EXCHANGE RATE REGIMES AND EMU ACCESSION STRATEGIES

MATEUSZ SZCZUREK

ING Bank
Plac Trzech Krzyży 10/14; 00-499 Warszawa; Poland
Tel +48228204698; Fax +48228204025
E-mail: mateusz.szczurek@ingbank.pl

ABSTRACT

This paper aims at clarifying the interactions between the choice of the exchange rate regime prior to the ERM-2 as well as various modes of ERM-2 itself, on the ease of fulfilling the Maastricht criteria, explores the mechanics of the exchange rate regime switches as applicable to the New Member States (NMS), and discusses the weak vs strong parity arguments faced by the new EMU applicants. New Member States with pegged exchange rates should have lower debt and deficit levels, but higher inflation than the floating or managed floating counterparts, and that was indeed the case in the 2003-2005 period. Fixed exchange rate does not fully solve the problem of final parity speculations. However, especially the countries with euro-linked currency boards are likely to avoid bond yields pick-up, and higher fiscal costs, related to the risk of the final parity being set at a weaker level than that prevailing during the pre-ERM-2 peg period. What is more, the mechanics of the target zone literature suggests that an unlikely switch from the fixed exchange rates into the target zone with weaker parity may still lead to nominal appreciation. While no fundamental exchange rate modelling is attempted in this work, two main views regarding the choice of the ERM-II parity level. Thanks to high productivity growth, the NMS so far are in a relatively comfortable position allowing to compensate for a relatively strong exchange rate which could be needed to ensure low enough inflation prior to the EMU entry.

KEYWORDS: ERM-II, EMU EASTERN ENLARGEMENT, REAL APPRECIATION, CURRENCY BANDS, MONETARY UNION, CENTRAL AND EASTERN EUROPE.

JEL: E52, F31

1. INTRODUCTION[1]

All new member states will have to decide not only on when, and on what terms (exchange rate) to join the EMU, but also on how to do it. Leaving political dilemmas aside, the question "how" concerns the desired path of the nominal convergence, and the strategy towards fixing the exchange rate in the environment of forward looking financial markets.

This paper aims at clarifying three issues. First is interaction between the choice of the exchange rate regime prior to the ERM-2 as well as various modes of ERM-2 itself, on the ease of fulfilling the Maastricht criteria. While it is now quite obvious that the wide-band ERM-2 may prove to be insufficient in fulfilling exchange rate stability criterion, the influence of the exchange rate regime on inflation, or fiscal criteria is much less recognised.

Second issue is the mechanics of the exchange rate regime switches. Fixed exchange rate does not fully solve the problem of final parity speculations. However, especially the countries with €-linked currency boards are likely to avoid bond yields pick-up, and higher fiscal costs, related to the risk of the final parity being set at a weaker level than that prevailing during the pre-ERM-2 peg period. What is more, the mechanics of the target zone literature (see eg Krugman and Miller, 1992) suggests that an unlikely switch from the fixed exchange rates into the target zone with weaker parity may still lead to nominal appreciation.

The final part of the work will consist of general comments on the CPI and exchange rate targets in the EMU accession strategy. While no fundamental exchange rate modelling will be attempted in this work, it is worth judging the two main views on the desired EMU final exchange rate. The view of many policymakers in the NMS is that the conversion rate should be as weak as possible, given the political constraints, as a mean of hedging the real economy against the inherent uncertainties in estimating the fundamentally justified exchange rates risks. Another view is that the exchange rate should be strong to offset the interest rate shock (seen in Spain, Portugal and Greece) and reduce the risk of overheating in the first years of the EMU.

The paper begins with the theoretical arguments behind the choice of different variants of the ERM-II in terms of ease of meeting the Maastricht criteria. Chapter 2 also includes arguments for or against a weak ERM-II parity and the final conversion rate. Part 3 evaluates how the choice of pre-ERM-II regime can influence nominal convergence. Section 6.4 looks at the exchange rate dynamics of the regime switch leading into the ERM-II. The last chapter concludes.

2. THE MAASTRICHT CRITERIA AND ERM-II OPTIONS

2.1. Inflation

In theory, during the latter stage of transition, a floating exchange rate makes the fulfilment of the inflation criterion easier. Such hypothesis is proposed by De Grauwe and Schnabl (2003). Fast growing NMS are prone to the Harrod-Balassa-Samuelson (HBS) effect, which leads, under a fixed exchange rate, to inflation in non-tradable goods which is not compensated for by falling prices of tradables[1].

A second channel that works in a similar fashion is the decreasing cost of capital, which is likely to be observed in the intermediate and latter stages of transition. Assuming the tradable sector is more capital intensive, a given fall in capital costs will increase the marginal return on labor to a greater degree in that sector. This in turn implies growth of wages and prices in the non-tradable sector, and consequently the real exchange rate will also have to appreciate (Buiter & Grafe, 2002).

A third channel, mentioned by Rostowski (2006), and earlier by Halpern and Wypłosz (2001) is the demand channel – higher growth of demand for non-tradables in fast growing economies puts pressure on wages and prices in that sector, and on the real exchange rate to appreciate (provided productivity in non-tradables does not grow too fast).

The impact of all these effects to equalize relative prices in the NMS and old member states (OMS) is 3.5-4% per year, according to Pelkmanns, Gros & Nunez Ferrer (2000), and this is the potential gain in terms of CPI inflation from having the exchange rate able to appreciate in nominal terms. From this point of view, the classic ERM-II, with a ±15% band is best, as it leaves enough room for nominal appreciation, provided that the initial market rate is close (or above) the parity rate. Even though the risk with such an approach is that sticking to the ±15% band does not guarantee fulfilling the exchange rate criterion, appreciation of that kind could be deemed as fundamentally justified, and thus accepted in the Maastricht check. The strict 'Solbes version' with a ±2.25% band may not leave enough room to fulfil the price stability criterion, leading to excessive pressures on domestic prices. Bearing in mind the possibility of revaluing the parity without violating the exchange rate stability criterion, any non-currency board version of the ERM-II is likely to be better at tackling the problem of growth-

[1] This paper is a thoroughly updated revision of Szczurek (2006)

related real exchange rate appreciation. The cost of altering the currency board rate makes such changes less likely.

Additional complication arises from the fact that because the expected EMU parity usually remains in the centre of the ERM-II bands (Ireland and Greece did have their exchange rate revalued, but other catching-up countries did not), rational economic agents should set their prices and wage demands to take into account the expected final year depreciation of the local currency (if it has previously appreciated below the ERM-II parity)[2]. This could limit or completely eliminate the beneficial effect of a semi-floating exchange rate on inflation. The Drachma and Escudo started to depreciate back towards the central parity some one year and eight months ahead of EMU entry, while in Spain the process started three years ahead of the country's joining the EMU. If the 'convergence check' comes some eight months ahead of accession to the EMU, and exchange rate pass-through is significant for periods less than one year, the inflation effect of the ±15% ERM-II could actually work in the opposite direction to the one described in the previous paragraphs.

Also on the negative side, non-fixed exchange rate regimes may promote short-term volatility in the case of global (or regional) market disturbances. Habib (2002), and Csermely & Vonnak (2002) show that world emerging markets' contagion does significantly influence the exchange rates of the Polish and Czech currencies (and the Hungarian Forint, with a currency band regime). This means that a major world market shock could prompt depreciation, leading to problems with the CPI inflation criterion. In the final stages of the EMU accession the argument for emerging market problems is already less valid, but may still be important for **converging markets**. As the date of the likely EMU entry approaches, the Hungarian Forint will be less prone to, let say, Latin American or Russian turbulence, but more susceptible to, fiscal disturbances in the Czech Republic. This is exactly what happened by the end of 2003, when concerns over Polish fiscal policy prompted a wave of Hungarian Forint selling and a bout of bond spread divergence. In 2004-2005 daily exchange rate movements correlation between the Forint, the Czech and Slovak Crowns, and the Zloty was between 30 and 40%. Thus, an event in one country could, theoretically, cause some inflation-related problems which are unjustified by local policies or fundamentals.

A major capital outflow, however, is unlikely to cause inflationary problems for the exchange rate regime, provided it fails to topple the exchange rate arrangement (or otherwise fails to make the country unable to meet exchange rate stability criterion). For fixed exchange rate regimes and narrow bands (and the even the ±15% is effectively a narrow band on the weak side), the effect of capital outflow can be contractionary. In any case, a negative inflationary impact in the band case will only appear under extremely precise timing. It would have to happen about one year ahead of the Maastricht check, and even then, the inflationary impact could quickly be reversed if belief in the parity returns (as it should).

Another exchange rate regime-related inflation issue comes into play if the exchange rate band becomes binding. Capital inflow (appearing for example as a result of insufficient savings in economies that are expecting faster growth in the post-EMU years) being absorbed by the central bank with higher base money can become a problem either for inflation or for the budget, through the costs of sterilization. Provided the parity is not set much weaker than the market rate, the problem will be much more pronounced for the ±2.25% ERM variant, or for currency boards (the latter do not engage in sterilization). The ±15% band is able to emulate a float more easily in this respect[3].

Disentangling the impact of the ERM-II arrangement on inflation is thus quite difficult. The standard relative price adjustment argument for the floating exchange rates cannot easily be translated into the superiority of the ±15% ERM-II band over the narrower arrangements, currency boards, and unilateral Euroization. This it due to the fact that nominal appreciation can be expected to be reversed in the final stages of EMU accession. One problem which a wide band is likely to have on a smaller scale is monetary expansion occurring when the exchange rate hits the bottom of the band. Here, pegs, currency boards, and narrow bands are inferior, provided that the initial parity of the ±15% band is not set too weak relative to the market rate.

2.2. Interest rates

Success in fulfilling the interest rate criterion depends largely on the credibility of the EMU accession, i.e., on the ability (or willingness) to fulfil all other criteria. If the markets believe the country will be considered fit to join the EMU, they will make sure that bond yields adjust roughly to EMU levels. The effect of public debt levels, bond supply, and fiscal stance on the Bunds, other EMU member bonds' spreads, is very limited (within 30bp, judging by current EMU members' bond spreads vs. Bunds). What is more, while inflation inertia is a significant factor to bear in mind while preparing to join the EMU, bond yields can be extremely quick to adjust – almost jumping into the new, low-yield equilibrium at the moment of entry into the ERM-II. This makes the choice of both pre-ERM-II exchange rate regime and the actual variant of the ERM-II regime somewhat irrelevant for the ability to fulfil the interest rate criterion at the time of the EMU entry decision.

Theory suggests that a floating exchange rate allows for nominal appreciation through the HBS effect, savings-investment imbalance created by expectations of higher growth, and stimulation from opening and deepening of the NMS financial markets. Due to uncovered interest parity (UIP), this would point to lower bond yields than in a more rigid exchange rate set-up, where real appreciation translates into higher inflation

pressures. But, as shown above, inflation and bond yields in the ±15% ERM-II band may not benefit from the nominal appreciation pressures. This is because these are likely to be reversed back towards parity in the final 1-2 years of the ERM-II in any case. A 5% nominal depreciation expected in one year would then translate into 120bp higher spread on 5-year bonds. Because there is a non-zero probability that the parity would be revalued, the negative impact of the final year depreciation expectations could be limited, though.

Moreover, the wide-band ERM-II, different from the float from the point of view of the mean expected value, can be almost equivalent to the float on the risk front. This could additionally boost the bond spreads. A short-term currency premium, which is bound to be higher than in the case of a credible peg or currency board, may have an important effect particularly on the short-end of the yield curve.

Should therefore the currency board ERM-II result in unconditionally lower yields than a narrow-band ERM-II, which, in turn, has lower yields than the ±15% arrangement? Not necessarily: capital inflow-related inflation problems in the more rigid versions of ERM-II could make the whole process of accession doubtful, putting additional spread burden on the economy. The overall impact of the exchange rate regime on bond yields is therefore unclear, and depends on where the market exchange rate is relative to the likely parity (for both versions of the band-ERM-II, especially the +/-15% variant), and on the inflation performance in the year prior to the Maastricht criteria check.

2.3. Exchange rate stability and the EMU parity

There are three issues related to the exchange rate in the run-up to the EMU. The first is the exchange rate stability criterion itself, and the impact of the choice of exchange rate regime on the ability to fulfil it. The second is the desired exchange rate. The third issue is the switch from the ERM-II regime towards the final fixing.

Several points need stressing before we engage in a comparison of exchange rate regimes. First, the ERM-II is not symmetrical. Revaluations of the band are permissible, meaning that a successful speculative attack against the Euro does not have to breach the criterion. Such an attack could succeed if defence of the stronger edge of the band were to threaten the inflation criterion significantly.

Second, the ERM-II is not the exchange rate regime of a single country. It is a matter of common concern; the NMS will not be alone in setting the parity.

It is easier to start with an evaluation of the exchange rate stability criterion for the pegged regimes. The literature on the subject is vast, starting with papers following the Krugman classic (1979), in which a macroeconomic policy incompatible with the peg causes gradual depletion of reserves. A fixed exchange regime can last only until foreign exchange reserves reach a certain critical level, when rationally-thinking speculators attack and buy all remaining stock of reserves as soon as the 'shadow' price – the price that would prevail without the central bank fixing the exchange rate – reaches the official rate. The regime turns smoothly to a float (the exchange rate does not jump; only the level of reserves does).

Krugman & Rotemberg (1992) provide a model of imperfectly credible exchange rate bands. It joins two strands of the exchange rate literature: target zones models and currency crisis models[4]. It is worth presenting the model here, as it is a base for several other variants mentioned later.

In the following s is the log of exchange rate, m is the log of money supply, D is nominal domestic credit, R is nominal foreign exchange reserves, a change in v is a shock to the money demand following random walk with a drift:

$$s = m + v + \gamma E\left(\frac{\partial s}{\partial t}\right),\ \partial v = \mu \partial t + \sigma \partial z\ ,\ m = ln(D + R) \tag{1}$$

Under a freely floating exchange rate, expected depreciation is equal to the drift in the money demand. Holding money supply constant, the general solution of the model, is[5]:

$$s = m + v + \gamma\mu + Ae^{\alpha_1 v} + Be^{\alpha_2 v}\ , \tag{2}$$

where A and B are free parameters, and

$$\alpha_1 = \frac{-\gamma\mu + \sqrt{\gamma^2\mu^2 + 2\ \gamma\sigma^2}}{\gamma\sigma^2} > 0; \alpha_2 = \frac{-\gamma\mu - \sqrt{\gamma^2\mu^2 + 2\ \gamma\sigma^2}}{\gamma\sigma^2} < 0 \tag{3}$$

With the exchange rate fully floating, money supply is truly constant and cannot be expected to change, thus the expectations component is simply equal to the expected change in v – the drift. In such a case both A and B

are equal to zero. If, however, the central bank is expected to spend reserves defending some target exchange rate, then rational speculators expect money supply to fall as soon as the exchange rate reaches the edge of the band. The size of *A* and *B* depends on the amount that the government is willing to spend defending the edges, the size of the reserves in the case of *A*, and the amount of reserves the central bank will buy in case of an 'attack' on the stronger side of the band (which determines *B*). Thus *A* can be determined by knowing the level of the foreign exchange reserves, and no predictable discreet jumps in the exchange rate can happen.

After a speculative attack when the reserves *r* are exhausted, the money supply *m* falls to the log money demand *d*, and the regime is floating. Therefore the shadow exchange rate is:

$$š = d + v + \gamma\mu \tag{4}$$

For a small level of reserves (reserve/domestic credit ratio $\frac{R}{D} < e^{\frac{1}{\alpha_1}} - 1$), as before an attack occurs when the shadow exchange rate is equal to the regime exchange rate. This is the only rate that eliminates the possibility of capital gains for the speculators. The attack happens when v reaches the critical level v' (for which š is equal to the targeted level of the exchange rate s_{max}):

$$d + v' + \gamma\mu = m + v' + \gamma\mu + Ae^{\alpha_1 v} \tag{5}$$

The free parameter *A* in Equation 6.5, which ensures that the exchange rate does not jump in a discrete fashion, is equal to: $-e^{(s_{\max} - d - \gamma\mu)\alpha_2} r$.

Figure 6.1 shows the exchange-rate-money demand shock loci for the free-float (dashed line) and zero-reserves (post attack) float (solid straight line, parallel to the free float). The latter can be considered a shadow exchange rate. It becomes the actual exchange rate at a point where it crosses the curved line (target regime). While it is obvious that the zero-reserves curve shows a stronger exchange rate than the (no-attack) free-float (total money supply is lower by the amount of reserves, so the exchange rate must be relatively stronger after the attack), the fact that the target regime curve is below the free float is more exciting. It shows that despite the inability of the government to defend the target rate (as soon as *v* reaches *v'* the regime collapses and the exchange rate starts to follow the zero-reserves curve), the exchange rate is supported by the sheer willingness of the authorities to spend reserves defending the target (Krugman's 'honeymoon effect'). The kinked thick curve (X-Y-Z) is the actual exchange rate-money demand schedule.

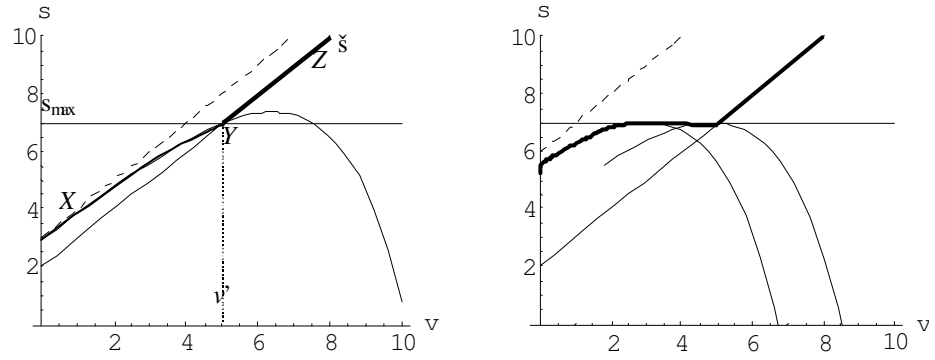

Figure 1. Target exchange rate with limited (left) and high (right) reserves

The situation looks different when the reserves to domestic credit ratio is bigger. For large reserves, the regime curve reaches its maximum to the left of the post-attack locus. A speculative attack then does not take place at all, and the target can be maintained with very small interventions. This type of situation is shown in the right panel of *Figure 1*. *A* is set to make the regime locus tangent to the exchange rate target (*s* cannot be expected to grow above the s_{max} without the attack). Each intervention, however, shifts the regime locus to the right, as the reserves get smaller and smaller. When the reserves reach the 'small' limit ($\frac{R}{D} = e^{\frac{1}{\alpha_1}} - 1$), i.e.

when the maximum of the regime locus is at the (s_{max},v') point, a speculative attack occurs that consumes all the remaining reserves and the regime turns into a free float.

The important point from this analysis is that an attack cannot occur with sufficiently large reserves. If the initial reserves are much larger than domestic credit, the reserve loss is zero when the fundamentals are good enough (v is low). As v gets worse, the reserves start to dribble out (along the horizontal part of the bold curve in the right panel of *Figure 1*). As they keep worsening, an attack occurs at some stage (the drift in the money demand shock term ensures that in the original model), eliminating all the remaining reserves.

We would argue that this first-generation model with monetized budget deficits is most unlikely to be of use for the NMS. Since governments cannot force central banks to monetize deficits, such a risk for any ERM-II member is non-existent (currency-boards are by definition protected from such behaviour). Also, as mentioned above, it is the strengthening trend in real fundamentals that the countries will have to cope with. Thus for fixed exchange rates the reserves will not dribble out, but dribble (or rush) in. Still, the framework used for currency band models can be used to accommodate almost any driver of the exchange rate. For example, the role of the exhaustible reserves can be taken over by fiscal or inflationary limits to foreign exchange rate interventions (eg the central bank can intervene weakening the local currency as long as the budget deficit or inflation is well within the Maastricht limits; if neither is, the rational agents should expect the local currency to appreciate beyond the lower edge of the band).

Second generation models[6] allow governments to optimize when deciding on an exchange rate regime. The loss function usually includes the exchange rate and some variable dependent on both the actual depreciation and prior public expectations of depreciation. In the two models presented in Obstfeld (1994), the variable is the level of taxation (dependent on nominal interest rates, and thus on public expectations of nominal depreciation), or unemployment (dependent on agents' wage setting decisions, and thus nominal depreciation).

This class of models appears much more likely to trouble the ERM-II members, not least because it seems to describe well what happened within the ERM-I in Britain or Sweden in 1992. What would cause such a forced departure from the peg? Very high unemployment could cause the markets to believe that it would be cheaper politically to give up exchange rate stability (and prompt EMU entry) for depreciation. For a politically feeble government, substituting difficult structural reforms for the quick fix of major depreciation could appear tempting, especially if they were not expected to be in office to reap the political glory of EMU entry.

New models have also appeared that explore asymmetric information issues. Governments' implied bail-out promise distorts investment decisions and leads to contingent government liabilities either becoming actual fiscal spending, or killing the banking sector through a wave of insolvencies (see for example Corsetti, Pesenti & Roubini, 1999) or liquidity crises (building on bank run literature, and maturity mismatch in capital account-surplus countries, see for example Rodrik & Velasco, 1999). Such problems could trouble the NMS regardless of the exchange rate regime, especially if the process of excessive private foreign borrowing (on the investors' presumption of insurance) and failed investments begin significantly before entry into the ERM-II. In this case the cumulative crisis could be large enough to topple not only the currency peg, but also any kind of ERM-II band.

Similar logic can be applied to liquidity issues – once foreign debt builds up, a sudden financing stop could cause a severe crisis due to the costly liquidation of investments.

The models described above can usually be applied to both fixed and band exchange rate arrangements. The NMS are unlikely to engage in reckless money printing, which could lead to a first-generation type crisis, and fundamentals are likely to put pressure on the stronger edge of the band (additionally, the currency board is protected by high reserves and automatic monetary tightening in the case of speculative pressure). The case of policymakers willing to devalue (and abandon the ERM-II) to jumpstart an ailing economy at the expense of early EMU adoption is more problematic. Incentives created by the European Commission, the ECB and the OMS may influence the loss function of the NMS' policymakers. Outright opposition to NMS' entry into the EMU will increase the temptation to sacrifice EMU entry in favour of stimulating economies. The mere hint of such a thing happening could increase market pressure and prompt the failure of the ERM-II. On the other hand, the costs of abandoning a currency board (especially a long-lasting one) could be much higher than for the band, so rational speculators would be less willing to pay a significant interest rate spread to speculate against such a currency.

2.4. The switch from the ERM-II to the EMU

The switch from the ERM-II to the currency union is likely to be close to a non-stochastic process switching environment. Thus a model describing the behaviour of the financial markets faced with a pre-announced currency peg in a clearly defined future should be of some use.

Obstfeld & Stockman (1985) ascertained that the announcement of a known peg on a known date leads to an immediate jump towards the new parity (relative to the original free-floating exchange rate path), and a smooth adjustment towards the pre-announced peg.

Ichikawa, Miller & Sutherland (1990) applied such a regime change to the credible exchange-rate-band model. Their findings are consistent with those of Obsfeld & Stockman (1985): the announcement of a fully credible peg (exchange rate band of zero width) results in an immediate jump of the exchange rate towards the future peg (the jump is small if the regime change is distant enough). The exchange rate then depends less and less on the fundamentals (money supply and velocity of circulation), and more on the exchange rate level set by the authorities. At time *0* (EMU entry), the exchange rate becomes totally insensitive to the underlying fundamentals.

Djajić (1989) provides another model, based on the standard monetary model, in which the exchange rate path ahead of the fixing at a known date depends on public expectations concerning the length of the fixing period (it is expected to last forever in case of EMU entry) and the desired ratio of foreign exchange reserves to domestic money after the fixing.

These models are applicable to a situation with a fully credible announcement of both the level and the time of the regime switch, and this should describe the environment of the final 6 months of ERM-II membership well. While the timing of entry should be known relatively far in advance, the exchange rate would come slightly later.

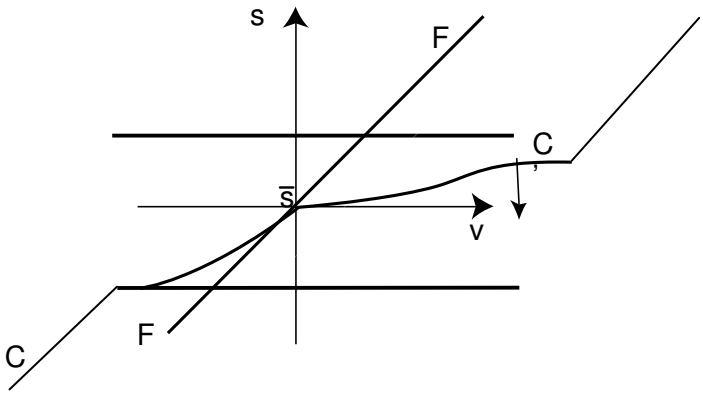

Figure 2. Exchange rate and fundamentals on the way from ERM-II to EMU

The inherent asymmetry of the final peg expectations may have some impact on the market exchange rate while in the ERM-II. The Krugman's S-curve cannot remain symmetrical if fixing the exchange rate weaker than the parity cannot be expected[7]. Thus, as the date of EMU entry approaches, the S-curve should become much flatter on the weak side of the parity (the exchange rate would be less and less sensitive to fundamentals because of appreciation expectations in the credible ERM-EMU switch). The change of the shape of the S-curve on the stronger side of the parity would depend on the political bargaining process, but given the experience of previous EMU entry cases, the benchmark case of ERM-II parity becoming the final rate would suggest the curve gets flatter on that side as well (see *Figure 2*). In the earlier periods of the ERM-II membership, the lower part of the fundamentals-exchange rate schedule is likely to look similar (only in reverse) to the Krugman & Rotemberg (1992) limited reserves schedule. Here, the role of the reserves is taken over by inflation or budget constraints to the local currency weakening intervention. The upper part of the schedule is constrained by the 2.25% "internal band", but it can only last as long as the reserves limit (or other crisis constraints of that kind – banking sector health, acceptable local interest rate levels, etc) last. There could be an additional expectation-induced twist (not shown) to the straight money demand – exchange rate schedule (above 2.25% from the parity, but below 15%), when the ECB interventions could come to play. Such interventions however, would not help in keeping the exchange rate stability criterion (as probably defined by the EU Commission).

2.5. The Budget deficit and public debt

There are several channels through which the choice of the exchange rate regime influences the fiscal position of the government.

First, a non-rigid exchange rate, in the context of the NMS, can stimulate nominal appreciation. This in turn hits the profits of (and the tax intake from) the tradable sector. The total effect of lost taxes depends on productivity growth - in a pure productivity driven appreciation case, there does not need to be profit decrease at all. Non-tradable sector inflation (and thus the nominal PIT and CIT in the sector) can be contained by nominal

appreciation (relative prices in the tradable-non-tradable sector can change without wage and price increases). In the short-run this also reduces VAT revenues[8].

For countries that have managed to remove most forms of automatic inflation indexation (in reality it means those countries that have recently been through a period of sub 5% CPI inflation), a period of higher inflation does facilitate fiscal consolidation. Nominal downward rigidities are prevalent in labour market regulations in most NMS (see Radziwiłł and Walewski, 2006). Almost all taxes depend on nominal wages and prices, while some kinds of spending are not indexed to the inflation rate. The biggest gains, both in terms of output and fiscal balance, can be achieved by surprise depreciation and inflation. This is out of the question within the wide band ERM-II, but a NMS can devalue and set a more rigid exchange rate in order to get some inflation. Getting the balance right (improving the fiscal balance while not overdoing it on the inflation side, which could breach another Maastricht criterion) is tricky. The exchange rate-inflation and exchange rate-output pass-through factors differ among the countries, so the size of the effects would vary.

Even though the inflation effect of the currency board or a peg need not be much larger than for a currency band (because of the relatively small likelihood of nominal appreciation becoming permanent through parity revaluation), the average exchange rate during the ERM-II period is likely to be stronger for the band than for the peg[9].

The second channel through which the exchange rate regime influences the budget deficit is debt servicing. As argued above, a floating exchange rate can have a two-fold effect. Expectations of nominal appreciation (as well as lower inflation) should keep the yields and debt service costs down. Despite the non-zero probability of a revaluation, such expectations would be severely limited by the benchmark expectations of a return to the parity, as was the case for most of the current EMU members. On the other hand, short-term exchange rate risk can still influence a large part of the yield curve.

A third indirect influence of the exchange rate regime on budget deficit is related to the 'straightjacket' of the fixed exchange rates. Advanced NMS cannot resort to deficit monetization. However, the perils of slack fiscal policy under a fixed exchange rate or under a currency board are well known, and are also well understood by the policymakers in the NMS. For example, not a single fixed exchange rate NMS (including Bulgaria) had a budget deficit above 2% of GDP in 2005, while all others (apart from Slovenia and Romania) had. Even if hard economic arguments do not fully support the case for a higher budget deficit under the floating exchange rate regime (a possibility of nominal appreciation for the +/-15% band and the related lower debt financing costs, but higher short-term currency risk widening the spreads), the absence of the straightjacket of a fixed exchange rate does seem to make the non-pegging NMS less strict about their budgets.

The public debt impact of the ERM-II regime choice can be due to three factors. The first is the budget deficit, which is likely to be smaller under more rigid exchange rate regimes, and especially under a currency board.

The second factor is inflation, and its influence on nominal GDP, the denominator of the public debt ratio. Again, lower inflation, which should be associated with a (properly aligned) wide ERM-II band, puts such countries in a disadvantageous position.

The third is the exchange rate itself. Nominal appreciation has an immediate public debt reducing impact as the local currency value of Euro-denominated debt falls.

Such a process, in turn, favours wide-band ERM-II members the most. The overall influence of the exchange rate regime depends on the currency composition of public debt. For example, nominal appreciation would certainly be negative for the Czech Republic, which has hardly any foreign public debt. For Poland, where 29% of the state treasury debt is in foreign currency (March 2006), the short-term impact of appreciation would be positive. For countries with a significant share of foreign-currency debt, and short ERM-II membership, the band is likely to be positive for meeting the public debt Maastricht criteria. Longer ERM-II membership favours pegging as a way to keep public debt levels in check. Indeed, the data among the new member states (Romania and Bulgaria excluded due to data deficiencies) seem to support it; pegging countries have 10.7% of GDP average public debt, floaters' debt is 35.8% of GDP, while ERM-2 members were struggling with 58.1% public debt in 2005.

2.6 Parity level choice

There are numerous arguments for both a strong and a weak final parity level. This would make the parity choice difficult enough, yet the problem gets even more complicated thanks to the multinational, and multi-institutional nature of the decision. The recent practice (ERM-2 entry by Slovakia) makes the dilemma somewhat irrelevant though, as the preceding *day* spot rate was chosen as the central parity. This effectively transferred the choice to the financial markets, which, in turn, proved to be free of the worry over the parity choice risk (the spot level simply got validated by the ERM-2 entry). Still, the arguments for a strong or a weak parity level could be employed to choose the exact time of the entry, in the fashion of Smith & Smith's (1990) understanding of the British interwar policy dilemma

Strong local currency parity is probably easier to negotiate, as the process involves agreement of all the member states. A parity considered weak could (and did in the case of Italy), raise protests of other government,

lobbied by industrial groups. The argument is probably somewhat weaker in case of the NMS, as the export sectors tend to be more internationalised than in the OMS of the mid 1990s.

Second argument for a relatively strong parity is the ease of the CPI criterion achievement, indicated above. The argument may be extended to cover not only the period in the run-up to the EMU membership, but also the years after. Interest rate reduction and subsequent credit boom could lead to overheating, excessive wage and inflation growth, and subsequent loss of competitiveness and a severe slowdown period. Portugal is given as an example of such a boom bust cycle. A counterargument here is that recessionary impact of a strong currency on domestic demand is far from guaranteed (see the last argument below), and that revaluation is a perverse way of fighting the risk of future competitiveness loss. A quick answer to overheating woes is fiscal tightening. It did not happen in Portugal, where fiscal tightening was concentrated solely in the debt service area. The real problem of overheating in the currency union is external competitiveness, not even domestic demand growth *per se*. Such issues may be solved either via fiscal policy, or by import of labour force from cheaper countries. Neither macroeconomic external stability, nor even low inflation credibility matter much in a country with monetary policy run by the ECB (recent research points to negligible influence of inflation in the range of 1-20% on growth, see eg Jerzmanowski, 2005), and the currency free from a crisis risk[10].

Finally, depending on the composition of sovereign and private debt, a strong parity could reduce its local currency value, at least in the short-run, assuming imperfect pass-through to inflation/GDP deflator. A strong parity also represents a wealth transfer from (typically foreign) speculators to domestic mortgage borrowers.

There are a few arguments for a weaker currency as well. First, establishing the "right" exchange rate level is subject to major uncertainties. In reality, FEER, BEER estimations yield very wide range of answers, depending on the assumptions plugged in. Because a country with the parity proving to be too strong may always be devalued, citing fundamental pressures, the mistakes in that direction should be, in general, less costly. The positive factor alleviating the need for a weak parity is relatively high tradables' labour productivity growth in many of the NMS. This growth should allow correcting for initial exchange rate misalignments.

3. THE CHOICE OF THE PRE-ERM-II REGIME

Can a specific regime choice before the ERM-II make it easier to meet the Maastricht criteria later on, within the ERM-II? It seems to matter for just three Maastricht criteria: inflation, the budget deficit, and public debt. Interest rates and exchange rate stability do not exhibit sufficient inertia to influence the ability to fulfil these criteria one year ahead of the EMU.

3.1. Inflation

For advanced NMS a floating exchange rate should help in bringing inflation close to the target easier in the long run, which, assuming inflation inertia, should help in meeting the Maastricht criterion.

Many countries seem unable to use any means of fighting very high inflation other than a currency peg. The cases of Romania and Bulgaria are good examples. Romania, with a (dirty) floating exchange rate, had 22.5% inflation in 2002, the highest of all the NMS. Bulgaria, on the other hand, had the highest inflation rate of all pegging accession economies, but it was still at a mere 5.8% compared to 2019.5% in March 1997[11]. Even so, the performance of the NMS-2004 group suggests it is unlikely that the peg will be the only inflation-credible exchange rate regime by the time of EU entry for Romania and Bulgaria. Relative price adjustment will thus be more of a problem than post-transformation price stabilization.

In the run-up to the EU accession, adjustable but managed exchange rate regimes demonstrated less favourable performance as an inflation-fighting tool because of the opposite goal of supporting external competitiveness. Lower inflation-fighting credibility caused, on average, over four percentage points higher inflation in managed, but not fixed, exchange rate regimes. In the later stages it is likely that the temptation to devalue, which is presumably higher in non-fixed managed regime countries than in currency board regimes, may boost inflationary expectations even more in such countries prior to the adoption of the ERM-II (see Froot & Rogoff, 1991 and discussion below)

What is the actual performance of the NMS so far? It matches the indicated inflation performance quite well. If we exclude Bulgaria and Romania from the calculations, the average floating NMS' average HICP inflation in 2005 was the lowest, at 2.29%, for the +/-15% band countries inflation was marginally higher, at 2.69%. The pegging economies stand out with the highest inflation, at 4.55% on average in 2005. Including Bulgaria and Romania increases the average inflation for the managed float (which includes the +/-15% bands), but it can quite safely be said that among the NMS only the pegging countries face inflation problems. Such situation was not permanent; it is worth noting that in 2002 the currency board/peg countries exhibited the lowest inflation of the group.

3.2. The Budget deficit and public debt

Due to nominal rigidities it may be easier to reform public finances with higher inflation. This effect, however, is likely to be limited for those post-transition economies, with indexation mechanisms still not having been completely removed.

The speed of debt accumulation depends as well on bond yields. Nominal appreciation expectations favour the floaters again. However, they suffer from higher short-term foreign exchange volatility. This factor may be even more important than the underlying long-term strengthening trend, which *should* be seen in NMS with low-inflation floating exchange rate regimes.

For longer bonds, the ones that are actually instrumental for the convergence play (investments based on the presumption that the interest rates will converge into the core-EMU levels), another type of exchange risk is also crucial. This is the risk of an up-front depreciation at the gate to the ERM-II, which is almost the last chance of an officially sanctioned devaluation. While all countries face the temptation to devalue, differences still exist. It is hard to imagine that current parities of the Euro-linked currency boards would be altered, which puts Estonia, Lithuania and Bulgaria in slightly more comfortable positions. Policymakers of other exchange rate regime economies could attempt to use a temporary weakness of the currency to establish the ERM-II parity. The recent case of Slovakia puts ERM-II parity expectations quite firmly at the spot rate at the moment of the entry to the system.

The facts on bond yields are mixed. It appears that long-term bond yields have not converged more in floating exchange rate countries than in the currency board ones. Even though the Czech Republic represents the lowest spread (where yields were, at one stage, trading through the German equivalents), the yields and inflation performance of the other countries with floating exchange rate regimes are no better than those of the peggers.

Probably the most important fiscal difference between currency regimes in the run-up to the ERM-II is the recognized value of tight fiscal policy in very rigid exchange rate arrangements. Slack fiscal policy in such countries increases problems with inflation and external competitiveness. It can also cast doubt on the regime altogether. This forces the currency board and rigid peg countries to reform their finances, which subsequently makes it easier to meet the Maastricht criteria on debt and deficit.

	Average HICP	*General gov deficit (% of GDP)*	*Public debt (% of GDP)*
Bulgaria	5.1	1.3*	38.8*
Estonia	4.1	1.7	1.6
Latvia	6.9	0.2	11.9
Lithuania	2.7	-0.5	18.7
Cyprus	2.0	-2.4	70.3
Malta	2.5	-3.3	74.7
Hungary	3.7	-6.1	58.4
Slovenia	2.5	-1.8	29.1
Romania	9.0	-1.4*	18.5*
Slovakia	2.8	-2.9	34.5
Czech	1.9	-2.6	30.5
Poland	2.2	-2.5	42.5

2005 data (Hungary CPI estimate, * denotes 2004 figures)
Source: Ecowin/Eurostat

4. THE REGIME SWITCH

Does the exchange rate regime matter for the dynamics of setting the exchange rate parity in the various versions of the ERM-II?

4.1. From float and managed float

As has already been shown above, models describing the transition from a float to a credible, predefined currency peg in known time (in the case of a fixed-exchange rate version of the ERM-II) point to a jump in the exchange rate towards the peg, and a slow loss of the relationship between monetary fundamentals and the exchange rate. This is because the expectations component of the exchange rate determination becomes more important as the time of the switch approaches (which, in turn, arises from the monetary credibility of the peg).

Ichikawa, Miller & Sutherland (1990) show the dynamics of the conversion from a float to a perfectly credible currency band (similar to a change from, say, a floating Czech Koruna exchange rate to the ERM-II). The analytical solution quickly becomes intractable, but the basic idea is similar to the one proved for transition from a float to a fix. The currency moves from a linear relationship between fundamentals and exchange rate to a familiar S-shaped curve, only slightly bent at first, and in time *0* becomes fully contained within the exchange rate bands.

The size of the jump depends on how far in advance the change is announced. If policymakers fail to inform the markets well in advance, they can be faced with a significant jump in the exchange rate (but not in the interest rate).

The announced peg or band may not be credible for two reasons. Either the parity points to an overly strong local currency, or the parity is set too weak in relation to fundamentals or market conditions. Too strong an exchange rate (relative to the floating rate) requires major monetary tightening to be credible, leading to growth problems. The overall fiscal consequences would depend on the debt levels – the primary deficit would be expected to rise (due to growth-related erosion of the tax base), and debt service costs would also increase as a result of yields rising along with official interest rates. Too weak a parity may prove to be unsustainable either because of the threat to the inflation targets or because of the quasi-fiscal costs related to the necessary money market sterilization operations[12].

In order to avoid monetary policy shocks while targeting a specific exchange rate, policymakers of a floating NMS could resort to state contingency of the regime switch. According to Smith & Smith (1990), after World War I British policymakers wanted to (and let everyone know about it): i) fix the Pound to gold; ii) have the parity stronger than the post-war exchange rate, preferably at the pre-war level; iii) leave some time for the exchange rate to adjust to the desired level, at which point the fixing would occur.

The situation of a floating NMS is not much different. In particular, the markets: i) expect the government/central bank will fix the national currency to the Euro; ii) often believe that the government would like to see the local currency weaker than the average market rate; iii) see that the floating exchange rate regime creates the possibility to do this.

What are the implications of such a regime-switching environment? Smith & Smith (1990) claim that in the case of Britain it resulted in a longer return to the gold standard and a weaker Pound during the adjustment. They got this surprising result by assuming that the Pound had an exogenous tendency to strengthen, which was expected to be counteracted on as soon as the Pound reached the desired parity level.

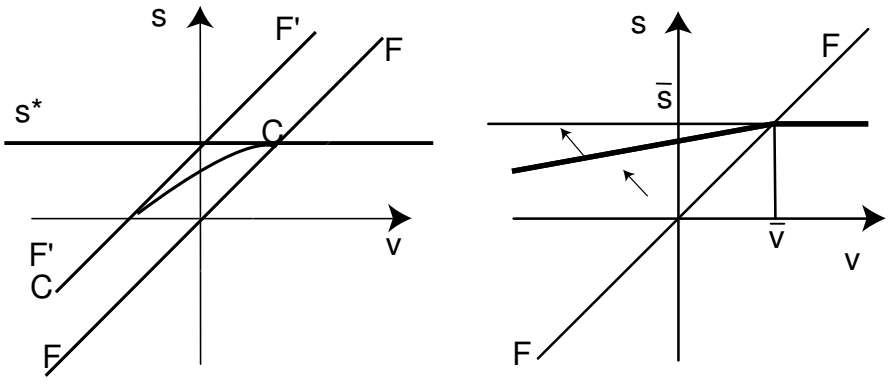

Figure 3. State (left) and time and state (right) dependent regime switches

The left panel of *Figure 3* illustrates this in a set-up similar to Krugman & Rotemberg's *Figure 1 F'F'* is a free floating relationship between fundamentals and exchange rate, which assumes expectations of a long-run nominal appreciation (e.g. due to relative price adjustments). *FF* is a free floating relationship without such expectations – it points to a weaker exchange rate than *F'F'* (the difference depends on the expectations parameter, and the drift in fundamentals). If the authorities promise to fix the exchange rate as soon as it reaches the level *s**, rational speculators must expect an end to the fundamental appreciation trend at that point. Therefore the fixing point must lie on the *FF* line (from that point onwards no appreciation is expected). Thus, the intermediate regime must be between the two curves, as the expectations of appreciation slowly give way to the reality of fixing.

The conclusion of the argument is that the government's known wish to make use of the appreciation trend to fix the parity at a stronger level leads to a weaker exchange rate than otherwise might be expected in the run-up to the fixing.

As Miller & Sutherland (1992) point out, there are two problems with the application of such a paradox to Britain's return to gold in 1925. Firstly, the claim that the switch was not at all time-contingent is unjustified. Similarly, it can be claimed that the NMS would not be willing to wait forever for the exchange rate to reach the proper level. The timing of the switch could occur earlier if conditions proved right, but still no later than a specific date (for example, one determined by the political cycle formula: election date minus 2 years to allow for EMU entry before elections). Assuming money velocity does not follow any trend, the switch would look like that shown in the right panel of *Figure 3*.

The free float exchange rate (s)-monetary shock (v) locus is shown as the 45 degree line FF. The desired exchange rate is s-bar. The credible announcement of the fixing within some time frame (but not necessarily at a certain date) shifts the exchange rate-monetary shock locus up for $v<v$-bar (thick line). However, if v exceeds v-bar, the fixing occurs. This is where state-dependency kicks in. As time leading up to the fixing date passes, the expectations component starts to matter more, and the bold curve becomes more and more horizontal.

The second problem is the fact that Smith & Smith (1990) interpreted the monetary aggregates drift towards a stronger pound as exogenous. Expectations of the trend ending once the exchange rate has reached the desired level could have weakened the spot rate. If the trend was in fact caused by British policymakers, then the result would be completely the opposite (as long as the Pound is trading weaker than the desired level, the authorities will continue to tighten). Because of the fundamental nominal strengthening trend in the case of the NMS, the Smith & Smith (1990) model could only be applied for strong target exchange rates, where fixing prospects mean expectations of the end of the underlying exogenous trend. The opposite case is more likely, where the desired weaker exchange rate requires changes in policy. In this case the exchange rate would approach the desired (weaker) level earlier than in the free-floating case (which could never happen, given the fundamentals).

Froot & Rogoff (1991) argue that the known date of giving up monetary authority creates expectations of currency weakness and widening of the interest rate spreads just ahead of the EMU accession date. Their idea is that after the transition the policymakers' credibility is useless (national central banks have no monetary policy powers in the EMU anyway). Therefore policymakers face the temptation to wipe out their domestic-currency denominated debt, or (assuming Keynesian price rigidities) to stimulate the economy through real exchange rate depreciation, which may then ease the burden of necessary fiscal reform. The cost of devaluation is known to the policymaker, but not to the public, which knows only the bounds of the uniform distribution of the cost.

It is then rational for the public to attach an ever-increasing probability to the event of devaluation as the date of giving up monetary policy approaches (the costs of doing so go down with time as the number of periods in which credibility matters falls). This makes the government pay a higher inflation premium on the local currency denominated debt. In the spirit of the second-generation model, this may mean that the government is ultimately forced to devalue.

The idea that EMU entry presents a strong temptation to inflate are far from purely theoretical. This is probably the idea behind the ERM-II requirement of not devaluing. In the model, it means that the cost of floating becomes extremely high, as it prevents EMU entry altogether.

The cost of the ERM-II entry depreciation, however, is likely to be less forbidding. This means that the final period of the process of ERM-II entry may be characterized by rising interest rate spreads and that shortening the period of accession will not eliminate the effect. What can the government do about it? The key is to show investors that C in *Figure 3* is very high and that devaluation is neither feasible nor desirable.

Means to achieve this could include convincing the public that other EU MS will not tolerate competitive devaluation. While in case of unilateral Euroization EU institutions have very limited influence on the parity rate, both EMU and ERM-II entry requires agreement of all the EMU member states, according to Article 123 (5) of the Treaty. Does this mean that an up-front competitive devaluation is impossible? Not entirely; politics rules all such decisions, and there is a possibility of key EMU MS agreeing in exchange for fishing rights or CAP reform for example.

The second possibility is to convince the public that devaluation/depreciation is not desired, for whatever reason. While this is not easy given the model, the authorities can at least stop talking about the need for a weaker currency. It is simply costly.

The third possibility is pegging the currency quickly and permanently.

The final option is indexing the debt to a foreign currency. This way, devaluation would be counterproductive for reducing the public debt. Also useful are binding debt level limits expressed as a percentage of GDP. The Maastricht limit of 60%, as well as the equivalent Polish constitutional limit may make devaluation impossible, as it would influence not only the numerator, but also the denominator (nominal GDP level expressed in Euros). Thus, with only 10% foreign debt, but an overall debt level of 60% of GDP, any depreciation would require a costly fiscal adjustment program, even if inflation was to make up for the loss in nominal GDP.

Theoretical models of a perfectly credible regime change announcement point to a gradual shift of the currency towards a new parity, with fundamentals losing their importance as the critical day approaches. The

situation with an endogenous parity level or an endogenous switch time is more complicated, but leads to interesting conclusions. First, the markets have reason to expect the government to use the end-of-game argument to devalue and wipe out its domestic currency-denominated debt. This could lead to an increase in bond yields and a weakening of the market exchange rate prior to the parity rate announcement. Second, in the unlikely case of the government setting the parity stronger than market rate or of an exogenous trend in exchange rate (caused for example by relative price adjustments), the convergence of the nominal rate to the desired level would be slowed down.

4.2. From a fixed exchange rate

For NMS facing a fundamental real appreciation trend, pegged exchange rates and currency boards can normally last forever. The typical first-generation crisis model dynamics shows growth in domestic money offset by falls in reserves: money supply must be held constant in Flood & Garber (1984), as PPP and uncovered interest parity ensures prices and interest rates do not change, and neither does money demand while the exchange rate stays fixed. One way to describe the NMS situation is to lift the PPP condition by adding non-tradables' prices, which exogenously drift upwards. This ensures that nominal money demand grows together with overall price level, which, if domestic credit remains constant, boosts reserves in each period of the peg[13].

With the announcement of a float, money supply becomes constant, and changes in the non-tradable price level should translate into expected nominal appreciation and lower interest rates. The change depends on the rate of non-tradables' inflation, their weight in the consumer price index, and the interest rate elasticity of money demand. A sudden switch to a float would then appreciate the currency immediately.

The announcement of the end of the peg some time ahead of the event would ensure no exchange rate jump. It would boost the money supply (through higher growth of foreign exchange reserves) to the point that the peg exchange rate is also a free float solution. This growth in money supply would ensure interest rates temporarily drop ahead of the end of the peg to maintain money market equilibrium amid prices responding to the (still pegged) exchange rate and a constant trend in non-tradable prices.

The transition to the currency band would depend on the parity chosen, and the results are shown in the two panels of *Figure 4*. A surprise switch into the currency band is equivalent to a vertical jump from a point on the *FF* curve (where money demand increases are offset by reserve growth) to the *S*-shaped curve *CC*, based on free float *F'F'* (where money demand increases are not offset by money supply changes), and expectations of monetary expansion/contraction at the edges of the band. For the currency band parity set at the peg level, the step appreciation for immediate regime change would be smaller than for the switch to a float. The currency could appreciate even if the parity is set weaker than the peg. It would appreciate more than in the floating case if the parity is set much stronger than the peg (unlikely in the NMS case).

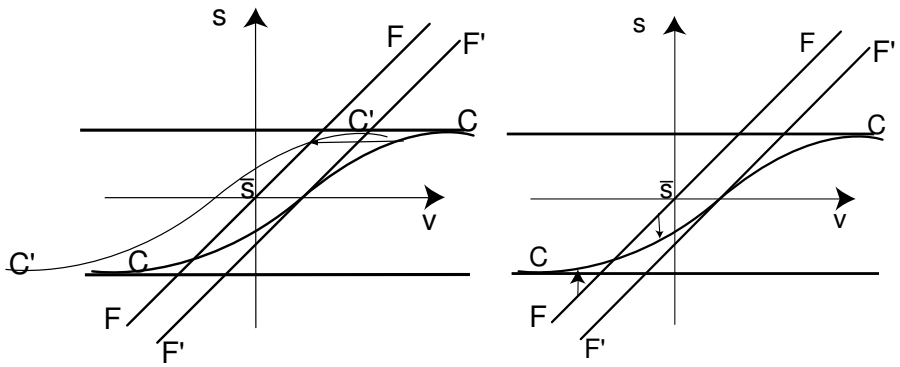

Figure 4. Surprise (left) and pre-announced (right) switches into a currency band

As in the floating case, prior announcement of the currency band (likely to happen in the ERM-II) would imply an inflow of reserves, and a temporary interest rate fall for a wide range of parity options, and capital outflow for an extremely weak parity.

A special case would occur if the peg were to be outside the currency band. Setting the stronger edge of the band weaker than the peg would imply the commitment to print as much local currency as was needed to get the currency within the band. Such a possibility, along with a peg still in place until the moment of the introduction

of the band, would require an anticipated jump in the exchange rate, providing infinite profits for speculators. Such a situation should never occur in competitive and open financial markets. If the peg is too weak relative to the pre-announced band, the result would be an infinite inflow of capital and a forced appreciation of the local currency.

5. FORGETTING THE DOLLAR

Large foreign exchange volatility on G-3 markets highlights a problem for some of the NMS. EMU entry could actually increase the exchange rate volatility faced by some economic agents. This could happen if the EUR/USD exchange rate is more volatile than the prior USD/local currency exchange rate. Below, we propose a method of measuring attachment of the local exchange rate to key world currencies. As a result, we calculate the share of the Euro, S_{EUR}, in an optimal basket which minimizes currency risk (while financing capital inflow or investing abroad)[14].

$$S_{EUR} \equiv \frac{Var_{USD} - Cov(EUR,USD)}{Var_{USD} + Var_{EUR} - 2 \cdot Cov(EUR,USD)} \tag{6.6}$$

S_{EUR} is the proportion of the Euro which the investor (or local firm financing itself from abroad) should choose to minimize its risk to EUR/USD rates.

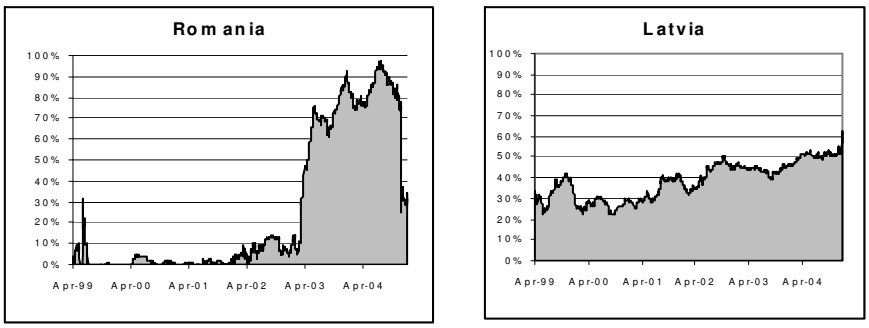

Figure 6.5. Euro share in the optimal basket

In a country which has the exchange rate pegged to the USD, EUR/USD volatility translates one-to-one into EUR/local currency changes. Lithuania used to be such a country, but stopped being one as soon as the reference currency for the currency board was switched to EUR. In the case of managed and floating exchange rates, exposure of the local currency to cross-exchange rate movements is much less obvious, making the tool useful.

Among the NMS, only Romania and Latvia still exhibited some attachment to the USD (see *Figure 6*) by early-2004[15]. Thus the Dollar's weakness against the Euro in 2003-2004 was translated into larger LTV/EUR and ROL/EUR depreciation.

The sources of a large share of USD in the optimal basket could include dependence on raw materials trade, large USD-denominated debt, historical and cultural reasons, and the exchange rate regime. The first two causes are fundamentally justified and could call for some caution in establishing a very rigid exchange rate regime with respect to the Euro. The other two can quite safely be ignored, being endogenous and dependent either on the present or past currency regime[16].

Lithuania and Hungary managed to reduce significant shares of USD in their currency trading baskets to (close to) zero in less than a month. Lithuania achieved this by switching the currency board reference currency from USD to the Euro, while in Hungary it was enough to change the composition of the currency basket from 30% USD and 70% EUR (quite well reflected in the optimal basket calculations), to 100% Euro. This experience suggests that the introduction of any form of ERM-II could be sufficient to change trading habits.

6. CONCLUSIONS

Assuming similar CPI inflation rates at the beginning of the ERM-II period, a wide band should make it easiest to meet the price stability criterion, followed by a narrow-band arrangement and pegs.

The full width of the wide-band ERM-II is insufficient for having the exchange rate judged as stable; non-symmetrical arrangements (with tighter weaker side of the parity) are likely to be adopted in practice. Currency

boards look the most credible, yet quite unsuitable for most of the countries which failed to adopt them quickly enough.

Fixed exchange rate arrangements should be better for the budget deficit criterion, followed by the narrow and wide bands. Public debt statistics, however, could be aided by the nominal appreciation possibility, provided foreign debt is significant and exchange rate-inflation pass-through is not too fast.

The current standing of the NMS suggests that rigid exchange rate regimes, including pegs and currency boards allow by far the fastest nominal convergence. The straightjacket they impose on fiscal policy, and the resulting smaller accumulation of public debt and currency stability are undisputed. Bond yields are not systematically higher in such countries, as the lack of nominal appreciation is compensated for by a lower short-term exchange rate risk. Finally, inflation, while theoretically suffering from the lack of a nominal appreciation buffer that compensates for relative price adjustments, does not seem to be as big a problem so far: on average inflation in currency board countries has been very close to that of the floating exchange rate countries.

A fixed exchange rate does not solve the problem of final parity speculations fully. However, the countries with Euro-linked currency boards are especially likely to avoid a bond yield pick-up and the higher fiscal costs related to the risk of the final parity being set at a weaker level than that prevailing during the pre-ERM-II peg period. What is more, the unlikely switch from fixed exchange rates into a target zone with a weaker parity may still lead to nominal appreciation.

The temptation to devalue for countries with other exchange rate regimes will be mitigated by political pressures (the required agreement of other MS to the final parity), by the fiscal costs of sterilized intervention defending the stronger edge of the band, by the potential inflationary impact of such a move, and by the short-term effect of foreign-currency denominated debt inflation, which could offset the reduction of the real value of local currency debt.

---

[1]NOTES

Yet recent research suggests that the scale of the HBS effect is not significant, possibly thanks to high non-tradables' productivity growth (see for example Blaszkiewicz, Kowalski, Rawdanowicz & Wozniak, 2005).

[2] It is likely that the „fixed rate rule" pointing to the ERM-II parity equal to the irrevocable rate will lose its power. As of 2Q06 Slovakia is widely expected to peg the koruna stronger than the ERM-II rate (see eg Robertson 2006)

[3] Delgado & Dumas (1992) show that for trended fundamentals (like trend money demand increase related to relative price adjustments) widening the currency band widens the bounds on fundamentals (the intervention limits) by three orders of magnitude. For mean reverting fundamentals the result holds only if the band is centered on the mean reversion point.

[4] Other models of this kind are shown in Bertola & Svensson (1993). Flood & Garber (1992) extend the model to allow for discrete interventions.

[5] See for example Garber & Svensson (1994) for the derivation of the solution, which uses Ito's lemma

[6] For other models of this kind see for example Drazen (1999) and Eichengreen, Rose & Wyplosz (1996).

[7] Formally this is *not* excluded by the rules; one could imagine a situation of a deeply deflationary economy struggling with trade competitiveness, in which such a devaluation could be contemplated. In practice, devaluation like this never happened, and the NMS so far enjoy (on average) better growth than the OMS.

[8] Real exchange rate appreciation, however, increases wealth, imports and consumption. As such, the losses in exporters' CIT could well be compensated by higher VAT intake.

[9] Much depends on the parity set, but there is no reason to believe the parity would be weaker for the band.

[10] While currency crisis is impossible in the EMU, a banking crisis is, thus the need for proper prudential regulations

[11] To be fair, Romania had 164% YoY CPI inflation in that period.

[12] The old argument about sterilized interventions not being effective in countries with a fully opened capital account is important here. Taking this argument seriously, the sterilization costs would be infinitely high, assuming local currency short-term interest rates are higher than their foreign equivalents (portfolio balance arguments would ensure the capital inflow is not infinite).

[13] Another option is to include a GDP growth differential which increases *real* money demand.

[14] I am grateful to Bartosz Pawlowski for pointing to the simple analytical solution to the problem.

[15] In early 2006 the exchange rate trading was utterly dominated by Euro in the two countries mentioned. Still, the mechanism can be used for evaluating e.g. Turkish, or Ukrainian dependence on the USD trading.

[16] Yet abrupt change in volatility patterns created for whatever reasons could cause some problems for the real economy, creating unexpected currency risk. For example, if a dollarized property market suddenly becomes Euroized, initially optimal investment decisions like USD financing become suboptimal. USD debt, at first naturally hedged by the fact that the value of the real estate is also quoted in Dollars (sudden Dollar strength increases also the local currency value of the property), becomes unhedged when house pricing switches to local currency or the Euro.

REFERENCES

Bertola, G. & Svensson, L.E.O. (1993). Stochastic Devaluation Risk and the Empirical Fit of Target-Zone Models. *Review of Economic Studies*, 60(3), 689-712, July. Blackwell Publishing.

Blaszkiewicz, M., Kowalski, P., Rawdanowicz, L. & Woźniak, P. (2005). Harrod- Balassa- Samuelson Effect in Selected Countries of Central and Eastern Europe. CASE Reports, 57. CASE - Center for Social and Economic Research.

Buiter, W. & Grafe, C. (2002). Anchor, float or abandon ship: Exchange rate regimes for the Accession countries. *EIB Papers*, 7(2), 51-71.

Corsetti, G., Pesenti P. & Roubini, N. (1999). Paper tigers? A model of the Asian crisis. *European Economic Review*, 43, 1211-1236.

Csermely, A. & Vonnak, B. (2002). The role of the exchange rate in the transmission mechanism in Hungary. Paper presented at the research meeting on '*Monetary Policy Transmission in the Euro Area and the Accession Countries*', National Bank of Hungary, October.

Djajić, S. (1989). Dynamics of the exchange rate in anticipation of pegging. *Journal of International Money and Finance*, 8, 559-571.

DeGrauwe, Paul & Gunther Schnabl (2003), Nominal versus Real Convergence with Respect to EMU Accession. How to Cope with the Balassa-Samuelson Dilemma, mimeo

Delgado, F. & Dumas, B. (1992). Target zones, broad and narrow [in:] Krugman, P. & Miller, M. (eds.) *Exchange Rate Targets and Currency Bands*, Cambridge: Cambridge University Press.

Drazen, A. (1999). Political Contagion in Currency Crises. *NBER Working Paper*, 7202

Eichengreen, B., Rose, A.K. & Wyplosz, C. (1996). Contagious Currency Crises: First Tests. *Scandinavian Journal of Economics*, 98 (4), 463-484.

Flood, R. & Garber, P. (1984). Collapsing exchange rate regimes: some linear examples. *Journal of International Economics*, 17, 1-13.

Flood, R. & Garber, P. (1992). The linkage between speculative attack and target zone models of exchange rates: some extended results [in:] Krugman, P. & Miller, M. (eds.) *Exchange Rate Targets and Currency Bands*, Cambridge: Cambridge University Press.

Froot, K.A. & Rogoff, K. (1991). The EMS, the EMU, and the transition to a common currency. *NBER Working Paper*, 3684.

Garber, P. & Svensson, L.E.O (1994). The Operation and Collapse of Fixed Exchange Rate Regimes. *NBER Working Paper*, 4971.

Habib, M. (2002). Financial contagion, interest rates and the role of the exchange rate as a shock absorber in Central and Eastern Europe, *Discussion Paper*, 7/2002, Bank of Finland Institute for Economies in Transition (BOFIT).

Halpern, Lászlo & Wyplosz, Charles (2001), Economic Transformation and Real Exchange Rate in the 2000s: the Balassa-Samuelson Connection. Mimeo. http://hei.unige.ch/~wyplosz/lh_cw_bs.pdf

Ichikawa, M., Miller, M. & Sutherland, A. (1990). Entering a preannounced currency band, *Economics Letters*, 34 (4), 363-368. Elsevier.

Jerzmanowski, Michal (2006), "Empirics of Hills, Plateaus, Mountains and Plains: A Markov-Switching Approach to Growth" . *Journal of Development Economics*, Forthcoming

Krugman, P. (1979). A model of balance of payments crises. *Journal of Money, Credit, and Banking*, 11, 311-325

Krugman, P. & Rotemberg, J. (1992). Speculative attacks on target zones [in:] Krugman, P. & Miller, M. (eds.) *Exchange Rate Targets and Currency Bands*, Cambridge University Press, Cambridge.

Miller, M. & Sutherland, A. (1992). Britain's return to gold and entry into the EMS: joining conditions and credibility [in:] Krugman, P. & Miller, M. (eds.) *Exchange Rate Targets and Currency Bands*, Cambridge University Press, Cambridge.

Obstfeld, M. (1994). The Logic of Currency Crises, *Cahiers Économiques et monétaires*, 43, p. 189, Banque de France.

Obstfeld, M. & Stockman, A.C. (1985). Exchange-Rate Dynamics [in:] Kenen, P.B. & Jones, R.W. (eds.) *Handbook of International Economics*, 2, Amsterdam: North-Holland.

Pelkmans, J., Gros, D. & Nunez Ferrer, J. (2000). Long Run Economic Aspects of the European Union's Eastern Enlargement. *Working Paper*, 109. Scientific Council for Government Policy, WRR.

Radziwiłł, Artur & Mateusz Walewski (2006), Future EMU Membership and Wage Flexibility? [in:] Dabrowski, Marek; Rostowski, Jacek (eds.) *The Eastern Enlargement of the Eurozone*, Springer

Rodrik, D. & Velasco, A. (1999). Short Term Capital Flows. *NBER Working Paper*, 7364.

Rostowski (2006), When Should the New Member States Join EMU? [in:] Dabrowski, Marek; Rostowski, Jacek (eds.) *The Eastern Enlargement of the Eurozone*, Springer

Smith, G. W. & Smith, T. (1990) Stochastic process switching and the return to gold, 1925. *Economic Journal*, 100, 164-175.

Szczurek, Mateusz (2006), Exchange rate Regimes and Nominal Convergence [in:] Dabrowski, Marek; Rostowski, Jacek (eds.) *The Eastern Enlargement of the Eurozone*, Springer