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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 sin and commitment problems, the latter being closely related to the law enforcement 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 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

Since the currency crises in South East Asia, economists have recognized that the proper choice of the exchange rate arrangement (ERA) results not only from the applied monetary policy regime or the source of stochastic shocks, but also from structural factors, particularly from a weak financial intermediary sector (see also *Calvo, 1996*). Financial fragility describes the covariate vulnerability of a country against a currency crisis triggered off by a financial sector (banking) crisis. The ERA plays a different role in banking crisis models than in currency crisis models. Currency crises models explain why and when a speculative attack against a government controlled exchange rate will succeed, and which role macroeconomic fundamentals play. The consequence might be a banking crisis (via the loss of liquidity). The political conclusion drawn from those models is to shift to a corner solution either to ensure monetary independence (float) or to ensure no-monetary policy (currency board). Financial crisis models root in bank run models, and the determinants behind are defects and the incompleteness of the financial sector. Recent financial crisis models try to explain why the financial sector might run out of liquidity and might cause a currency crisis even in case of a corner solution. The question now reads, how the ERA limits or widens financial fragility.

This study concentrates 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, 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.

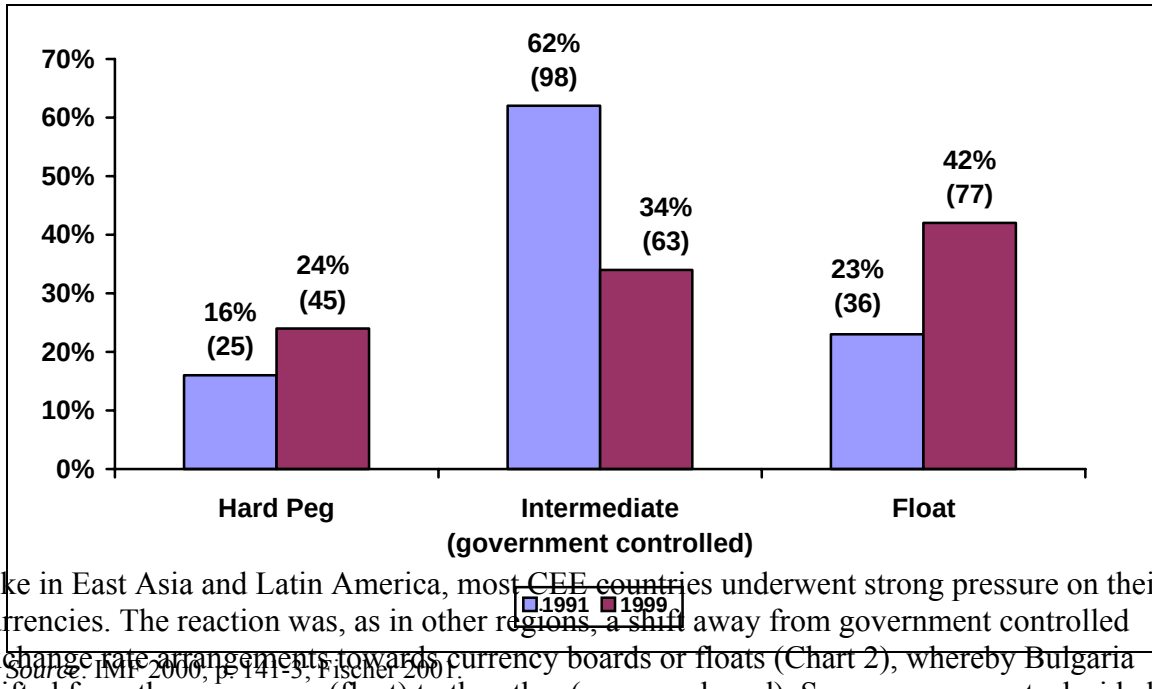
The remainder of the paper is organised as follows: Section 2 describes the present ERA in CEE countries and the vulnerability of these countries against a financial crisis. Section 3 will

explore the nature of financial fragility from a more conceptual viewpoint. Section 4 discusses the roots of financial fragility in CEE countries. We focus on the corner solution: the float in Poland, and the currency boards in the Baltic countries Section 5 confronts the ERA of candidate countries with the rules of EMU membership. Using the case of Hungary, we illustrate how the ERM II solution might increase financial fragility. Section 6 concludes.

2. Financial fragility and corner solutions

After fundamental liberalisation of financial markets in developed countries and of capital accounts worldwide, a number of currency crises have upset the South 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 observe a shift away from government controlled exchange rate arrangements towards floats and hard pegs (Chart 1).

Chart 1: Exchange rate arrangements around the world



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

Like in East Asia and Latin America, most CEE countries underwent strong pressure on their currencies. The reaction was, as in other regions, a shift away from government controlled exchange rate arrangements towards currency boards or floats (Chart 2), whereby Bulgaria shifted from the one corner (float) to the other (currency board). Some governments decided from the very beginning of transition to start with a corner solution (currency board: Estonia, Lithuania; float: Bulgaria, Slovenia). The governments of other countries decided for controlled ERA in order to stabilise the economy after the first transition shocks. However, a number of currency crises challenged this approach, among them in Bulgaria, Romania, and the Czech Republic 1997, or in Russia, Belarus and Ukraine in 1998. Did this shift ease the pressure on the exchange rate stemming from financial fragility?

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

	Hard peg	Government controlled			Float	
	Currency Board	Fixed peg peg	Fixed band	Crawling band	managed	independent
Bulgaria	● ←				→ ●	
Estonia	●					
Latvia		● ←			→ ●	

Lithuania	●					
Poland		●		●		●
Romania					●	
Slovak Republic			●		●	
Slovenia					●	
Czech Republic			●		●	
Hungary		●		●		

Sources: Corker et al. 2000

Fundamental currency crisis models lost their predictive power in the Asian crises in 1997. New model generations lost their predictive power even in theoretical terms because of their non-linearity which makes the outbreak of a crisis unforeseeable under multiple equilibrium conditions.[i] Therefore, measuring a country's vulnerability to financial crises became one of the leading areas in empirical research, assuming that many determinants may trigger off a crisis. One example is the signals approach of *Kaminsky*, *Lizondo* and *Reinhart* (1997) who analysed the behaviour of 18 macroeconomic and banking sector variables before a crisis. A logit/probit approach was offered by *Frankel* and *Rose* (1996) and *Eichengreen*, *Rose* , and *Wyplosz* (1996). All these approaches try to capture traditional 'fundamentals' – mainly in the real of fiscal and monetary policies – and 'new' fundamentals although they might have only weak links to theory.

Adopting the signals approach, *Brüggemann* and *Linne* (2002) constructed a composite indicator for CEE countries. They calculated the conditional probability of a financial crisis. They found the highest probability for a financial crisis in CEE with 86% (Poland), which is a relatively high value compared with other international studies.

Table 4: Conditional probabilities of a crisis in CEE countries; June 2001

Index of the composite indicator	Conditional probability of a crisis	Index for CEE countries
0 – 20	0.2143	Bulgaria (CB)
21 – 40	0.1781	Slovak Republic (mf)
41 – 60	0.2813	Estonia (CB), Latvia (fp), Slovenia (mf)
61 – 80	0.2250	Czech Republic (mf), Romania (mf)
81 – 100	0.2593	Lithuania (CB)
121 – 140	0.6154	Hungary (fb, ± 15 %)
> 141	0.8571	Poland (float)

Legend: CB = Currency Board, mf = managed float, fp = fix peg, fb = fix band.

Source: *Brüggemann and Linne*, 2002.

From this empirical perspective, the corner solutions are by no means a save haven against a currency crisis (see Argentina for the break down of a currency board). Behind this picture, hence, is not only a violation of the applied monetary rule, but assumingly also an increase in financial fragility.

3. On the nature of financial fragility

The empirical findings illustrates, that the nature of financial fragility makes the choice of the optimal exchange rate arrangement more complicated than in the traditional *Mundell-Fleming* framework. *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 1: 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 the banking sector, the cost might outweight 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.[ii]

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 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 with loans to private households since they 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. 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 a maturity mismatch would raise financial fragility. 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.[iii] (2) A currency board is not immune to a bank run 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.

A currency board or no-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 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.

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

4.1 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 consolidated[iv] 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 ´Peggers` (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%.

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 address mainly 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 BIS statistics show that the share of consolidated international claims of reporting banks 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.

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 indictors 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: Websites of national finance ministries, statistical offices or national banks; own calculations.

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.[v] 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.

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. (2000) with further source information.

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.

4.2 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 discussed by hand of the case of Poland. The National Bank of Poland 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 ± 2.5% to ± 7% in May 1995. The National Bank expanded the band to ± 10% in February 1998, ± 12.5% in October, and to ± 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 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 with 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. Raising its interest rate, the National Bank prevented the zloty from further devaluating. The price, however, was more attractive for short-term portfolio inflows causing an appreciation since then. Increasing conflicts

between the National Bank and the Polish government about interest policies was at the root of the debate on an unilateral introduction of the Euro in Poland (*Bratkowski* and *Rostowski*, 2001)

Applying the signals approach, the composite indicator shows an increasing risk potential for the Zloty since April 2000 pointing out that the strategy to lower the risk and to find the equilibrium exchange rate for ERM entry by floating failed (Chart 5).

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

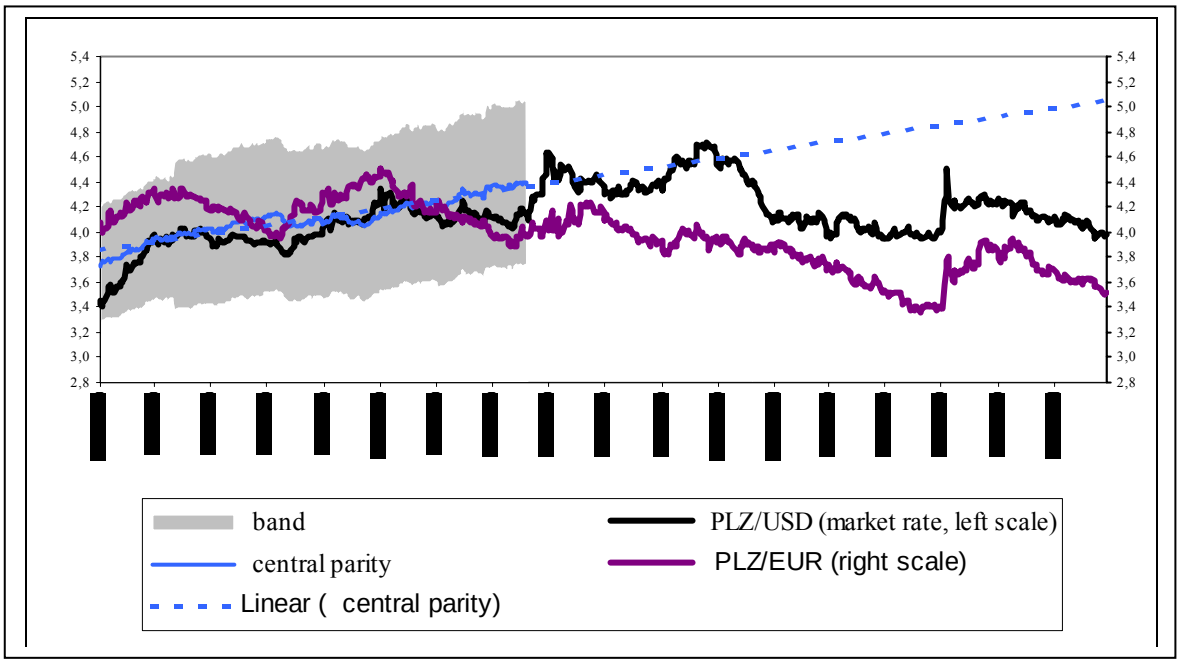
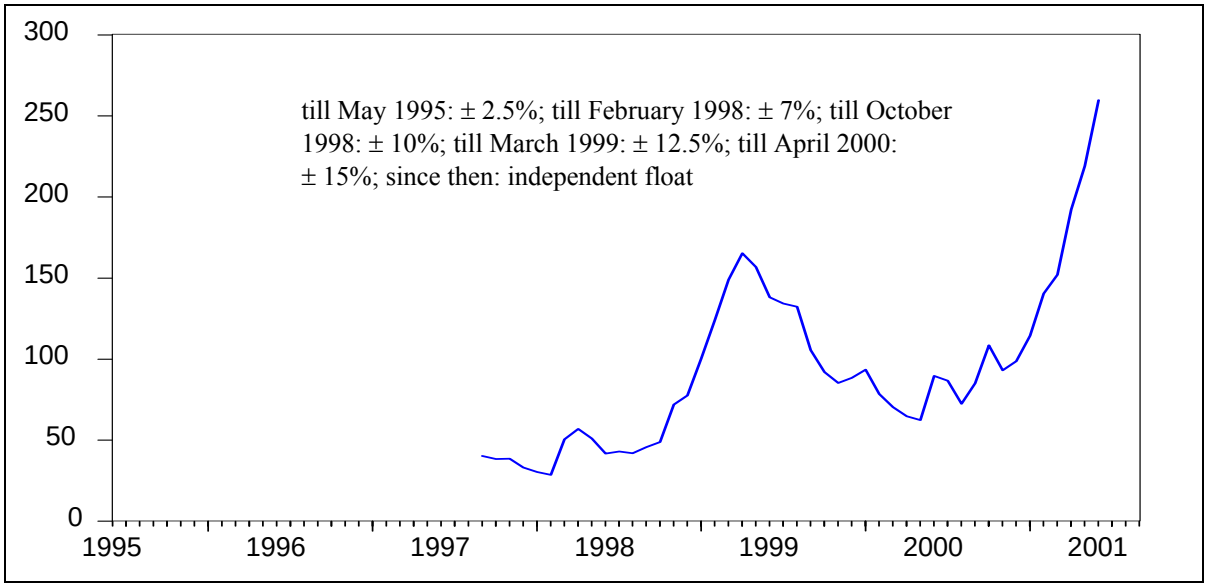


Chart 5: The composite indicator for the Polish Zloty between August 1997– June 2001



Source: *Brüggemann* and *Linne*, 2002.

Why financial fragility increased in Poland? (1) Capital inflows served trade financing and liquidity trade (derivatives etc.), but were also attracted by domestic equity and debt markets. Mass privatisation schemes[vi] 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. (2) Privatisation of banks has gained momentum since 1998. The banking sector was overwhelmingly privately owned with 56% of foreign share in statutory capital in 2002. 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.

Table 4: FCL of Polish banks

in % of	1996	1997	1998	1999	2000	2001
total banks loans	14.1	17.1	22.8	20.5	22.7	27.6
loans to Corporations	16.5	20.3	27.1	25.5	26.8	28.1
loans to Persons	1.7	3.5	5.9	5.4	10.7	20.1
housing loans	2.2	8.1	8.9	9.4	23.6	51.0

Source: National Bank of Poland website.

4). 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).[vii] 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.[viii] 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 self-fulfilling crisis.

4.3 Why have the Currency Boards survived?

Among the Baltic countries, Estonia and Lithuania have long-lasting currency boards, and Latvia has a fixed peg.[ix] 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 of debt markets is small due to low public debt. Public debt was at 3.2% of GDP (2001) in Estonia, but short-term debt was 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. Hence, the Eesti Pank 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.[x] 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).[xi] Nevertheless, spill-over effects on fundamentals could be observed in the composite risk indicator for all three countries.

5. Financial Fragility and EMR II: the case of Hungary

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 ± 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).

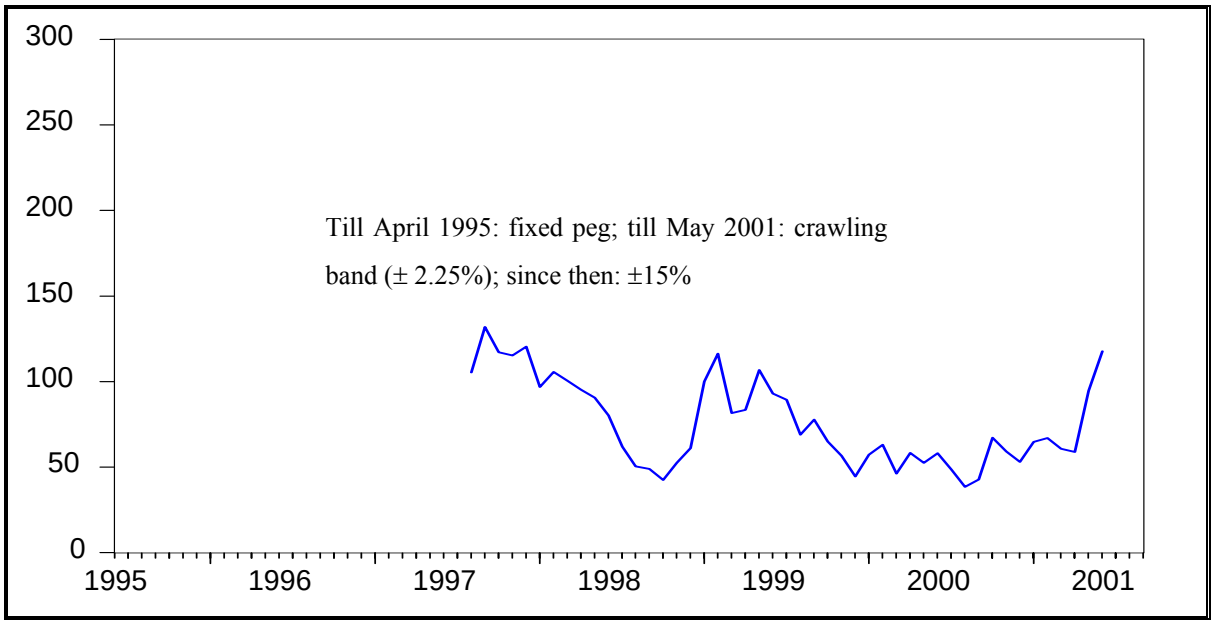
The central parity is to be negotiated between the European Council, which the European Central Bank recommends, and the government of the new member country; no country can set the parity autonomously. The bandwidth may be smaller, but this is also to be negotiated with the European Council (Denmark negotiated a band of ± 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.

Here, the problem emerges very clearly: with financial fragility, will the premature return to a fixed peg raise the risk for a currency crisis? We discuss this problem with the case of Hungary.

Among today's ERA only the Hungarian arrangement is most compatible with the ERM II rules, and the switch to this regime illustrates the problem of increasing vulnerability against a crisis. The composite indicator reports a strong increase to about 120, that reflects a conditional probability of a crisis of 62% in May 2001 compared with 28% in March (Chart 6).

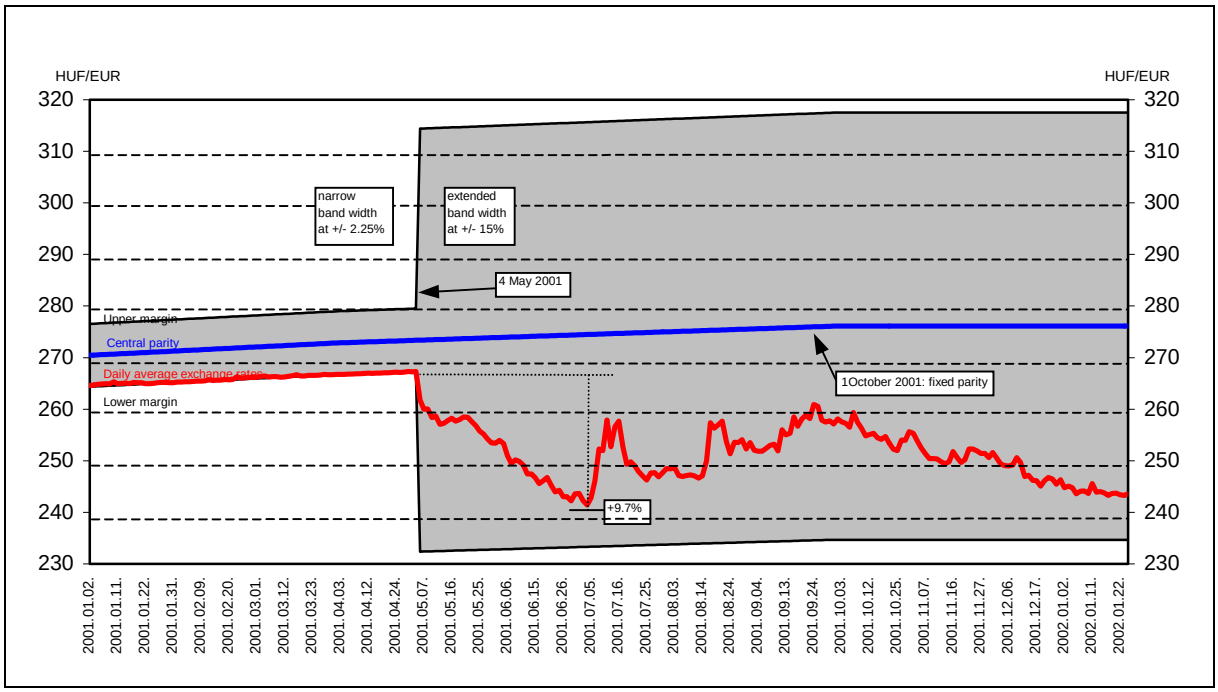
Chart 6: The composite indicator for the Hungarian Forint between June 1996 – May 2001



Source: *Brüggemann and Linne*, 2002.

Hungary's crawling peg was within margins of ± 2.25% until May 2001. A relatively high capital inflow and share of international bank claims vis-à-vis domestic banks and the government could indicate moral hazard problems. The almost fixed peg remained sustainable, because the banking sector w as 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 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. This picture, however, changed in 2001, when capital controls were lifted in May 2001 in order to prepare EU membership. In facing this challenge, the National Bank of Hungary widened the band to ± 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 7).

Chart 7: The exchange rate of the Hungarian forint to the Euro between January 2001 and January 2002



Source: National Bank of Hungary website.

6. Conclusions

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 fragility is in original sin 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.[xii] 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 would deepen the problem of violation of the ERM II rules. is not a convincing way out. A transitory solution leading the Zloty toward equilibrium seems necessary, possibly a switch to a managed float.

At the other end of the scale, does the switch of a currency board to ERM II increase financial fragility in the Baltics (and later in Bulgaria)? The answer is, in principle, yes. With a currency board, there is no exchange rate risk, but an interest rate risk although the exchange rate is fixed. With a fix band, moral hazard of the financial sector might be the immediate consequence since either the central bank or the ECB gives an implicit guarantee. With this implicit guarantee, markets could test the parity. The limited ability of central banks to sterilise could be a problem for monetary convergence (inflation and interest rates). Hence, entering the ERM II with a currency board seems to be the least risky strategy. However, the EU does not regard a currency board as an acceptable substitute for participating in ERM II

(*Ecofin*, 2001). But a currency board offers possibilities for a convergence test required for ERM. 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. The risk for moral hazard could be restricted. Convergence could be tested by the interest rate and the inflation criterion.

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[i] For an overview see Flood and Marion (1998).

[ii] 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.

[iii] 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.

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

[v] 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 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.

[vi] 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.

[vii] 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.

[viii] The National Bank followed direct inflation targeting.

[ix] Monetary policy rules are very strict; sometimes the Latvian peg is called a 'quasi currency board'.

[x] Eesti Pank, Annual Report 1997, Tallin.

[xi] Something similar holds for Bulgaria: only 2.5% of exports go to Russia.

[xii] 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.