Exchange rate regimes and Poland's participation in ERM II

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Abstract

In this paper we address some of the issues resulting from Poland's will to join the Economic and Monetary Union. Our attention focuses on topics related to the possibly soon entry into the European exchange rate mechanism (ERM II). We consider the possible paths of entering the system, providing a detailed analysis of the choice of fluctuation margins and the central parity.

Further, we analyze the possible monetary policy strategies within the system. We describe the benefits and drawbacks of ERM II participation and consider the eventuality of parity revaluation. In this part estimates of the Balassa-Samuelson effect for Poland are provided.

Keywords: Transition economies, ERM II, Balassa-Samuelson effect, equilibrium exchange rate

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Introduction

As the enlargement of the European Union in 2004 is almost certain, the preparation of the accession countries to join the Eurosystem gains importance and momentum. The National Bank of Poland is strongly willing to join the euro area as soon as possible and, with respect to its competence, feels responsible for the best preparation of Poland for this event.

To join the EMU, Poland has to fulfill the Maastricht convergence criteria. First, this requires the central bank to lower inflation in a credible way. Second, the credibility of low inflation must be confirmed by market expectations in form of low long-term interest rates.Third, this requires the government to make an effort to lower the public finance deficit and prevent public debt from increasing excessively. Finally, this requires the Ministry of Finance and the NBP to prepare and introduce a successful program of participation in the Exchange Rate Mechanism (ERM II).

One paper cannot be enough to describe all the issues arising only from the necessity to fulfill the convergence criteria. Hence, we will concentrate on topics related to the perspective of ERM II participation. The rest of the paper is structured as follows. Part 1 describes briefly the Polish experience with exchange rate regimes in the period 1990-2002. Part 2 discusses the issues related to entering ERM II. Special interest will be placed on choosing the right parity and the width of fluctuation bands. Part 3 will be devoted to describing our view on how to proceed after joining the system. In particular we will try to estimate the necessary appreciation of the Polish currency during the participation period, discuss issues resulting from the Balassa-Samuelson effect and consider the possibility of revaluing the central parity during the participation. Part 4 concludes.

1 Towards ERM II

For the last 12 years, the Polish economy has witnessed a gradual drop in the inflation rate. Since 1990 CPI inflation decreased more than two hundred times, from over 250% in December 1990 to a low of 0,9 in December 2002. During this period the exchange rate regime has been frequently adjusted to changing economic conditions. When suppressing hyperinflation in 1990

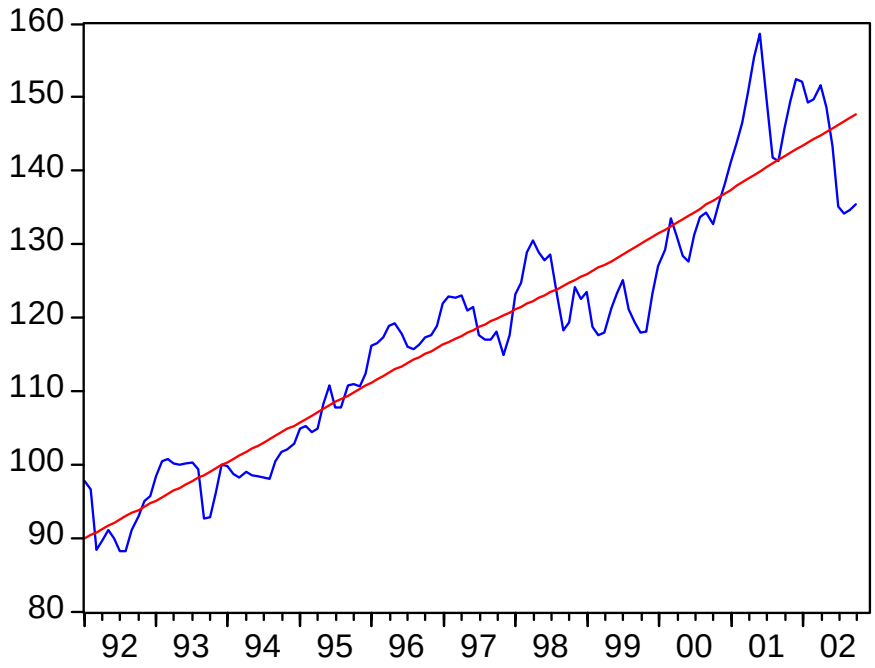
required a credible nominal anchor for the economy, the zloty was fixed to the US Dollar. In fall 1991, to soften further real appreciation of the currency, Poland introduced a crawling peg. The pre-announced rate of crawl was set lower than the difference between domestic and external inflation. It allowed tempering the real appreciation of the currency, giving some room for smooth real sector adjustment. In this way polish monetary authorities avoided shock loss of competitiveness of enterprises. This mechanism became unsustainable in 1995, when huge foreign currency inflows (surplus in current account, as well, as FDI and portfolio investment) generated an enormous increase in foreign reserves (more than USD 9 bn within 12 months, what equalled 140% increase in reserves) and NBP sterilizing operations. Again the exchange rate regime had been changed, this time to a crawling band system, with gradually widened fluctuation margins[2].

In 1998, the newly established Monetary Policy Council (MPC) decided to change the monetary policy strategy of the NBP, and introduced the regime of direct inflation targeting (DIT). The "*Medium-Term Strategy of Monetary Policy 1999-2003*" set a goal of below 4% for the inflation rate in 2003, and announced floating the zloty exchange rate in the future. According to the Strategy, this move was supposed to let market forces bring the market rate closer to its equilibrium level, before the Polish currency would enter ERM II.

The floating found place in April 2000, however actually the deep regime changes occurred already in 1998, when the NBP stopped FX interventions, and in 1999, when it ceased so called fixing operations with the banking sector. Soon after the floating, in July 2000, the process of strong appreciation, both in real and nominal terms started (Fig. 1). However, as it can be seen, finally the real effective exchange rate returned to its long run appreciation path of about 5 % per annum. Thus, although increased volatility of the series can be clearly observed, the evidence speaks strongly against the often-repeated view, that floating the exchange rate would dramatically speed up real appreciation trend.

[2] The history of exchange rate regimes in Poland is presented in Appendix 1.

Figure 1: Zloty real effective exchange rate (CPI deflated) and H-P trend 1992-2002



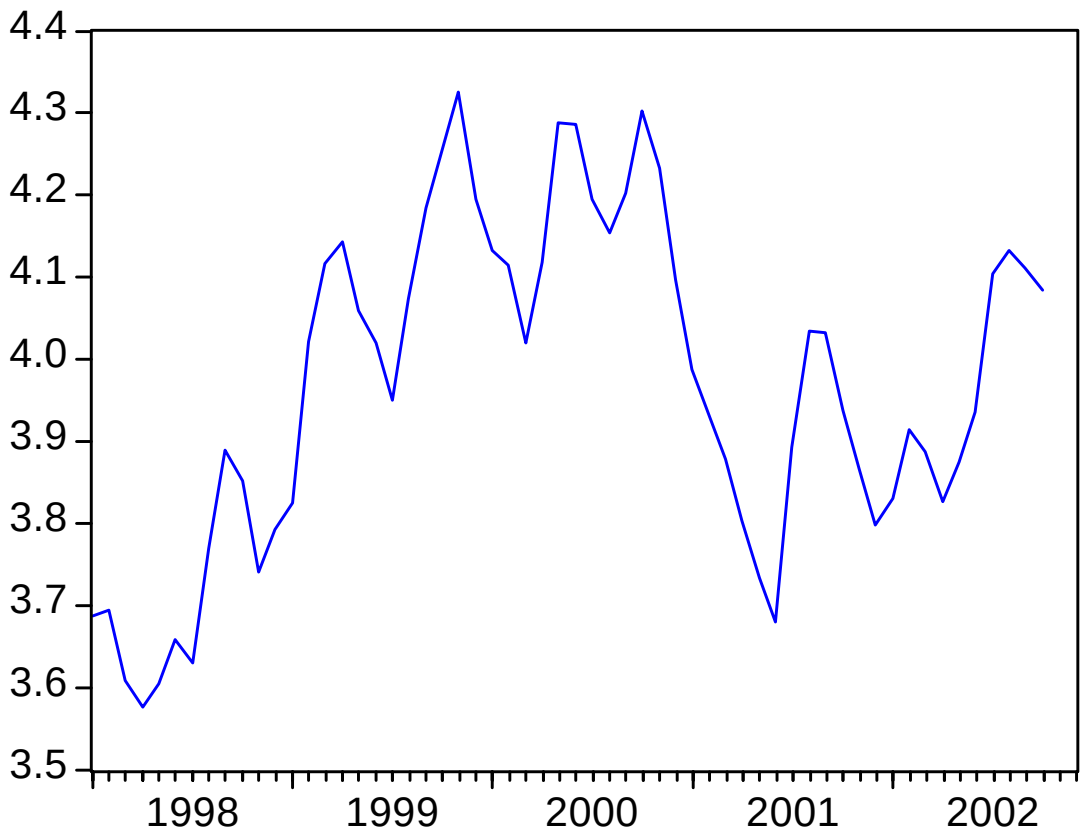
Source: NBP

Abandoning the crawling band helped to resolve one of the most serious problems faced by the Polish monetary policy in the 1990's - the problem of internal inconsistency. Sterilized interventions in the FX market led to a fast increase in foreign reserves and debt issued by the central bank to mop up the resulting liquidity. In 1998 the estimated liquidity surplus absorbed by the central bank exceeded PLN 28 bn (USD 8 bn). Since excess liquidity had been mopped up via open market sales of NBP bills, the central bank incurred a huge cost estimated at nearly 1% of GDP in 1998. Since foreign exchange interventions had been abandoned, the amount of outstanding NBP bills has been slowly decreasing. Both the reduction of the excess liquidity itself, as well as falling interest rates contributed to significant lower cost of sterilization which amounted approximately to 0.3% of GDP in 2001. The expected cost of servicing the NBP debt in the next years should shrink further (Szpunar 2002).

It can be also said with much certainty that the floating exchange rate protected Poland against turbulence that recently took place in emerging markets around the world. The reactions at the

Polish FX market were tempered even in the event of the Argentinean crisis, or the huge external imbalance on the Polish current account which exceeded 8% of GDP in Q1 2000 (Fig. 2).

Figure 2: Nominal exchange rate of the zloty against the basket[a)], 1998-2002



a) Basket consists of 45% USD and 55% EUR.

Source: NBP

From the perspective of over 3 years it can be said unambiguously that the floating exchange rate was a good choice for the Polish economy. Not only did it solve the problem of long run inconsistency of monetary policy, but also immunized the economy against external shocks that could have otherwise caused a currency crisis. There is no simple *a priori* first best choice of an exchange rate system for any country. Considered as an element of economic policy it depends on the fiscal and monetary policy applied by a country. Too loose fiscal policy may lead to an

inconsistent policy mix, and in case of fixed exchange rate, to a currency crisis. In our opinion, given the track of fiscal policy the choice made for Poland was adequate. There is an additional argument against fixed regimes for emerging markets – a country with even sound policy mix may not sustain a contagion effect. Hence, in our view, **Poland should stick to the floating exchange regime in the nearest future, until the ERM II entry.**

2 ERM II - getting inside

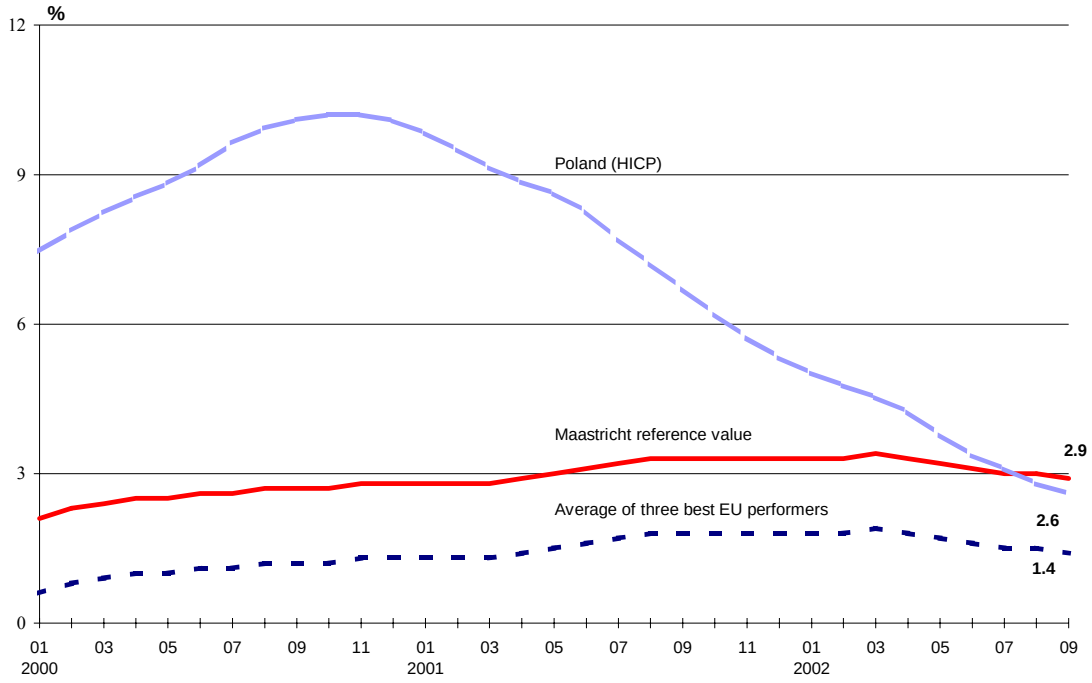
As it has previously been noted, direct inflation targeting with a floating exchange rate seems to be a well designed monetary policy regime for a country like Poland. Thus, from our point of view, the quasi-fixed exchange rate system we have to go through in order to fulfill the Maastricht criteria cannot be considered as a very tempting one. Consequently, it seems to be a reasonable solution to proceed in a way that will guarantee **as short as possible participation in ERM II**. In view of the EMU accession procedure this means not much longer than two years of participation, provided that at the moment of evaluation Poland will fulfill the remaining convergence criteria.

2.1 Fulfilling the convergence criteria

Hence, from our point of view, entering the ERM II will make sense only, if the remaining Maastricht criteria are to be met within 2 years. Below we present a brief discussion of all the criteria:

i) **inflation:** as already mentioned, in mid 2002 CPI inflation came to a low level of only 1.3%. To our best knowledge, the HICP for Poland shows only minor difference against CPI, and its average over the last 12 month has fallen in August 2002 to 2.9% so that **Poland was able to fulfill, for the first time, the Maastricht inflation criterion** (Fig.3). It is the intention of the MPC to stabilize the CPI growth rate at 3% (with a tolerance band of +/- 1 p.p.) in 2003. If we assume a similar ongoing target for the future and consider that the reference value can be expected to fluctuate around 2-2.5% over the long run, inflation will probably require a slight lowering before the evaluation. This, however should not be a major issue.

Figure 3: HICP inflation in Poland (12 month average) vs. the reference value 2000-2002.



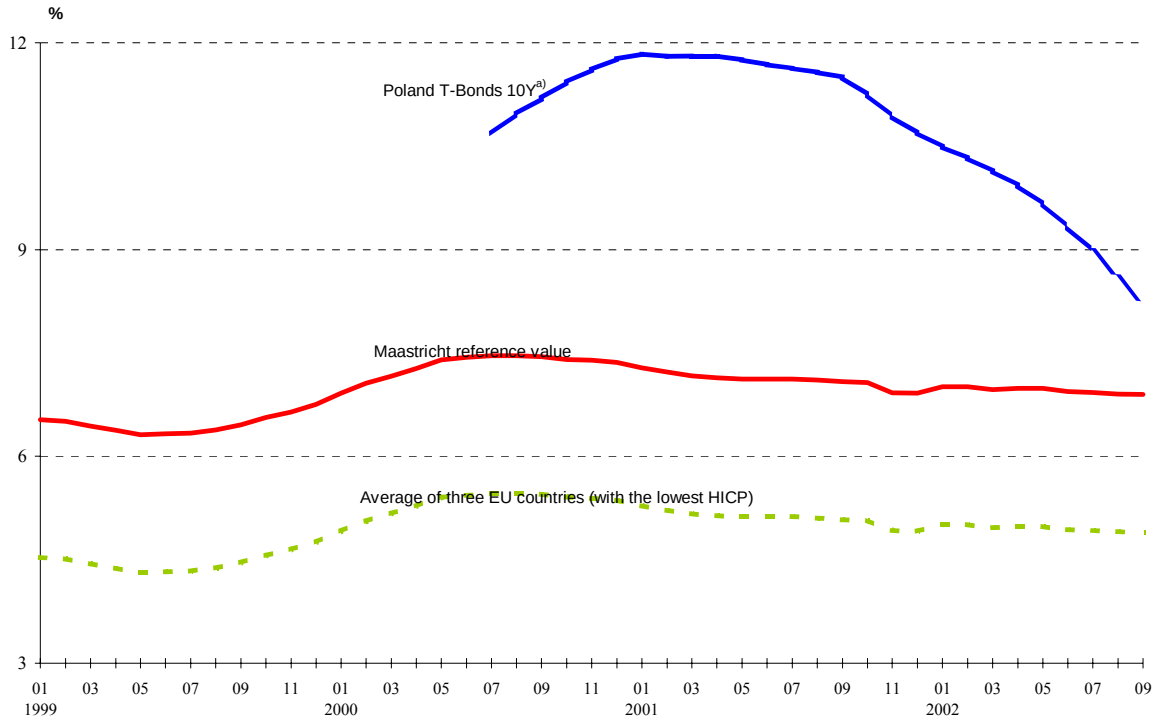
Source: NBP calculations based on Eurostat and Central Statistical Office data

ii) **interest rates:** in September 2002 Polish 10-year bonds were traded with a yield of approximately 6.4%. However, as interest rates in Poland have been falling over the last 20 months, the 12-month average still is much higher than the current reference value (Fig. 4). One can be pretty sure that, at the latest after entering ERM II, interest rates will gradually converge to EMU levels, as it happened in Greece in 1999 - 2000, provided that the parity would be credible (Borowski, Woreta 2002).

iii) **public debt:** in 2001 public debt attained 38.7 % of GDP (Tab. 1). Although the ratio has been rising and is projected to grow further over the recent future, we do not see a major threat that the explosion of debt over the 60% reference value could jeopardize Poland's accession to the EMU. This is because of the very strict legal provisions, which oblige the government to provide a budget in surplus if the debt (increased with anticipated guaranty and surety payments) to GDP ratio exceeds 55%. Moreover, the constitution does not

permit to contract public loans or guarantees that would engender the public debt exceeding 60 % of GDP.

Figure 4: Yield on 10-year Polish government bonds (12-month average) and the reference value 1999-2002.



Source: NBP calculation based on Eurostat and Bloomberg data

Table 1: Public debt in Poland (as % of GDP) 2001-2005

Specification	2001	2002	2003	2004	2005
	Execution	Forecast			
Public debt increased with anticipated guaranty and surety payments	43.2	49.7	52.2	53.8	54.0
General government debt (ESA'95)*	38.7	43.3	45.1	46.0	45.6

* *Acc. to the ESA 95, the general government sector debt does not include matured liabilities of budget units that are treated as accrual basis expenditures but they constitute an element of the debt according to the Polish methodology.*

Source: PEP (2002)

iv) **public finance deficit:** the public finance deficit in 2002 will probably exceed 5.4% of GDP (4.1% according to ESA 95), which is well above the Maastricht benchmark. Although the government projections are relatively favorable and point at going below 3% in 2005 (Tab. 2), **in our opinion the deficit can become the major obstacle to the fulfillment of convergence criteria**. Not only is the projected safety distance from the reference level relatively small[3] (only 0.8 p.p.), but also is 2005 an election year and those are never favorable for fiscal tightening. Moreover, the estimates are based on relatively high growth rate assumptions, which seem realistic only in case of structural reforms being pursued (Borowski, Woreta 2002).

Table 2: Public sector balance (as % of GDP) 2001-2005

	2001	**2002**	**2003**	**2004**	**2005**
	Execution	Forecast			
Balance (ESA'95)	-3.5	-4.1	-3.6	-3.3	-2.2

Source: PEP (2002)

Summing up, it could be basically possible for Poland to fulfill the convergence criteria during an evaluation in 2006. **This implies that Poland would enter ERM II in 2004.** Relying on Greek experience (Garganas, Tavlas 2000) we must expect that the process of negotiating the participation conditions with the European Commission will take at least 3 months. This makes the following scenario possible: immediately after entering the EU (1 May 2004) Poland starts negotiations with the Commission. In the third or fourth quarter 2004 we join the ERM, and in fall 2006 Poland is positively evaluated in Convergence Reports of the European Commission and the ECB. This scenario seems tight but realistic, provided that it will not be jeopardized by the aforementioned problems with fiscal policy.

Having said this, following issues have to be analyzed: First, the central parity has to be chosen. Second, the band width is not unambiguously stated, and theoretically we can choose between +/- 2.25 and +/-15%.

[3] It must, however be noted that the recent figures available from the Ministry of Finance, presented in the 2003 Budget Law, are more favorable and point at a deficit of only 1-2% in 2005.

2.2 Choosing the central parity

Choosing the central parity for ERM II will be a difficult issue, not only because of supposedly hard negotiations with the European Commission and the ECB, but also due to the analytical burden. As there are various ways to calculate the equilibrium rate of exchange, there is very scarce knowledge, which is the best one, and they will probably return different results (ECB 2002 b). Despite these problems, below some preliminary results are presented.

Three different methods have been recently applied at the National Bank of Poland to estimate the equilibrium rate of exchange (Rubaszek 2002); one based on the corrected Purchasing Power Parity (PPP) concept, one known as the Fundamental Equilibrium Exchange Rate (FEER) approach and one based on the Behavioral Equilibrium Exchange Rate (BEER) methodology.

The approach based on PPP is a two step algorithm (Brook, Hargreaves 2001; Baude, Coudert, Couarde 2002). In the first step the exchange rate that would result from applying directly the concept of absolute purchasing power parity is being calculated. Obviously the rates differ substantially from the market rates (for instance according to this estimate, the zloty equilibrium exchange rate in 2000 should have been 1.98 PLN/USD against 4.34 PLN/USD average market rate). This estimate must be corrected by the difference in GDP per capita between countries, which is the second step of the analysis. The results suggest an undervaluation of the Polish currency over the recent years (Tab. 3).

Table 3: Estimates of over or undervaluation of the Polish currency based on the corrected PPP concept

Year	1998	1999	2000	2001
over(+)/undervaluation(-) of PLN	-5%	-10.5%	-10.6%	-3.8%

Source: Rubaszek (2002)

In order to calculate **the Fundamental Equilibrium Exchange Rate** (Wiliamson 1985) two estimates are necessary: the exchange rate elasticities of exports and imports and the long term sustainable current account position. For the need of our estimation the elasticities have been calibrated at -0.5 and 0.5 (broadly in line with econometric estimates) and the sustainable current

account was approximated by the 4 quarter moving average of FDI inflows. Having assumed this, one has to calculate the equilibrium exchange rate that would have equalized the current account balance with long term financing possibilities in each period of time. Table 4 presents the results of comparing the actual and equilibrium exchange rates over the period Q1 2001 - Q2 2002. The results suggest a slight overvaluation of the zloty.

Table 4: Estimates of over or undervaluation of the Polish currency based on the FEER concept.

Date	Q1 2001	Q2 2001	Q3 2001	Q4 2001	Q1 2002	Q2 2002
over(+)/undervaluation(-) of PLN	1.96%	1.36%	-3.40%	0.63%	2.12%	1.68%

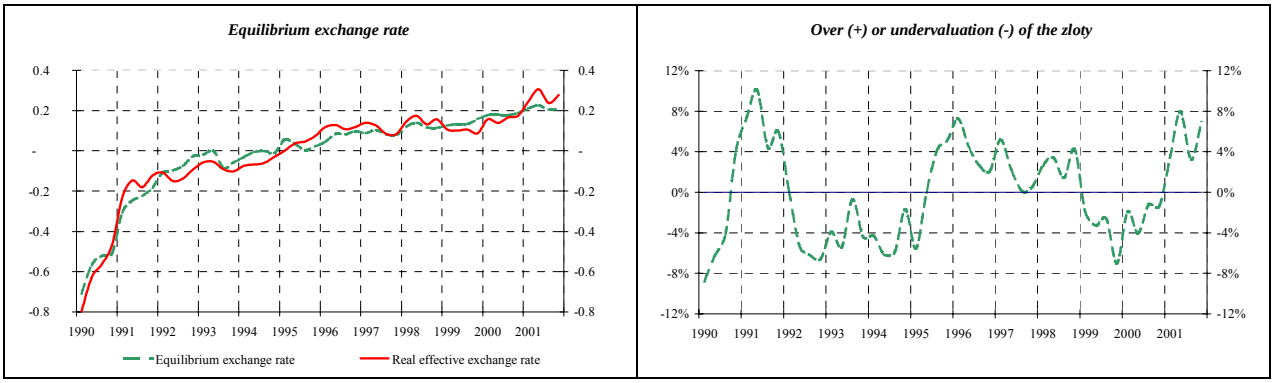
Source: Rubaszek (2002)

The Behavioral Equilibrium Exchange Rate concept (Alberola et al. 1999; Habereier, Mesquita 1999; Brook, Hargreaves 2001) is based on the estimation of a long run relationship between the real exchange rate and various macroeconomic variables. The following equation was estimated, based on panel cointegration for Poland, Hungary and the Czech Republic:

$$rer = \underset{}{0{,}02} + \underset{(18{,}5)}{1{,}29}\, pr + \underset{(6{,}91)}{0{,}22}\, tt + \underset{(1{,}89)}{0{,}63}\, gbal ,$$

where *rer* is the real exchange rate, *pr* - productivity, *tt* - terms of trade and *gbal* stands for the central budget balance, numbers in brackets stand for T-Student Statistics. These factors explain 90% of the real appreciation of the currency. The residuals show the degree of over or undervaluation of the zloty over the period 1990-2001 (Fig. 5). It can be clearly seen that there is a tendency of the exchange rate to return relatively quickly to its equilibrium level.

Figure 5: The equilibrium exchange rate and over or undervaluation of the Polish currency based on BEER.



Source: Rubaszek (2002)

Summing up, the results do not give an unambiguous answer to the question of over and undervaluation of the Polish currency. What is however important, is their consistence on the magnitude of indicated imbalances. It comes out that whether under or overvalued, the zloty is not traded far away from its equilibrium value and imbalances are probably (based on BEER) relatively quickly corrected. **Thus, from the economic point of view, if no extraordinary exchange rate movements occur on the eve of ERM II accession, there will probably be not much need to choose the central parity far away from the market exchange rate.**

2.3 Choosing the fluctuation bands

The second important decision regarding Poland's entry into the ERM is the choice of fluctuation bands. The European Council decided in its 1997 resolution that one should interpret "normal fluctuation bands" referred to in the Maastricht Treaty (Art. 121) as +/- 15% around the central parity. However the institutions responsible for preparation of convergence reports are not clear, how they interpret the Treaty provisions. According to the recent Convergence Report on Sweden (EC 2002), one of the conditions to be respected in fulfilling the exchange rate criterion is as follows:

> *„Exchange rate to have been maintained within a fluctuation band of ±2.25% around the currency's central parity against the euro in the context of the ERM II. However, the extent to which a breach of the ±2.25% fluctuation band would correspond to severe tensions would take account of a range of relevant considerations. A distinction is to be*

made between exchange rate movements above the 2.25% upper margin and movements below the 2.25% lower margin."

The ECB is even more enigmatic about its application of the Treaty provisions. In the latest Convergence Report (ECB 2002) the following interpretation is provided:

„... in the assessment of exchange rate developments the emphasis is placed on exchange rates being close to the ERM II central rates. [...] the issue of "severe tensions" is generally addressed by examining the degree of deviation of exchange rates from the ERM II central rates against the euro, by using such indicators as short-term interest rate differentials vis-à-vis the euro area and their evolution, and by considering the role played by foreign exchange interventions."

Thus, although the focus is on the narrow bands, in both cases it is not clear what fluctuations will be regarded as a breach of the bands. Moreover, in both cases the application is provided with regard to the current evaluation, without mentioning the procedure that would be applied in the future. Relying on previous experience with Greece, one can only expect that (at least when the wide corridor is adopted) both the Commission and the ECB will accept appreciation above the 2.25% margin.

It need not be explained thoroughly that such a situation is very uncomfortable for the future EU members, Poland included. As noted earlier, we are not convinced, whether a quasi-fixed exchange rate arrangement is the proper one for a country like Poland as it can be less sustainable than a float. However, the rules have been set and we are strongly willing to follow them and fulfill all the convergence criteria as described in the Treaty. **Nevertheless, it would be desirable to have a clear description of how the treaty will be applied.** Thus, instead of a vague description, how the Treaty provisions have been interpreted, we would rather know, how they will be applied during the next evaluation.

Nevertheless, some basic conclusions can be drawn. First, each depreciation of the exchange rate below the +/- 2.25 margin can be regarded as incompatible with the convergence process and

thus, has to be avoided. On the other hand a long-term trend for real appreciation of the zloty should be expected (due to the Balassa-Samuelson effect and other factors described in more detail in part 4.2). Accordingly, the currency must be allowed to appreciate, possibly above the 2.25% benchmark over the two year horizon. Taking these issues into account, the most reasonable solution seems to be **adopting the wide +/- 15% fluctuations margin and setting an informal intervention band just below (say ca. 2%) the central parity.**

This solution, though the most reasonable one from the macroeconomic point of view, has one strong disadvantage - it requires intramarginal interventions. As opposed to interventions at the margins, these do not find unlimited support from the ECB. The ceiling for these operations is being set within a bilateral agreement between the ECB and the non euro-area member states' central banks and has been recently only symbolical[4] (EUR 520 mln for Denmark, EUR 300 mln for Greece, EUR 990 mln for Sweeden and EUR 3,480 mln for England). As national central banks ought to make "appropriate use" of their own reserves, before they use the ECB facility, it seems highly unlikely that Poland would really need the ECB money. Even using a small part (say 25%) of our foreign reserves (USD 30 bn at the end of 2002) to defend the exchange rate, should be considered a useless and costly struggle against the markets and would be probably classified as "severe tensions". Hence, the support of the ECB is in fact needed to strengthen the stance of the NBP versus the markets. **This can be achieved by setting a high ceiling for intra marginal interventions**, a ceiling that would probably never be used.

3 ERM II - staying inside

In the previous section it has been stated that Poland should try to enter the ERM II in early 2004, with the central parity set at a level consistent with the long-term equilibrium exchange rate and with wide fluctuations margins. Now it is time to consider issues related to the behavior within the system. Two basic topics emerge. First, it is possible that Poland will enter ERM II with

[4] ECB (1998)

inflation slightly above the reference value. It must be decided whether monetary policy, with regard to the inflation level, should be conducted as before - by raising interest rates or/and by letting the currency appreciate. Second, it has to be estimated how much real and nominal appreciation should be expected during the participation period and whether the possibility of revaluing the central parity should be considered.

3.1 How to reduce inflation?

Let us assume that Poland enters 2004 with an inflation target of 3% (+/- 1 p.p.). In what follows we assume that inflation will be in the middle of the target range by then. Moreover, we work under the assumption that there will be no contribution from the side of fiscal policy to antiinflationary policy. Since it can be assumed that the reference value for inflation will probably lie between 2 and 2.5%, a lowering of the inflation rate by some 1-1.5 p.p. during the first year of ERM II participation and keeping it at the lower level during the second year will be necessary. The reason is that inflation performance during the second year will be taken into consideration when verifying compliance with convergence criteria.

This job could be basically done in two ways, either by raising interest rates (which *de facto* means a continuation of DIT in ERM II) or by letting the exchange rate appreciate. It must be noted that the option of reducing inflation by making use of the appreciation pressure, stemming from the convergence play process, is relatively tempting. On the other hand, too much appreciation over a short time period can be painful for the external sector. To look deeper into the matter, simple simulations have been performed, showing how inflation reacts to changes in real interest rates and the exchange rate. The presented results come from a 3 dimensional VAR model, very similar conclusions can also be drawn from the small structural model of the NBP (Łyziak 2001).

Two conclusions can be drawn from the results. First, the inflation response to an exchange rate shock is definitely quicker than to an interest rate shock, the first one exerting the strongest impact after 8 months against 16 months in the second case. Second, taking into account the magnitude of residual standard deviations, the same 0.5 p.p. drop in the inflation rate can be

achieved either by raising interest rates by 1 p.p. or by letting the currency appreciate by approximately 2.5 percent.

Figure 6: Reaction function of inflation to a 1 S.D. shock to the real interest rate (scale in months)

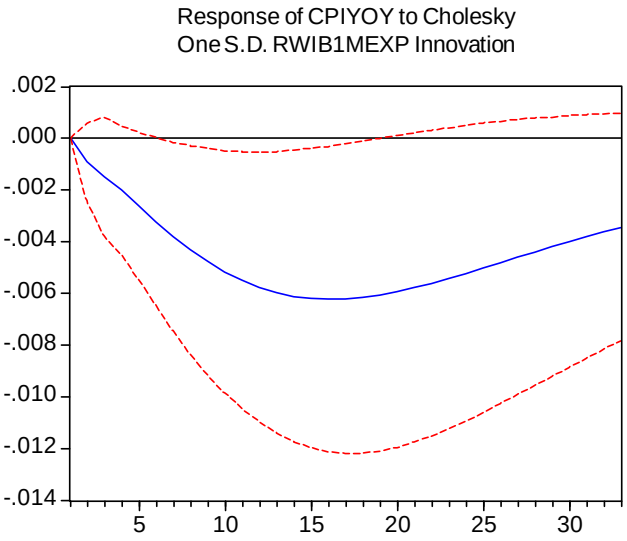
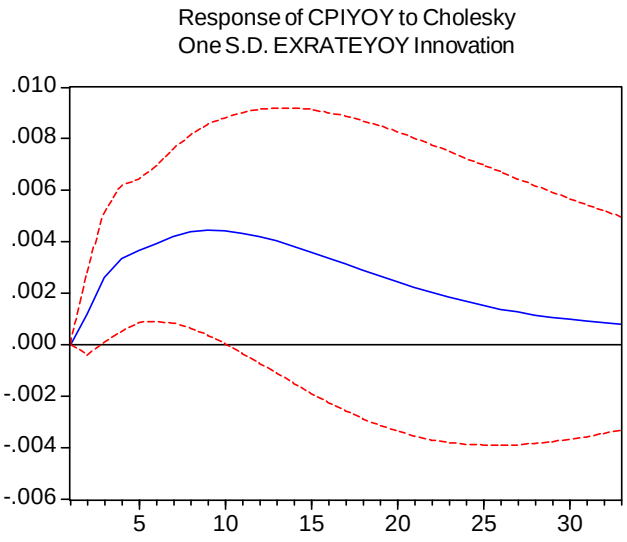


Figure 7: Reaction function of inflation to a 1 S.D. shock to the exchange rate (scale in months)



In view of these results, the option of currency appreciation that would lead to a drop in inflation looks tempting. First, inflation reacts to an exchange rate shock much faster than to interest rates. As time will be scarce this is obviously a major advantage. Second, maybe even more important,

it has to be born in mind that once the accession scenario becomes clear, mid and long term interest rates will be guided by markets, regardless of what the central bank does with short term rates. And as, to some extent, longer-term rates are seen as transmitters of monetary policy impulses, interest rate policy can prove less efficient under ERM II.

3.2 To revalue or not to revalue?

It has been shown in the previous section that to lower inflation the NBP will have to let the zloty appreciate. This can be basically done either by using the appreciation potential of convergence play or the short-term interest rate. Based on the above-presented results it can be roughly estimated that to reduce inflation by 1-1.5 p.p. the nominal exchange rate will have to appreciate by 5-7.5% within the first year of ERM II participation. This is, however not the end of the appreciation story. Thinking about a converging economy, one has always to bear in mind the magnitude and potential consequences of the Balassa-Samuelson effect. Although there is some divergence of opinion among experts, recent results from the NBP show that the magnitude of the B-S effect is approximately 1.2-1.7%, somewhere in the middle of external estimates. Thus, for further simulations we will apply 1.5% as a benchmark assumption about the B-S effect. In Box 1 we present a brief discussion of the B-S estimates for Poland.

Once inflation will be reduced to EMU levels, the currency will appreciate further. This is because of the appreciation of the real exchange rate caused by the B-S effect, which, at equal inflation rates between Poland and the EMU must come up as nominal appreciation. If we assume that the disinflation will be finished after 1 year (i.e. in the end of 2004), we should expect some additional appreciation in 2005. In case of full pass-through from the exchange rate to domestic tradable prices this appreciation would be equal to the magnitude of the Balassa-Samuelson effect. However, as available estimates of the pass-through point rather at values below 1, the B-S effect should be considered as the lower end of the possible appreciation. Thus, we can roughly assume that in 2005 at least 1.5% additional nominal appreciation should be expected to keep inflation stable.

Summing together the appreciation caused by B-S and by the central bank to reduce inflation we arrive at a minimum of 6.5-8% of nominal appreciation over the first 2 years of ERM II participation. This is of course a very rough estimate, and serves only to show the potential consequences of the convergence of the inflation rate during ERM II participation. In such a case the competitiveness of the export sector could be endangered.

Box 1: Estimating the Balassa-Samuelson effect in Poland

Over the recent years many authors have presented estimates of the B-S impact on inflation in Poland. Among others Egert (2002) and Egert et al. (2002) estimate the B-S component of CPI inflation at approximately 1-2%. Halpern and Wyplosz calculated the effect within a panel of transition countries and assessed the B-S magnitude at 3% across the region with relatively minor country specific effects.

At the NBP a method similar to Canzoneri et al. (1999) has been adopted (Chmielewski 2002). The basic model consists of 2 standard equations:

(1) $p=\alpha p_T +(1-\alpha)p_N$

(2) $p_N-p_T= \beta(a_T-a_N)$

which imply:

(3) $p=p_T +(1-\alpha)\beta(a_T-a_N)$

Where p is the log CPI price level, p_N is the log of service prices, p_T the log of manufacturing prices, a_N the log of productivity in manufacturing industry and a_T the log of productivity in services.

The $(1-\alpha)$ coefficient, being the share of services in CPI, has been calibrated at 0.3, β has been estimated from equation (2) by cointegration techniques at 1.2-1.5. The productivity growth rates have been calculated as 8.2% per annum in manufacturing and 5% in the service sector.

Accordingly, the component $(1-\alpha)\beta(a_T-a_N)$ of equation (3), representing the influence of B-S on inflation was estimated in the range 1.2-1.7% per annum.

One solution to this problem could be to choose a mixed monetary policy strategy, based on interest rate and exchange rate policy. Accordingly, the NBP should start reducing inflation, by raising interest rates even before entering ERM II, so that less nominal appreciation would be necessary to bring down the inflation rate. In this case the real cost of adjustment would be more equally divided between the domestic and external sector. Accordingly, if the zloty appreciation threatened to bring the exchange rate far away from the equilibrium level, the NBP might consider using sterilized FX interventions. In this case the return of the exchange rate to parity would not be such a burning issue. There are, however some caveats related to this strategy. First, fine-tuning of inflation via interest rate policy requires very precise estimates of the neutral level of interest rates. This is unfortunately hardly the case in Poland (Brzoza-Brzezina 2002 a, 2002 b). Second, as the transmission from interest rates to inflation takes much time (approximately 1.5 years in Poland), action must be taken even before entering ERM II, which could substantially decrease its precision.

In any case, as the possibility of substantial appreciation of the zloty cannot be ruled out, one has to consider how the final convergence to parity should be carried out. There are only two possibilities. The first is to revalue the parity, as in the case of Greece. The second, to let the exchange rate depreciate in the final stage of ERM II participation.

Theoretically both possibilities are feasible and it is quite difficult to give a clear answer today, which solution will be chosen. The scenario of revaluation has been recently successfully carried out by Greece and accepted by the Commission (EC 2000) and the ECB (2000). **From the economic point of view it would mean an adoption of the equilibrium exchange rate for the EMU entry (provided that the exchange rate will be set at the equilibrium level when entering ERM II).**

On the other hand, a sudden depreciation over the last few months of ERM participation would bring about a comparable, temporary depreciation of the real exchange rate and EMU entry with an undervalued currency (again, provided that the exchange rate will be set at the equilibrium level when entering ERM II). The obvious consequences would include an increase in inflation

and inflationary expectations. Moreover, it cannot be excluded that the depreciation would find place even before the evaluation deadline. In this case it could jeopardize Poland's convergence effort by fueling inflation.

Summing up, **from the economic point of view it seems reasonable to revalue the central parity during the ERM II participation period** if the above-projected appreciation scenario should really find place. As it is, however widely known, such a decision can be very hard from the political point of view, because of the sudden loss of external competitiveness.

All the above-mentioned problems put forward the question of the role fiscal policy should play in the process of achieving nominal convergence. **Even without exploring the problem in depth, one can easily deduce that a fiscal tightening should increase the efficiency of monetary policy in reducing inflation, decrease the necessary appreciation of the zloty and increase the chance of a secure participation in ERM II.**

4 Conclusions

In this paper we addressed some of the issues resulting from Poland's will to join the Economic and Monetary Union. Our attention focussed on topics related to the possibly soon entry into the European system of fixed exchange rates ERM II.

As we are willing to join the EMU as fast as possible after entering the EU (probably in 2004), we should start negotiating the ERM II participation conditions with the European Commission immediately after joining the EU. This should make it possible to adopt the euro at the begin of 2007. Our estimates provide evidence that over the recent past the zloty exchange rate fluctuated close to its equilibrium level. **Thus, from the economic point of view, if no extraordinary exchange rate movements occur on the eve of ERM II accession, there will probably be not much need to choose the central parity far away from the market exchange rate.**

As regards the choice of the fluctuation bands, it is highly possible that a substantial appreciation of the zloty will take place during the ERM II participation period**. Hence, we see the NBP**

choosing the wide +/- 15% band to allow for necessary upward movement of the currency. However, as fluctuations on the weak side of the parity may be regarded as a breach of the treaty provisions, the **NBP should set an informal intervention band just below the central parity**. The tough issue would be however, to convince the markets that such intra-marginal interventions would be supported by the ECB. We see here a field of action for the ECB to either substantially increase or abandon the ceilings for intramarginal interventions.

Further, we analyzed the possible exchange rate movements within the system. First, because of necessary adjustment of the inflation rate below the reference value, one should expect a substantial appreciation of the nominal exchange rate. Second, the exchange rate appreciation due to the Balassa-Samuelson effect will certainly add to the trend. Our rough estimates point at a minimum of 6.5-8% appreciation of the nominal exchange rate during the first 2 years of participation, only because of the two above-mentioned factors. This can, however pose a serious problem to the competitiveness of the export sector.

We see a solution to the problem of excessive appreciation in using a mixed strategy of interest rate and exchange rate policy. Accordingly interest rates should be raised before entering ERM II to lower inflation, so that the zloty appreciation can be reduced. There are, however some problems related to this strategy. First, interest rate policy might be weakened by the convergence trend of mid and long-term interest rates. Second, the transmission lags from interest rates are much longer than from the exchange rate, which could diminish the precision of this strategy.

In any case, the possible exchange rate trend above the central parity will have to be somehow corrected within the ERM II. We conclude that it is at the moment difficult to asses, whether this target will be achieved via a revaluation of the parity or by allowing the exchange rate to depreciate towards parity in the final stage of ERM II. Although, from the economic point of view it seems more reasonable to revalue the parity than to let the exchange rate depreciate towards parity in the final stage of ERM II, such a decision can be very hard from the political point of view. We conclude that the efficiency of monetary policy in reducing inflation, and a lower necessary appreciation of the zloty would be strongly supported by a fiscal tightening.

Appendix 1: Exchange rate regimes in Poland 1990-2002

Period	FX Regime	Band
I.1990 - V.1991	Peg to USD	
V.1991 - X.1991	Peg to basket of currencies : 45% USD, 35% DEM, 10% GBP, 5% FRF, 5% CHF	
X.1991 - V.1995	Pre-announced crawling peg	
V.1995 - II. 1998	Crawling band	+/-7 %
II.1998 - X.1998	Crawling band	+/-10 %
X.1998 - III. 1999	Crawling band. Basket redefined to 45% USD 55 % EUR (01.01.1999)	+/-12,5 %
III.1999 - IV.2000	Crawling band	+/-15 %
IV 2000 -	Floating	

Source: NBP

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