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Financial Fragility and Exchange Rate Arrangements of EU Candidate Countries

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ABSTRACT

This study investigates how present exchange rate arrangements increase or reduce financial fragility of Central and East European countries, hence, the risk of a currency crisis, particularly when the countries will enter the Exchange Rate Mechanism (ERM) of the European Union. Financial fragility stems from moral hazard, original sin, and commitment problems. The study finds that moral hazard plays a minor role in explaining financial fragility in candidate countries. More problems result from original sins and commitment problems, the latter being closely related to the institutional weaknesses of transition countries. In that constellation, an independent float as in case of the Polish zloty, remains more or less ineffective in reducing financial fragility. The study finds further that the currency boards of Bulgaria, Estonia, and Lithuania, and the managed floats of the Czech Republic, Slovakia, and Slovenia have recently presented the best results in reducing financial fragility. Finally, the study finds that the switch to the ERM will probably increase the financial fragility of Poland since the currency appreciated more during the float period than before. With an overvalued currency, increased sterilisation efforts might lead to liquidity constraints. Otherwise, expected depreciation might trigger speculative attacks. The misalignment problem is less present in the case of managed floats. The currency boards of Estonia and Lithuania (and, in perspective, of Bulgaria) seem to be sustainable in the ERM II test phase, and they can be made compatible with the ERM II rules.

Keywords: Transition countries, EMU, exchange rates, financial crises

JEL: E58, F3

1. *Introduction*

After fundamental liberalisation of financial markets in developed countries and of capital accounts worldwide, a number of currency crises have upset the East Asian, Latin American and Eastern Europe economies in the last two decades. Fixed exchange rates were the first victims of speculative attacks against the respective currencies (*Fisher, 2001*). In reaction, we have observed a shift away from intermediate exchange rate arrangements (ERA)¹ towards floats and hard pegs (Chart 1). Politicians in emerging market economies have recognized that the proper choice of the ERA results not only from the applied monetary policy regime or the source of stochastic shocks (see also *Calvo, 1996*), but also from structural factors, particularly from a weak financial intermediary sector. Financial fragility is the systemic risk of a country's financial sector, particularly banks, against runs and bankruptcy and, thus, to exhaust liquid assets. With a fixed exchange rate, liquid assets in domestic currency are implicit international assets (*Chang and Velasco, 1998*).

[Insert Chart 1 about here]

This study will concentrate on the constraints financial fragility imposes on the choice of the ERA in the Central and Eastern European (CEE) countries. These countries started transition to a market economy a decade earlier when their banking sector was less developed than in East Asian or Latin American countries. Most of the CEE countries will soon become members of the European Union (EU) and will adopt the Euro after a precisely defined preparation period (the ERM II stage). The problem to be discussed here is the possible dilemma that emerges when countries have to forfeit their exchange rate arrangement (ERA), chosen in order to lower the financial crisis risk potential, and accept the ERM II rules that were developed according to the specific monetary policy regime of the EU.

The remainder of the paper is organised as follows: Section 2 will describe the dilemma mentioned in more detail. We confront the rules of EMU membership preparation with the ERA being in force in CEE countries. Section 3 will explore the nature of financial fragility from a more conceptual viewpoint. This chapter will show that, first, the choice of the exchange rate is a trickier task in the presence of financial shocks than under traditional conditions of demand and terms-of-trade shocks. Second, it will show that the nature of financial fragility also provides insights into first ('fundamental') and second ('multiple equilibrium') generation models of currency crises. Section 4 will turn to the EU candidate countries and begin with an overview of crisis risk potentials and the exchange rate arrangement. In the

¹ We define an arrangement as intermediate when the central bank follows a declared exchange rate goal. This includes a fixed peg but not a currency board. With this definition, intermediate ERA are sometimes called 'soft pegs'.

following, we will first discuss the case of an exchange rate float, and second, ask why some pegged arrangements including currency boards have survived. Section 5 will conclude.

2. *The dilemma between monetary convergence and financial fragility*

After accession to the European Union, EU candidate countries are obliged to make all necessary preparations in order to become a member of the European Monetary Union (EMU) and to introduce the Euro; no opting-out is possible. The ERM rules include:

(a) a central parity of the country's currency against the euro within a relatively wide band of $\pm 15\%$ and intra-marginal intervention points inside of this band,

(b) voluntary intra-marginal interventions of the central bank with its own reserves,

(c) automatic interventions at the intra-marginal points with interest bearing credit facilities of the ECB (the central bank of the country acts as an affiliate of the ECB), and

(d) a term of ERM membership of at least two years in which voluntary interventions should be only moderate (with successful convergence of interest and inflation rates and fulfilling the fiscal criteria).

The central parity is to be negotiated between the European Council, which the European Central Bank recommends, and the government of the new member country; no country can set the parity autonomously. The bandwidth may be smaller, but this is also to be negotiated with the European Council (Denmark negotiated a band of $\pm 2.5\%$). Upon request by the member country, the EU can consider shortening the two-year term. Central banks are also obliged to defend the band by effective monetary policies, including sterilisation. At first glance, the wide band seems to be very close to a floating exchange rate. The automatic interventions and the requirements mentioned under (d) characterise the ERM II, however, rather as a test under a fixed exchange rate.

Like in East Asia and Latin America, some CEE countries underwent strong pressure on their currencies. The striking examples are the Czech currency crisis of May 1997 and the Russian crisis of summer 1998. Among CEE countries, we observe a similar shift away from intermediate exchange rate arrangements or 'soft pegs' towards currency boards or floats (Chart 2).

[Insert Chart 2 about here]

Among today's ERA only the Hungarian arrangement is most compatible with the ERM II rules. Latvia's ERA is a fixed peg that only needs to be combined with a band; this seems to be only a minor adjustment. Floats are a clear violation of

the ERM II rules. Here the problem emerges very clearly: when a country decides to shift from a fixed peg to a float in order to reduce the risk of a financial crisis, will the premature return to a fixed peg raise this risk, and what are the alternatives to achieve conformity with the ERM II? The idea of unilateral Euroisation (discussed mainly in Poland) would also end in a new violation of the ERM II rules. At the other end of the scale, the EU does not regard a currency board as an acceptable substitute for participating in ERM (*Ecofin*, 2001). This is in itself astonishing, because the currency board is a fixed peg without band, and the example of Denmark demonstrates that a lower band is possible. The EU, however, is willing to tolerate a currency board 'under certain circumstances' without defining those circumstances in detail. The currency board problem shows that beyond the formal compatibility issue, we might find the concern of the EU that a currency that has not yet proven to be both domestically and externally stable could have detrimental effects on the Euro. So we return to our initial question: Will the move from either side – float and currency board – to ERM II increase financial fragility of new EU member countries?

2. On the nature of financial fragility

For an understanding of the relationship between the exchange rate arrangement and financial fragility, the nature of financial shocks plays a decisive role. In understanding its very nature, we start with the basic fact that a market economy is based upon financial contracts discharged over time -- a scheme that constitutes a basic risk of getting repaid for the holder of the financial claim. In the world economic order before the fall of the Bretton Woods system, international financial flows were closely linked to real economy flows: commodities, services, and real assets (e.g. land), which served as 'solid' forms of collateral. The exchange rates were overwhelmingly fixed, hence, lenders faced only a minor foreign exchange (FX) risk. The fall of Bretton Woods changed everything. First, lenders became confronted with the FX risk and demanded new securities. The fundamental change in financial markets of developed countries and the worldwide capital account liberalisation was a necessary undertaking to provide stabilising liquidity to the financial markets. Within the new framework, the financial sector became active in international business, and financial flows became independent from trade flows. The disintegration of international trade and finance created new kinds of contracts, parts of them devoted to provide collateral based upon reputation (for example, derivatives). The daily transactions on world foreign exchange markets amounted to 1,500 billion US dollars on average in 1998. World exports accounted for only a small portion of this number.²

Such large amounts add an additional factor to macroeconomic models and to the

² BIZ, 2001.

choice of the exchange rate arrangement: financial shocks. In the legacy of the *Mundell-Fleming* model, exchange rate arrangements were discussed under the prevalence of demand and terms-of-trade shocks. With a pegged exchange rate, a shock would be directly transmitted to the economy through the reduction of international reserve, and hence, a reduction of money supply. Given wage and price rigidities, this reduction would also curb aggregate demand. Debtors default due to shrinking revenue and/or lack of international reserve. The move to a floating exchange rate would ensure that the shock would reduce neither money supply nor international reserves. Devaluation would cushion the shock at the expense of higher inflation. The critical point is that this basic model fits rather into a world in which payment flows were seen not to affect the long-run trajectories of the economies (*Stuarta 2001, p. 639*). It is a picture of the 1950s and 1960s where the financial sector was rather passive in international business.

The nature of financial fragility makes the choice of the optimal exchange rate arrangement more complicated than in the traditional *Mundell-Fleming* framework. On the one hand, short-term financial flows increase the liquidity of financial markets, and empirical research underpins that higher liquidity stabilises markets. On the other hand, the increasing flows of liquidity might meet with financial intermediaries, which are not able to manage their liability-asset balance in the proper way. It seems, that some of the recent crises were much more related to the changes in financial markets in developed economies than to changes in the fundamentals of the crisis countries in Asia and Latin-America. This opened the debate over a new, third generation of models, explaining the outbreak of a currency crisis by the behaviour of the banking sector. However, insofar as weak banks prevent monetary authorities to limit the issuing of domestic credit, we find ourselves in the world of the fundamental crisis model, from the view of the early works of *Krugman (1979)*. Similarly, when central banks are forced to increase international reserves too much in order to defend a peg, the reduction of welfare might lead us to the self-fulfilling crisis model with bad equilibrium according to *Obstfeld (1986)*. Stated differently, exploring the very nature of financial fragility provides reasons for a currency crisis beyond a single model.

Eichengreen and Hausmann (1999) condense three hypotheses from the recent literature explaining financial fragility: moral hazard, original sin, and the commitment problem (see Box 1).

Box: Explaining financial fragility – three hypotheses

Moral hazard

Moral hazard of agents who borrow abroad is likely when they can expect to be bailed out. Bailing out means the existence of explicit or implicit guarantees given by a third party (the government, or an international institution like the IMF). Corporations and banks are not forced to hedge their foreign exposures. The result is excessive risk-taking.

Original sin

A history of high inflation and strong and frequent depreciation undermines confidence in the currency of the borrowing country. The currency is not accepted as international reserve money, that is, lenders do not accept debt in this currency. Banks and corporations are not able to hedge their foreign exposure. The result is a currency and/or maturity mismatch of assets and liabilities.

Commitment problem

Financial contracts are charged over time. If law enforcement is weak, if there is a lack of collateral, or if the institutional framework is weak, the willingness to repay could be constrained. The consequence could be high spreads on interest that increase financial fragility.

Moral hazard means that agents feel sure to be bailed out if they encounter repayment difficulties. Explicit or implicit guarantees prevent them from hedging their foreign exposures against the FX risk. A pegged exchange rate is an implicit guarantee given by the Central Bank, mainly to banks and to the government. The costs of this guarantee are normally outweighed by the gains a pegged exchange rate offers. If moral hazard led to excessive risk taking by, say, the banking sector, the cost might outweigh the gains. The banking sector might expand its balance sheet without being limited by its equity capital. The literature describes over-borrowing abroad (*McKinnon and Pill 1997*) and a lending boom (*Krugman 1998*) as possible consequences: most of short-term financed investment is allocated in assets. Increased demand for assets is often constrained by supply (land or stock shares), hence, asset prices rise, the quality of bank assets deteriorates, and lending rates increase. The Central bank comes more and more under pressure to put a brake on increasing interest rates. When domestic credit exceeds the amount that trade and real growth can absorb, capital inflows might reverse, and the asset bubble bursts. If moral hazard constitutes the main source of financial fragility, then the literature recommends the move to an independent float in order to force agents to hedge risks.³

With a float, the financial fragility will not diminish when the borrowers of a country are not able to hedge. Hedging means that there is a final lender who accepts debt in the domestic currency of the borrower. Borrowers in developing countries often have difficulties hedging their foreign exposure since hedging might be too costly, or the currency is generally not accepted. Why borrowers of a country are unable to hedge is not very clear. A certain history of inflation and strong depreciation (*Eichengreen and Hausmann*) may play a role, hence, the term '*original sin*'. When agents expect depreciation with an independent float, they might purchase foreign exchange to cover their exposures with the consequence of further depreciation. The likely

³ Another recommendation is to restrict capital account liberalisation. This will not be discussed in this study since we are concentrating on the exchange rate issue.

outcome is a high volatility of interest rates. A typical sign of an existing original-sin problem is a maturity mismatch. It evolves when long-term investment is financed by short-term international credit.

The inability to hedge is often coupled with an open foreign exchange position of banks, that is, foreign liabilities exceed foreign assets. But even with a balanced net foreign exchange position, banks are not automatically safer. Since banks tend to carry over the currency risk on their domestic borrowers by foreign currency loans (FCLs), their foreign position might seem balanced at first glance. The FX risk, however, moves from the banks to the company sector or private households. On the demand side, the non-banking sector might be increasingly attracted by borrowing in foreign currency, since it is a typical feature of original-sin countries that the nominal interest rate on domestic credits is higher than on foreign credits.

A severe currency mismatch might occur when the stream of income from investment financed by FCLs yields only revenues in domestic currency. The same applies naturally since private households earn their income exclusively in domestic currency. With an independent float, depreciation would increase the debt service cost associated with the foreign currency loan. More defaults in the company or private household sector would damage the liquidity position of banks. Although depreciation increases the book value of their assets in domestic currency, the value of liquidation might shrink considerably below the book value when the company sector runs into trouble.

Original sin problems are the reason why central banks all around the world are reluctant to let the market do its work, and raise interest rates or follow a managed ('dirty') float. If the central bank tries to avoid depreciation and raises its interest rates, the structure of capital inflows might change towards the short end, and financial fragility would increase. Two reasons might explain the reluctance to rely on the market: (a) the fear that depreciation due to the given inflation differential could seriously hurt the still vulnerable domestic banking and non-banking sector; and (b), the concern that depreciation could lead to higher inflation and thereby damage the monetary authorities' reputation. With these typical original sin problems, the fear is that depreciation would trigger a downturn in investors' confidence and result in even sharper reversals in net capital inflows.

A fixed peg is not an alternative. If the central bank tried to defend the peg by interest hikes, the liquidity situation of corporations, banks, and the government would deteriorate, short-term capital would then usually fill the gap, and financial fragility would increase. The trade-off between defending the peg and other aims of the government might lead to multiple equilibrium and self-fulfilling currency crises.

Is a currency board a safer haven? The classical currency board is characterised as a constitutionally backed prohibition to sterilise. The central bank cannot take money from the market to defend the peg nor can it provide money (= loss of lender-of-last-resort function). Two possible risks then emerge: (1) Financial fragility could increase due to spill-over effects from trade shocks, when the currency of the main trading

partner devalues. The recent collapse of Argentina's currency provides a striking example.⁴ (2) A currency board is not immune to a bank run (see also the model of *Chang and Velasco*, 1998) that severely hurts the liquidity position of banks. On the other hand, lending in the base currency would not pose any problem. The financial risks are the reason why pure currency boards are so rare. Central banks intend to keep some reserves out of money circulation ensuring a certain lender-of-last resort function, and to keep some tools for managing the money supply (minimum reserve holding of banks, for example).

The literature offers *no currency* as the better solution. Indeed, mismatch problems, as well as too much risk-taking, would not appear with complete dollarisation or euroisation. The typical feature of a country considering dollarisation in order to avoid financial instability is, however, the lack of international reserves of the central bank or the banking sector. The longer and the more severe the history of inflation and devaluation of a country, the less the public's confidence in monetary authorities and the banking system. If dollarisation/euroisation yielded the expected fall of interest rates, deposit holders would transfer their deposits from vulnerable domestic banks to safer foreign banks (or their affiliates in the country). Dollarisation might trigger a bank run, and if the reserve position were too small, a liquidity crisis would break out and spread over the entire economy. Foreign reserves should then cover the highest possible monetary aggregate (in the extreme case: M3).

A ~~non~~-currency is not a solution either when agents are unwilling to hedge or to repay. This unwillingness is the direct consequence of weak *commitment* devices the modern financial world provides. With developing financial derivatives and financial institutions, the close tie between claim and collateral broke. An enforcement problem in countries with a weak institutional framework and property rights might increase the commitment problem. Weak property rights simply destroy the function of real assets as collateral. Russia provides an example, but borrowers in Asian countries were also suspected of being unwilling to repay their foreign or domestic lenders, often trying to hide unwillingness behind inability.

The implications for exchange rate policies are, however, less obvious. Where the financial infrastructure is least developed, and ownership is under question as in transition countries, the markets may most need a lender of last resort, who needs the freedom granted by a flexible exchange rate policy (*Eichengreen and Hausmann*). A currency board or dollarisation are no means to reduce financial fragility if it stems from a commitment problem. On the other hand, in case of a float, commitment problems cause lenders to demand higher spreads, which might trigger a self-fulfilling crisis through expected devaluation.

The commitment problem is closely linked to the institutional settings of the financial

⁴ The Peso was tied to the US dollar, but only 12 % of trade was conducted with the US and 30 % with Brasil. The real depreciated in January 1999 by 40 %, hurting Argentina's international competitiveness. The country slid into a severe recession, and financial markets lost trust in the country's ability to repay.

sector in crisis countries. When capital account restrictions are lifted, the quality of supervision and monitoring of the financial sector (*Williamson and Miller, 1998*), as well as the degree of international integration of the banking industry, plays a role in increasing or reducing financial fragility. A low quality and integration first hit Japan's economy when financial deregulation and a loose monetary policy started in the 1980s, causing a 'slow-moving financial crisis' between 1991 and 1996 (*Fukao, 2001*), with severe impacts on the other Asian economies. Foreign ownership, for example, might help to improve monitoring and auditing, and can even substitute for the lender-of-last-resort function of the central bank, thus, a fixed peg becomes more sustainable. *Chan-Lau and Chen (1998)* note that countries such as Hong-Kong (currency board) and Singapore (managed float) had better supervision and monitoring, developed from longer experience in financial business, and were less prone to financial crises, if not immune to them. Both countries are rather small, and their banking industry is completely integrated into the international financial world.

3. Financial fragility and exchange rate arrangements in Central and Eastern Europe

3.1 Is there a systematic link?

Measuring a country's vulnerability to financial shocks/crises became one of the leading areas in empirical research after the Asian crises in 1997. We use an approach by *Kaminsky, Lizondo and Reinhart (1997)* presented and tested by developing countries: the so-called signals approach. The approach is based upon single macroeconomic and financial indicators. *Brüggemann and Linne (2002)* tested it for EU candidate countries and merged the single indicators into a composite indicator. Compared with probability approaches (*Frankel and Rose, 1996; Eichengreen, Rose, and Wyplosz, 1996*), which deliver short-term prognoses for a crisis to private investors, the medium-term oriented signals approach is more targeted at policy recommendations. While the probability approaches may capture contagion, the signals approach can identify a change in fundamentals (policy failures and spill-over effects from trade shocks) and problems in the banking sector as reasons for increasing fragility.

The most prominent consequence of a crisis or crisis-preventing measures is a re-arrangement of the country's exchange rate system. But is there any systematic link between a change of the risk potential and the exchange rate arrangement in EU candidate countries? The changes of the composite indicators for the risk potentials of EU accession countries are presented in Chart 3. The shaded areas indicate the 18-month period before a financial crisis. From this perspective, countries with a fixed peg may or may not have a currency crisis (the Czech republic and Latvia, respectively). There seems to be evidence that countries with a currency board did not experience a financial crisis, and their vulnerability is rather on the decline

(Bulgaria,⁵ Estonia and Lithuania). Nevertheless, the signals approach marks a strong increase of vulnerability for currency board countries and Latvia in the aftermath of the Russian financial crisis from fall 1998. We can explain this increase by spill-over effects from trade with Russia.

The managed float arrangements (Czech Republic, Slovakia, Romania and Slovenia) show a similar positive development of the composite indicator. However, The match between interest rate targeting (against inflation) and exchange rate flexibility (against short-term capital inflow) seems to be more successful than in the case of the independent float of the Polish zloty. The rapid increase of the risk potential was followed by speculative attacks against the zloty in July 2001. Romania is an exception since a series of financial crises have broken out since December 1996, demonstrating the close relationship between a banking and currency crisis.⁶ This indicates the limits of a managed float in a very poor institutional environment.

[Insert Chart 3 about here]

3.2 *Is moral hazard the main problem?*

The moral-hazard hypothesis predicts that capital flows should be large or, much more than 'socially optimal' (Eichengreen and Hausmann). Actually, capital flows seem to be rather low (Table 1). The share of the consolidated⁷ international claims of BIS reporting banks vis-à-vis Eastern Europe in their GDP accounted for a mere 0.7 % – by far less than for Western Europe. There seems to be, however, some difference between countries with a float and a peg. The 'Peggery' (countries with a fixed peg, a narrow crawling band, or a currency board, marked with a 'P') tend to show a higher share than countries with a flexible arrangement. Estonia is a remarkable case with a share of 33.3 %. On the other hand, we find Poland with its independent float and a share of only 0.1 %.

[Insert Table 1 about here]

There is still a lack of clear determination about what is 'socially optimal'. *Krugman* (1998) pointed out that investors, having two alternatives of a low risk asset with low returns and a high-risk asset with high returns, are inclined to put their money into the highly risky asset when moral hazard prevails. Investors simply believe they can leave a country even when the investment fails and there is somebody who bails out. Without the bailing out option, investors would prefer the low risk asset in a second country. Hence, the moral-hazard hypothesis predicts that capital inflows will take

⁵ Bulgaria has not experienced a financial crisis since the introduction of the currency board in July 1997. The managed float failed before in a crisis from 1996-97.

⁶ December 1996: banking crisis; January 1997: currency crisis; May 1999: banking crisis; March 1999: currency crisis; see *Brüggemann and Linne*, 2001, Box 3.1. As usual in real life, there is always an exception.

⁷ Consolidated means, among other things, that positions between offices of the same bank are netted out.

such forms as banks and the government, which most likely will benefit from a bailout. Banks are more likely to be bailed out by the government or the central bank than private companies due to the perceived threat to macroeconomic and financial stability. Governments are also likely to be bailed out by international aid, for example, granted by the IMF. The sector structure of foreign capital investment may serve as an indicator for moral hazard. The consolidated international claims of BIS reporting banks shows that the share of claims vis-à-vis banks and governments is lower for CEE countries, Asian countries, and Latin America than for Western Europe, with Russia being the exception. Peg arrangements show an even lower share than float arrangements, though it should be the reverse if the moral-hazard hypothesis were to hold. High capital inflow to Estonia should be seen as a moral hazard sign only if the structure were in favour of claims against banks and the government. Most foreign investment, however, is long-term and in the private non-banking sector.

Lending to Asian and Pacific, Latin American and Caribbean countries, and to Eastern Europe concentrates more on the non-bank private sector than in developed countries. The low share of lending to banks and governments in CEE is rather an argument for the original sin and commitment view. In regions with a weak banking sector, international lenders prefer debtors who can provide a solid collateral. While banks can only provide their reputation, the private company sector offers more solid insurance.

[Insert Table 2 about here]

The share of short-term debt is another indicator for the nature of financial fragility. The moral hazard view includes the idea that the exchange-rate insurance implied by a policy of pegging the currency is most credible over the short horizon. A high share of short-term lending might also support the original sin hypothesis when it is the sign of a maturity mismatch. Figures, however, show only a small share of short-term lending to Eastern Europe compared to Western Europe, Asia and the Pacific, or Latin America. Float arrangements even show the highest shares of short-term lending (Czech Republic, Romania, Poland).

Public short-term debt or mass privatisation is one of the driving forces for emerging domestic debt and security markets. Moral hazard should not play a significant role when the government does not run fiscal deficits financed by T-bills, or when privatisation is based upon (foreign) direct investment. In general, debt and equity markets are too small in CEE countries to attract large foreign portfolio inflows.⁸

⁸ The CEE country with the highest number of traded bonds in 2000 was Slovakia (108). In Estonia, only 6 bonds were traded. The London debt market includes 5,300 bonds. On equity markets, market capitalisation

Estonia serves as an example—where short-term public debt was zero (Table 2). To sum up, data on capital flows and debt structure indicate rather problems that depend on commitment and original sin problems, the latter representing a maturity mismatch.

Further insights provide data on the foreign exchange position and lending activities of the banks in foreign currency. Net foreign exchange liabilities inform roughly about unhedged positions. Unhedged positions might represent moral hazard when the exchange rate is controlled by the central bank. Inspecting the few available data (Table 3) shows that in 1996, most banking sectors had net foreign assets. With more or less flexible exchange rates, foreign exposures were covered. There were only two exceptions: the Czech Republic and Bulgaria. In May 1997, the Czech Republic suffered a severe currency crisis and was forced to give up the fixed peg. The banks' foreign exposure was completely hedged in the two years preceding the crisis. This demonstrates that the lack of hedging or moral hazard was likely not the main factor responsible for the crisis. Bulgaria slid into a crisis from 1996-97 with a managed float. The high open foreign exchange position of the Bulgarian banking sector indicates that despite the managed float, banks were not able or willing to hedge until after the currency board was introduced in 1997.

[Insert Table 3 about here]

3.3 The pitfalls of an independent float: the case of Poland

When moral hazard is not prevailing, an independent float cannot prevent financial fragility. This shall be briefly shown by the case of Poland. The National Bank gradually increased the flexibility of the zloty. With capital account liberalisation in 1995, capital inflows gained momentum, and the flexibility of the zloty significantly increased when the band around the central parity was widened from $\pm 2.5\%$ to $\pm 7\%$ in May 1995. The National Bank expanded the band to $\pm 10\%$ in February 1998, $\pm 12.5\%$ in October, and to $\pm 15\%$ in March 1999. The band was abandoned in April 2000 when the National Bank declared an independent float. Although Poland's economy did not suffer from a financial crisis, its vulnerability has increased since the zloty started to float independently. This increase stemmed from a real appreciation initiated by strong capital inflows.

If moral hazard was the root of financial fragility, and if agents had rational expectations, hedging activities should have prevented an excessive deviation of the

ratios reached from 3.1 % in Romania to 35 % in Estonia in 2000 (EBRD 2001). Market capitalisation was 130 % in Frankfurt, 185 % in London, and 719 % in Paris.

free spot exchange rate from the purchasing power parity. In Chart 4, the exchange rate's hypothetical course following the purchasing power parity was extrapolated by use of the trend line of the central parity (the latter valid until 11 April, 2000). The gap between the hypothetical central parity and the actual exchange rate widened in Euro terms until July 2001. The zloty came under speculative pressure in July 2001 for the first time since the Russian financial crisis in August 1998 and depreciated by about 13 % within two weeks. Since then, the zloty has appreciated again.

[Insert Chart 4 about here]

Capital inflows served trade financing and liquidity trade (derivatives etc.), but were also attracted by domestic equity and debt markets. Mass privatisation schemes⁹ established an equity market large enough to attract foreign portfolio investors. Public debt (44 % of GDP in the third quarter of 2001) was among the highest compared with other transition countries, and a relatively high share (4.5 %) was in T-bills. Although there were some official restrictions on short-term capital flows, the National Bank handled them liberally. Privatisation of banks has gained momentum since 1998. The banking sector is now (2002) overwhelmingly privately owned with 56 % of foreign share in statutory capital. However, banks still held a relatively high share of bad performing loans in their portfolio in 1999 (14 % compared to 9 % in Hungary), illustrating commitment problems in the economy.

Hedging is now a common feature of the Polish banking sector, and the open currency position of 1998 turned into a closed one. However, behind this was an increase of FCLs to private households. At the end of 2001, these loans were at one third of all outstanding FCLs to the private sector. Any depreciation of the zloty would increase the debt service costs of private households (and companies).¹⁰ This currency mismatch was likely one of the reasons why the National Bank tried to prevent depreciation when inflation exceeded the targeted path from 2000-2001.¹¹ Otherwise, an expected weakening of the zloty might have led the private households to purchase FX in order to service the debt. The result might have been a

⁹ Considering the political controversy in Poland about the delays in privatisation, I refer to various issues of the EBRD's transition report. Mass privatisation (= large privatisation in Poland) was of minor importance compared with the Czech Republic or Slovakia, but 'large' enough to fuel the stock market.

¹⁰ Private households are somewhat protected against the FX risk by the option to re-denominate the FX loans into Zloty loans at a certain fee. Credit costs would, however, increase in this case since the domestic interest rates are higher and would soar if the Zloty would weaken. The vulnerability of the banking sector would by no means decrease.

¹¹ The National Bank followed direct inflation targeting.

self-fulfilling crisis. Raising its interest rate, the National Bank prevented the zloty from devaluating. The price, however, was more attractive for short-term portfolio inflows even causing an appreciation.

3.4 Why have the ‘Peggers’ survived?

Hungary’s crawling peg was within margins of $\pm 2.25\%$ until May 2001. A relatively high capital inflow and share of international bank claims vis-à-vis domestic banks and the government (Table 1) could indicate moral hazard problems. The almost fixed peg remained sustainable, because the National Bank defended it by a restrictive handling of still existing short-term capital controls, allowing for somewhat higher interest rates than without controls. Another feature was that the banking sector was re-structured more successfully than in other countries. The share of short-term debt in total debt was less than average. Although the domestic debt market is rather large in CEE comparison, it was not attractive for foreign speculators due to the restrictions on the capital account. Last but not least, state owned enterprises were preferably sold to strategic investors and not privatised by vouchers or equities. Capital inflows were overwhelmingly in the form of foreign direct investment.

Nevertheless, financial fragility started to increase in early 2000. The forint appreciated in real terms and the balance of payment deteriorated. In this context, the lifting of capital controls in May 2001 could have caused a problem. In facing this challenge, the National Bank widened the band to $\pm 15\%$ in May 2001, and finally abandoned the crawling peg in October 2001 (approaching the EMR rules). The problem, however, is that the forint has appreciated since then, approaching the lower band border in January 2002 (Chart 5). As in the Polish case, interest policy of the National Bank is too restrictive and lures additional capital into the country.¹²

[Insert Chart 5 about here]

Baltic countries: Among the Baltic countries, Estonia and Lithuania have long-lasting currency boards, and Latvia has a fixed peg.¹³ In first approximation, these pegs survived due to the relatively small financial markets and the almost complete international integration of the banking industry (*Sutela, 2001*). The sizes of equity and debt markets is not attractive for large international investors. The relative sizes

¹² This statement can be evaluated by using the Taylor rule for finding the interest rate target adequate to fight inflation (about 13 % on year’s average). But the interest differential is too large to cover the sum of the targeted exchange rate change and the risk premium. Hence, the domestic financial market is in disequilibrium.

¹³ Monetary policy rules are very strict; sometimes the Latvian peg is called a ‘quasi currency board’.

of debt markets is small due to low public debt. Public debt is at 3.2 % of GDP (2001) in Estonia, but short-term debt is zero (Table 2). Short-term public debt in terms of GDP was 1.5 % in Lithuania, and in Bulgaria (having another currency board) 2.9 %. Privatisation in the Baltic countries (as in Hungary) followed patterns of direct sales to strategic investors; equity markets remained small. Hence, most capital inflows are long-term (FDI) or trade-related (short-term). Most banks in Estonia are in foreign ownership. There is, simply said, little room for moral hazard problems.

Add to this that Baltic currency boards are more like fixed peg arrangements. From the very beginning, the money base of Estonia was more than covered by international reserves and the central bank could use them if the banking sector ran into liquidity problems. The Eesti Pank hence has a lender-of-last resort function (which in a pure currency board is non-existent). What is more, all 'currency boards' include the option of changing obligatory reserves for sterilisation purposes. To fight off speculative attacks during the Asian crises, the Eesti Pank increased obligatory reserves in mid 1997.¹⁴ Defending the fixed peg this way generated some liquidity bottlenecks in the banking sector with the consequence of higher interest rates.

Upon further consideration, a fixed peg with restricted sterilisation (lender of last resort capabilities) may collapse due to spill-over effects from trade shocks when the currency appreciates in real terms. When the Russian rouble depreciated in fall 1998, the former Baltic Soviet republics were hit only marginally. Russia absorbs only 6.8 % of Estonia's exports, 4.2 % of Latvia's exports, and 7.1 % of Lithuania's exports. The share of the EU in exports is between 48 % (Lithuania) and 69 % (Estonia).¹⁵ Nevertheless, spill-over effects on fundamentals could be observed in the composite risk indicator for all three countries.

4. Some conclusions

There is no risk-free shift to ERM II. Approaching EU membership triggers additional capital inflows as the examples of Hungary and recently of the Czech Republic (and what is a well-known experience from the southern enlargement) have shown. Widening the band (Hungary) or massive interventions (Czech Republic) become necessary to stabilise the exchange rate and to minimise the vulnerability to a crisis.

Among all exchange rate arrangements, the *independent float* of the Polish zloty is at the highest variance to the ERM. When, as we suspect, the nature of financial

¹⁴ Eesti Pank, Annual Report 1997, Tallin.

¹⁵ Something similar holds for Bulgaria: only 2.5% of exports go to Russia.

fragility is in original sins and commitment problems, the independent float is not a successful way to find the equilibrium exchange rate. The central bank, in its aim to lower the risk of a sudden reversal of capital inflows, would be forced to increase interest rates. If the currency appreciates in real terms instead of depreciating, the float contributes to higher vulnerability, because the real appreciation and the high interest rates lure additional short-term capital into the country. The consequence might be a currency and maturity mismatch with a strong exposure of the non-banking sector to the FX risk. Entering the ERM with that burden would be a very risky undertaking. The critical aspect is the negotiation of the fixed euro/zloty parity between the EU (ECB) and the National Bank. If markets expect an initial devaluation because they assume the zloty to be overvalued, a speculative attack on the zloty might occur on the eve of ERM membership.¹⁶ The currency mismatch might trigger a banking crisis. If the overvalued zloty entered the ERM, strong adjustments in the company and banking sector might lead to income and liquidity losses, both of which would increase the fragility of the banking sector. From this point of view, the switch from the independent float of the zloty to a fixed peg is the riskiest undertaking among the candidate countries. Unilateral euroisation – an idea recently raised by some Polish authors (*Bratkowski and Rostowski*, 2001) – is not a convincing way out. Reserves of the central bank and the banking sector are too low to cover even M2 at the factual exchange rate.¹⁷ A transitory solution leading the Zloty toward equilibrium seems necessary, possibly a switch to a managed float.

For a country with commitment problems and a weak financial sector, a *managed float* is the preferable solution, as the risk potential pictures of the Czech Republic, Slovakia, Slovenia, and Romania seem to suggest. On the eve of ERM, central banks can fine tune interventions and sterilisation efforts. It is decisive to have a long approach lane. If this switch to ERM were premature, the central banks' ability to intervene and sterilise might be over-stressed. This problem seems to be less pronounced in the case of Slovenia with its small debt and equity markets. Rather, it could be a problem for the Czech Republic, Slovakia, and Romania. The Czech Republic has already slid into a financial crisis due to its inability to sterilise capital inflows. Since then, consolidation and transformation of the banking industry and the equity market have gained momentum, and the switch to a fixed peg should not increase financial fragility. For Romania, membership in the ERM is a long-term

¹⁶ One should note that the Greek drachma entered the ERM with a 15 % devalued rate, without any prior speculative attack. This devaluation was a surprise to the markets.

¹⁷ There was no candidate country, including Poland, with reserves covering M2 in mid 2000 (*Gabrisch*, 2001).

target. With the shield of the managed float, the government and central bank may restructure the financial sector and make monetary policies more effective.

Currency boards are sustainable when debt and equity markets are small and the banking industry is completely integrated internationally. Then there is little room for moral hazard or original sin problems. When, in addition, most trade is conducted in the base currency, the Euro, and the central banks dispose of some tools for sterilisation, the fixed peg will not contribute to financial fragility. The threat of a currency mismatch seems to be negligible. Some lender-of-last-resort function of the central banks suffices to control the remaining commitment problems (particularly in Bulgaria).

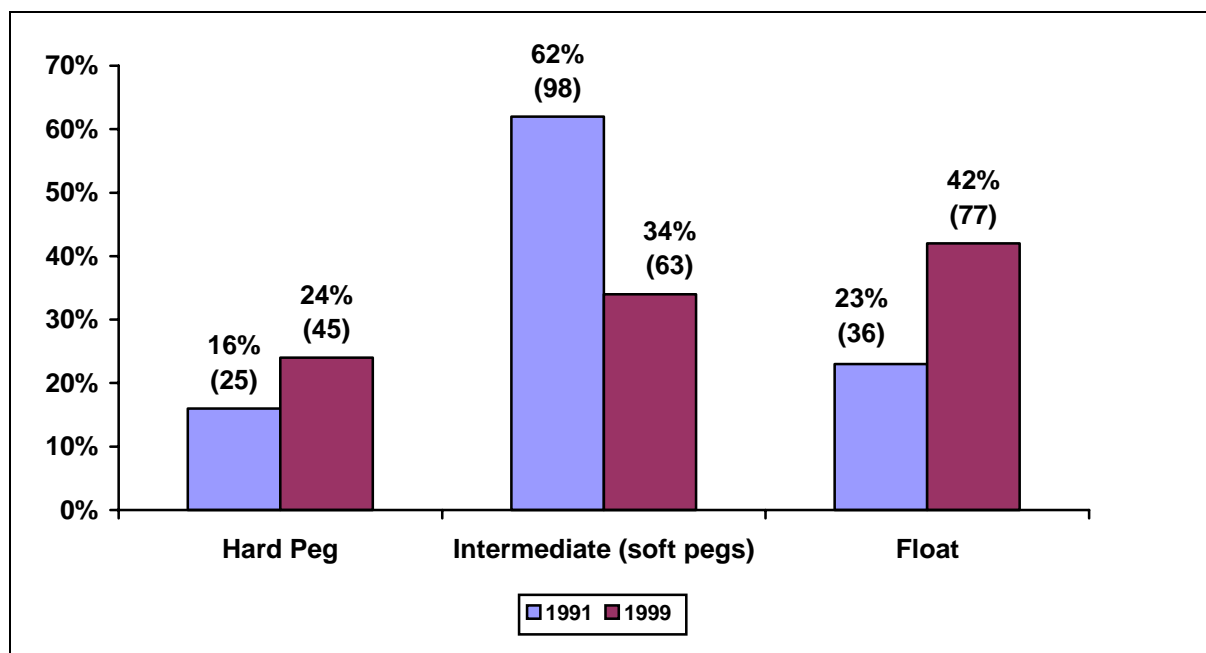
There are two compatibility problems with regard to ERM II: the character of intervention and the ability to sterilise. A currency board is a fixed peg with a ± 0 % band. In terms of ERM, the central bank would have access to ECB credits in any case of intervention. This is a matter of negotiation; the currency board countries could enter the ERM with a ± 0 % band, but only without any commitment of the ECB to common interventions at least at that point. They could agree to intervention points at ± 15 %, and the central banks of the currency board countries would have to intervene in case of financial shocks by their reserves up to this point. With a ± 0 % band, domestic liquidity depends on inflow and outflow of foreign exchange. The limited ability of currency boards to sterilise could be a problem for monetary convergence (inflation and interest rates). But testing for this convergence might work as an effective substitute for exchange rate stability. There is only small risk that Estonia and Lithuania will not withstand this test with their currency boards.

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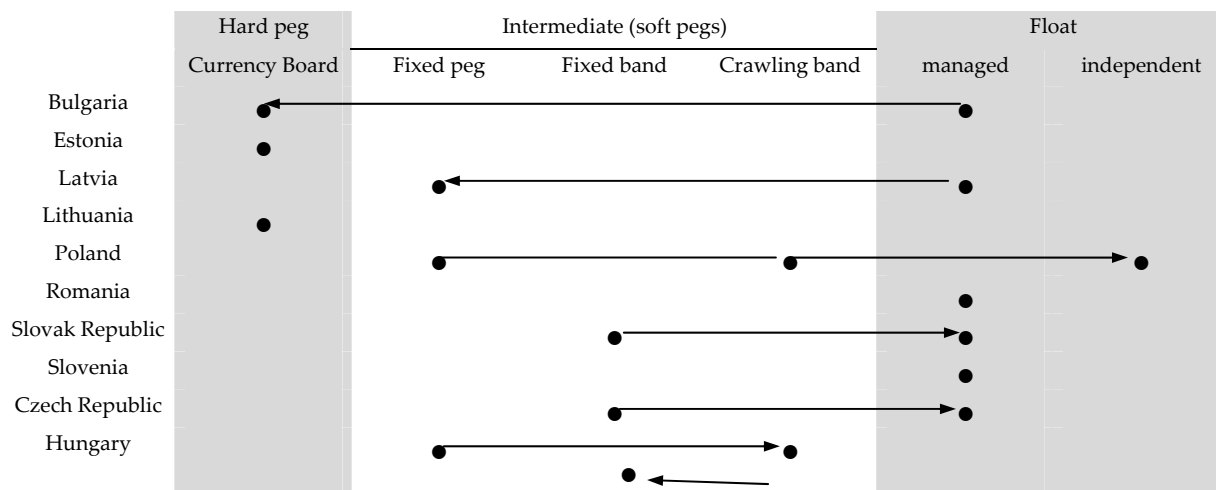
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Chart 1: Exchange rate arrangements around the world



Source: IMF 2000, p. 141-3; Fischer 2001.

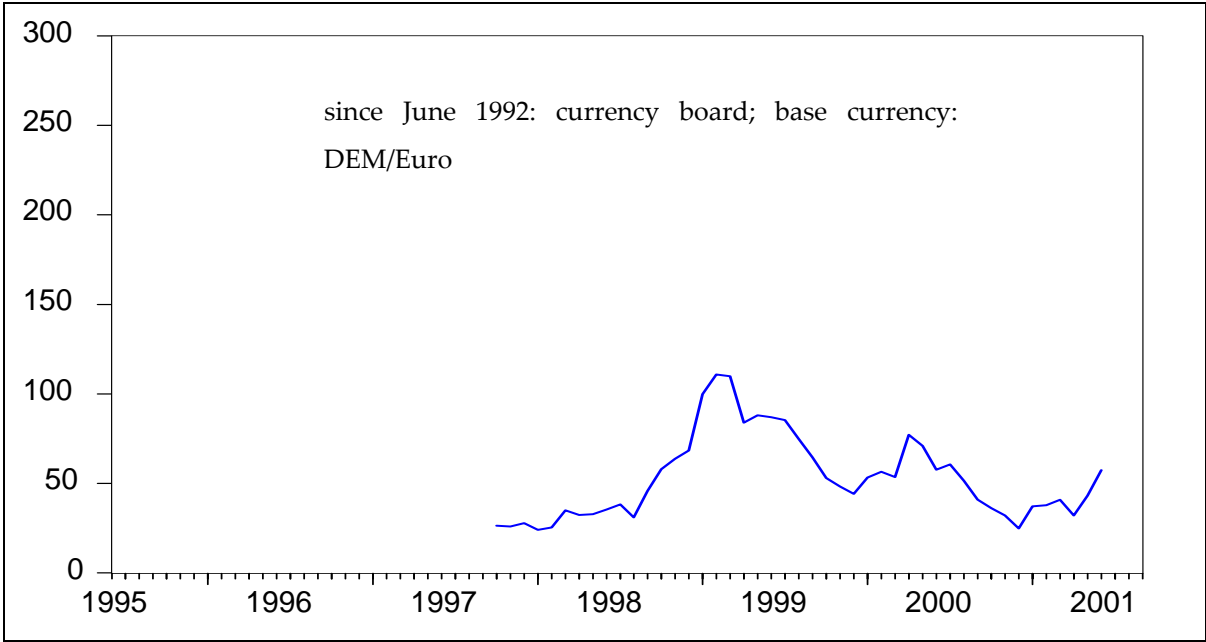
Chart 2: Exchange rate arrangements in Central and East European countries



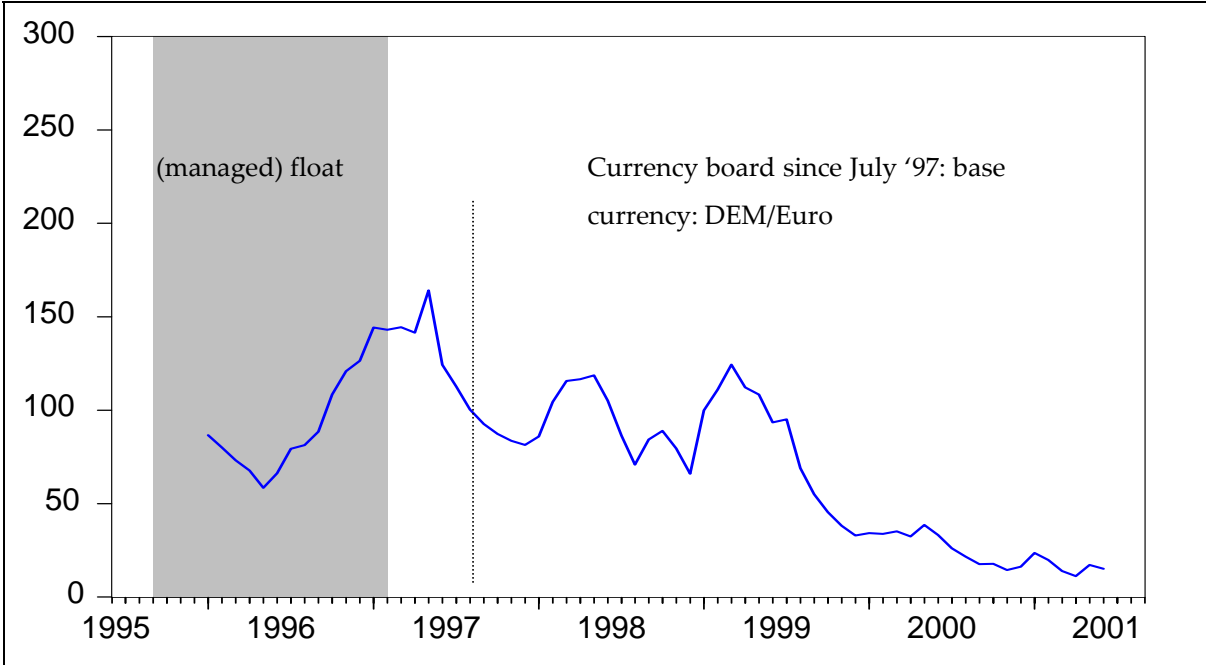
Sources: Corker et al. 2000

Chart 3: Composite risk indicator development for selected EU candidate countries

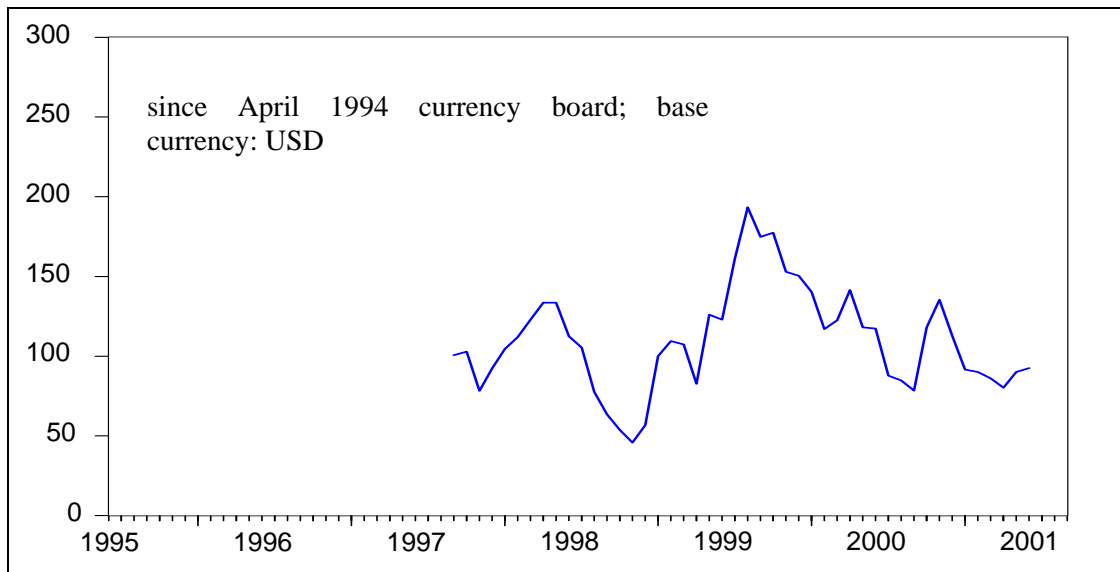
Estonia: July 1997 – June 2001



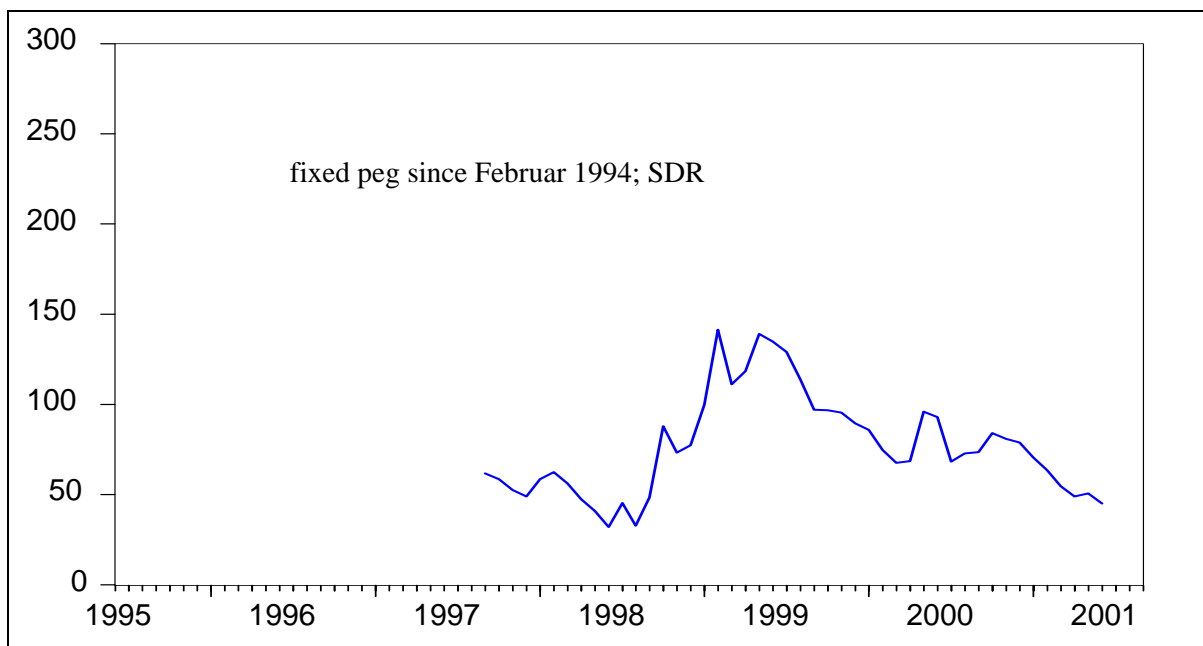
Bulgaria: December 1995 – June 2001



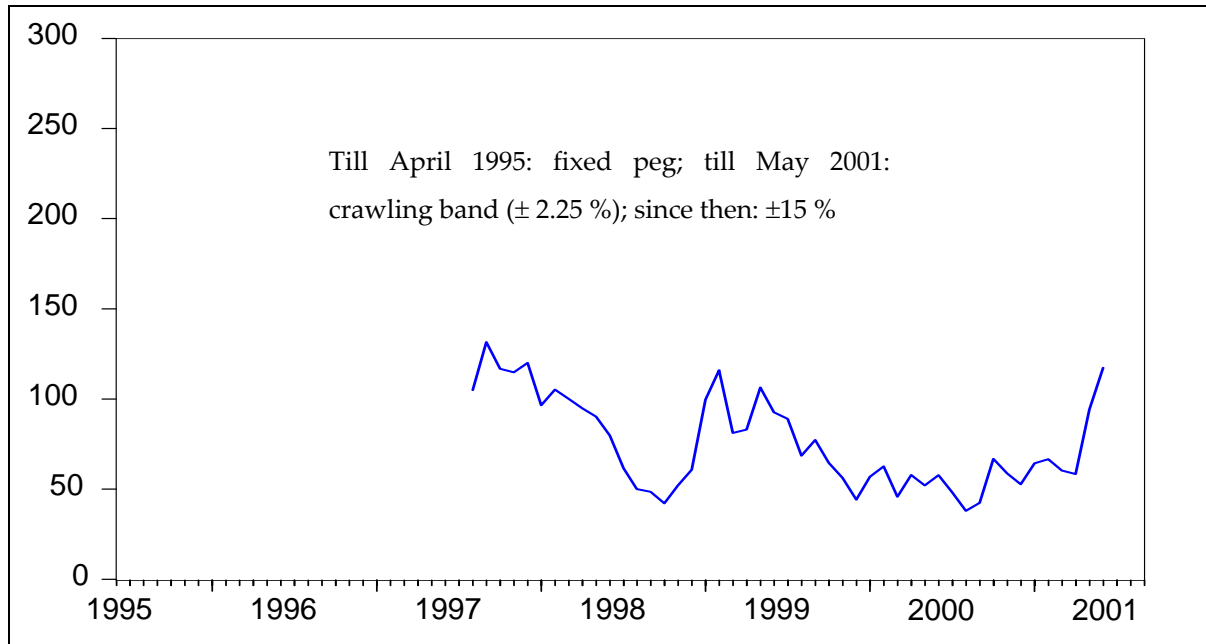
Lithuania: August 1997 – June 2001



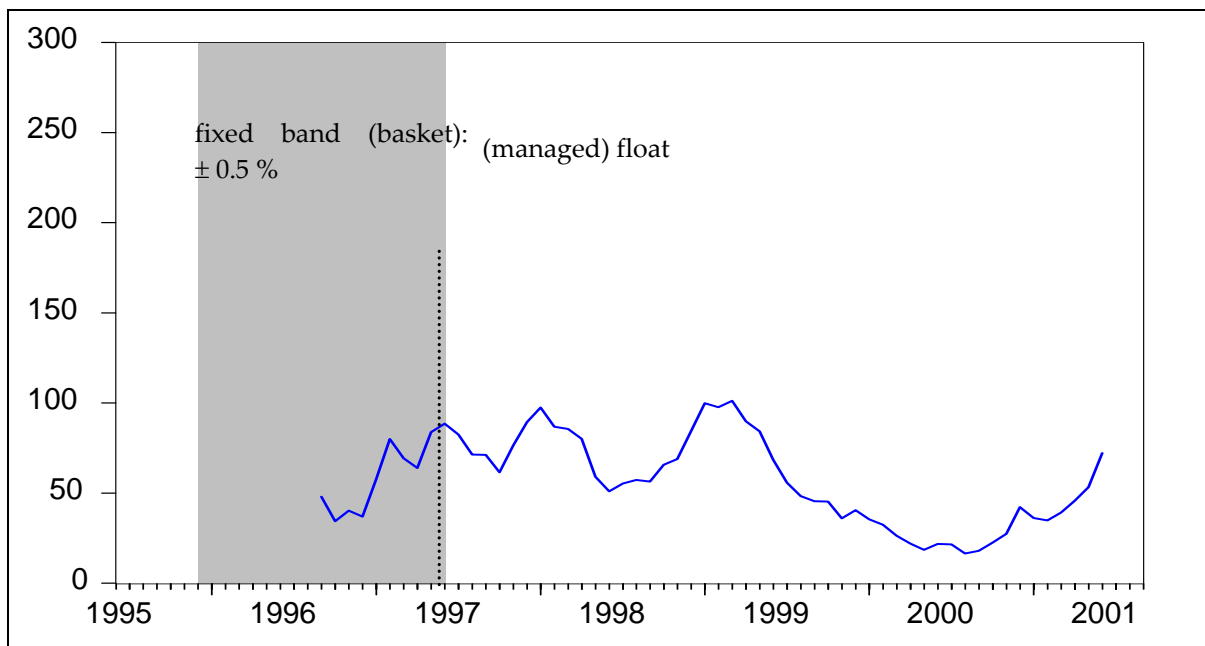
Latvia: August 1997 – June 2001



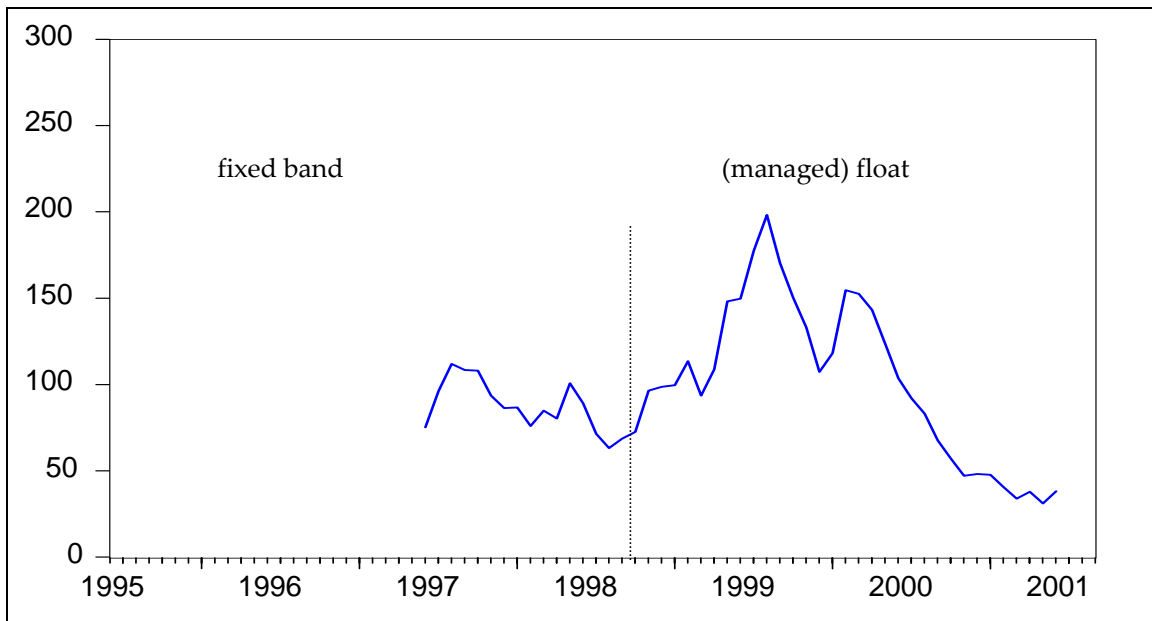
Hungary: June 1996 – May 2001



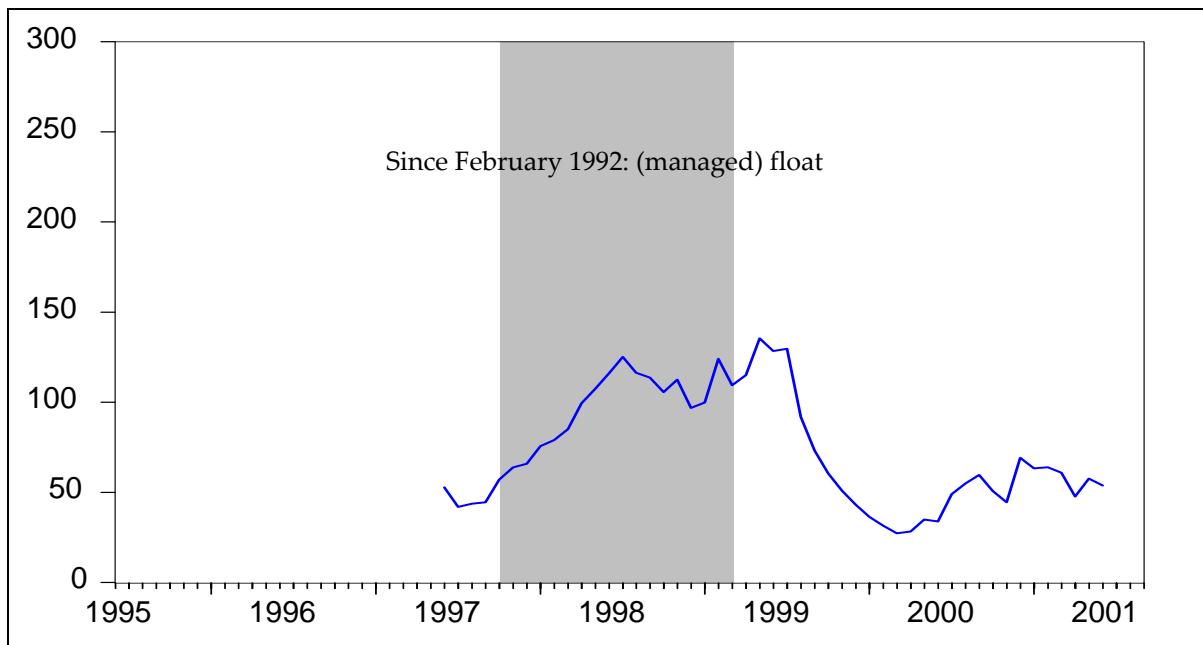
Czech Republic: August 1996 – June 2001



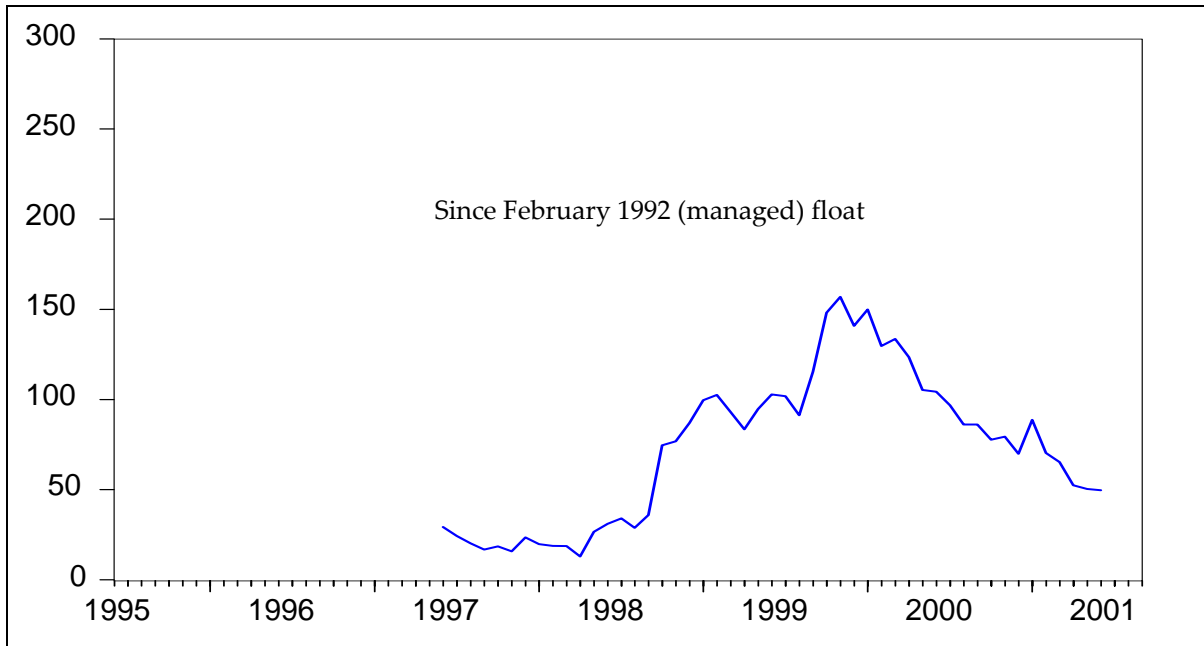
Slovak Republic: April 1997 – June 2001



Romania: May 1997 – June 2001



Slovenia: May 1997 – June 2001



Poland: August 1997– June 2001

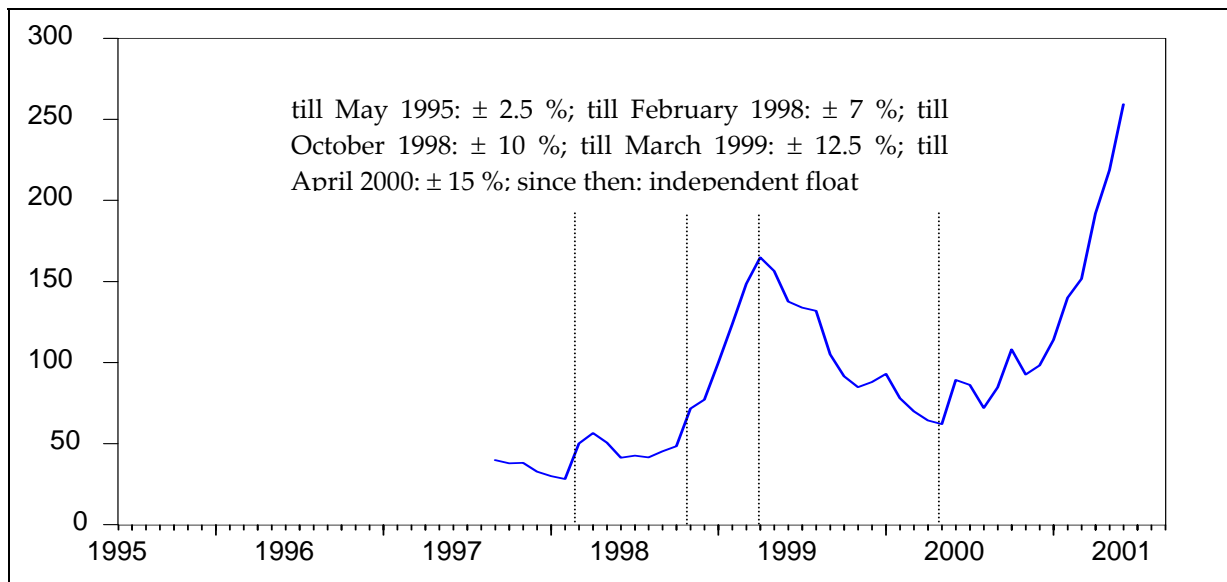


Table 1: Consolidated international claims of BIS reporting banks on individual countries

End June 2000, sectors and short-term in % of total

Claims vis-a-vis	Absolute change of total claims in % of GDP 2000 ^a	Absolute size in % of total claims			
		Banks	Public sector	Non-bank private sector and others	short-term up to one year
Western Europe	2.1	56.9	12.5	30.6	60.4
Eastern Europe	0.7	44.8	14.4	40.8	32.2
Bulgaria (P)	0.2	23.5	41.1	35.3	23.7
Czech Republic	1.1	39.0	10.0	51.0	52.0
Estonia (P)	33.3	27.1	2.3	70.6	33.5
Hungary (P)	3.4	42.5	22.4	35.2	30.6
Latvia (P)	3.7	34.9	11.8	53.4	33.6
Lithuania (P)	3.0	28.2	28.2	43.7	46.3
Poland	0.1	32.2	20.9	46.9	37.2
Romania	1.0	22.2	8.6	69.3	39.2
Russia	4.2	60.3	7.6	32.1	26.0
Slovakia	3.3	10.9	23.2	65.9	38.4
Slovenia	1.7	32.9	31.3	35.8	20.8
Asia & Pacific	n. a.	35.9	12.7	51.4	47.2
Latin America & Caribbean	0.0	18.4	20.4	61.3	47.3

^a Change End June 1999-End June 2000, in mn of US dollars.

Source: BIS; IMF; own calculation.

Table 2: Public debt indicators of selected candidate countries (central government)**-- IMF standard (SDSS) --**

Country	Date	bn \$	of which short term in %			in % of GDP	of which short-term in %
			total	domestic currency	foreign currency		
Bulgaria	Oct 2001	9.280	4.1	0.7	3.4	71.0	2.9
Czech Republic	Sept 2001	8.000	51.3	51.3	0.0	12.7	6.5
Estonia	Sept 2001	0.160	0.0	0.0	0.0	3.2	0.0
Hungary ^a	Sept 2001	29.600	21.6	17.4	4.2	58.7	12.7
Latvia	Sept 2001	1.027	7.3	7.3	0.0	53.9	3.9
Lithuania	Nov 2001	3.277	5.0	5.0	0.0	29.0	1.5
Poland ^a	Sept 2001	75.9	7.2	7.2	0.0	44.2	4.5
Russia	Sept 2001	158.0	62.9	6.6	1.5	5.1	4.1
Slovenia	June 2001	4.848	n. a.	n. a.	n. a.	27.3	n. a.

^a Including guaranteed debt.

Sources: Official statistics via internet: www.minfin.government.bg/en/index.html (11.01.02); www.mfcr.cz/cenpap/En/default.htm (11.01.02); www.stat.ee/sddseng#fiscal (16.01.02); www.ksh.hu/pls/ksh/docs/index_eng.html (16.01.02); www.csb.lv/Ecdata/latvia123.htm#EXTERNAL%20SECTOR (16.01.02); www.finmin.lt/liet/prie2001/htm (16.01.2002); www.mofnet.gov.pl/sdds_en/index.shtml (11.01.2002); www.minfin.ru/macroeng/cg_debt.htm (11.01.2002); www.sigov.si/mf/angl/tekgib/avl_dolg.htm#Breakdown%20by%20Currency%20-%20End%20of%20Q4%202000; own calculations.

Table 3: Net foreign exchange positions of domestic banks in relation to total assets in selected countries, 1994 throughout 1998, in %

Country	1994	1995	1996	1997	1998
Bulgaria	-61.7	-55.4	22.6	26.6
Czech Republic	3.3	-5.4	-5.1	5.1	6.7
Estonia	23.1	14.0	1.0	-12.9	-13.1
Poland	12.5	7.8	4.7	4.1	-1.1
Romania	7.5	4.9	2.8	4.5	-0.5
Russia	4.7	2.8	-6.6	-1.3
Slovakia	5.9	4.3	1.7	3.5	6.6

Source: Brüggemann et al. with further source information.

Chart 4: The exchange rate of the Polish zloty between 4 January 1999 until 31 December 2001

