Authors' interpretation based on interviews with the Latvian Financial and Capital Markets Commission and analysis of Latvian regulation.
- 31 See Tumpel-Gugerell (2003).
- 32 This calculation assumes 1 percent amortization. The lower the assumed amortization ratio, the higher the debt service difference between local currency and foreign currency.
- 33 Source: Analysis undertaken in Dübel et al. (2009, publication by EU Commission expected).
- 34 For an extensive discussion of this point see Taleb (2007).
- 35 See Laeven and Laryea (2009).
- 36 See Mercer Oliver Wyman (2005) and Dübel (2005).
- 37 See Cárdenas (2006).
- 38 See Österreichische Nationalbank (2009b).
- 39 See Österreichische Nationalbank (2009b).