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Alena Kimakova\*

## Financial Markets and Exchange-rate Regimes in Transition to EMU

*This paper highlights that the EMU transition process itself can pose challenges to individual accession countries and draws policy implications for ERM II. Differences in financial market development and international liabilities underscore the risks and benefits of ERM II, and may lead to conflict between short and long-term policy objectives.*

Since the introduction of the euro in 1999, sixteen European Union member states have adopted the common currency in line with the requirements of the Treaty establishing the European Community. Most recently, Slovakia joined the Economic and Monetary Union (EMU) as of January 1, 2009, but following the EU enlargements of 2004 and 2007, eleven member states still remain less than full participants of the EMU.

As one of the preconditions of entry into the eurozone, potential entrants are required to adopt successfully the framework of the Exchange Rate Mechanism (ERM) II for a minimum of two years. ERM II stipulates the maintenance of a stable exchange-rate peg vis-à-vis the euro, typically with a fluctuation margin no greater than +/- 15%.<sup>1</sup>

Notably, the ERM II participants are mostly made up of smaller new EU member states.<sup>2</sup> Some of the larger economies – such as the United Kingdom, Poland, the Czech Republic and Hungary – have not entered ERM II. While their individual circumstances and motivations vary, this paper provides a unifying framework for analysing the incentives to enter ERM II as a decision distinct from the goal of adopting the euro. Utilising a comparative study of two recent EU entrants and aspirants for full EMU membership – the Czech Republic and Hungary – this paper highlights the potential pitfalls in the transition to EMU, specifically with respect to the required two year participation in ERM II.

Although not officially part of ERM II, Hungary had been implementing an exchange-rate regime consistent with this framework until February 2008 when, in light of high market volatility, the decision was taken to officially float the currency. The Hungarian government originally aimed to adopt the euro as soon as possible, setting 2010 as its preferred target date, but was forced to abandon this plan in 2006. The country has been experiencing problems in meeting the convergence criteria, and the date for eurozone accession remains open.

The Czech Republic has not entered the ERM II stage of accession to the eurozone to date, and in 2006 both the government and the central bank retracted their official target of 2010 for the adoption of the euro without announcing a new plan. This is despite the Czech Republic's better performance in terms of the convergence criteria. As Table 1 shows, Hungary has not met any of the convergence criteria, while the Czech Republic falls short only marginally. The inflation rate exceeds the eurozone benchmark for 2008, but this development has been affected by a substantial increase in indirect taxes and administered prices, as well as a rise in food prices. Given the country's historically low inflation rates and high degree of inflation aversion, it is not surprising that the European Commission forecasts a 3.1% annual inflation rate for 2009 and 2.7% for 2010.

Nevertheless, both the Czech government and central bank appear quite weary (and rightly so) of entering the interim ERM II phase ahead of EMU membership. The Governor of the Czech National Bank (CNB) has argued that "... EMS/ERM is, by its nature, a regime of the past, not of the present nor the future. ... it does not reflect the increased globalization of the financial flows and the current skeptical view of the soft exchange-rate regimes".<sup>3</sup>

This paper analyses the past, present and prospective monetary and exchange-rate policies in the run-up to EMU membership. Specifically, the paper highlights the implications of differences in financial market microstructure, fiscal policy stance and monetary regime preferences.

The Czech Republic and Hungary provide an interesting ground for comparison, since they are similar in size and share a common past of central planning, yet

<sup>1</sup> In 1993 the ERM fluctuation margin was increased from +/-2.25% to +/-15% to accommodate speculation against participating currencies.

<sup>2</sup> As of 2009, ERM II participants include Denmark, Estonia, Latvia and Lithuania.

<sup>3</sup> Z. Tuma: Monetary policy towards E(M)U accession: A central banker's view, in: Atlantic Economic Journal, Vol. 31, No. 4, 2003, pp. 297-302.

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**Table 1**  
**Fulfilment of Convergence Criteria**

Criterion	Reference value	Czech Republic	Hungary
HICP <sup>1</sup> Inflation rate	max. 3.2%	4.4%	7.5%
Annual fiscal deficit to GDP	max. 3%	1.4%	4.0%
General government debt to GDP	max. 60%	28.1%	66.5
Long-term interest rate	max. 6.5%	4.5%	6.9%
ERM II membership	min. 2 years	0 years	0 years <sup>2</sup>

<sup>1</sup> HICP = Harmonised Index of Consumer Prices.

<sup>2</sup> Although Hungary has not been officially part of ERM II, it had been implementing an exchange-rate regime consistent with this framework until February 2008.

Source: European Central Bank: Convergence Report, May 2008.

Note: The data in general correspond to the period between April 2007 and March 2008 as the reference year.

they exhibited significant divergence in their choice of economic policy both historically and during the transition period of the 1990s. Different paths of public debt and inflation had significant implications for the sources of investment financing.

The choice of exchange-rate regime has closely paralleled the development of these underlying factors. As external sources of financing gained in importance in Hungary after a period of inflation persistence, so did the incentives for enhancing credibility through a stable and predictable exchange-rate. The Czech government, on the other hand, was relatively free of such constraints, given the low level of public and private sector financing needs and a solid domestic investor base. Accordingly, the Czech Republic has had a preference for an exchange regime with a relatively high degree of flexibility and has been implementing a managed float since May 1997. Hungary on the other hand applied *de facto* crawling bands for most of the 1990s and a pre-announced crawling band around the euro since 1999. The fluctuation band was originally a narrow +/-2.25% and was later widened to +/-15% around the central parity in 2001. Until then Hungary had also maintained restrictions on non-resident short-term capital inflows in order to enhance the central bank's ability to maintain the narrow band.

In February 2008, Hungary was forced to abandon its ERM II mimicking exchange-rate regime and let the currency float. The decision came as a result of exchange-rate pressure reflecting on the country's economic imbalances, but also at least partly a manifestation of the challenges of maintaining a soft exchange-rate peg in globalised financial markets and their associated high degree of volatility.

Intereconomics, May/June 2009

### A Review of Literature on Exchange-rate Regime Choice

Among the most prominent normative theories of regime choice is the Optimal Currency Areas (OCA) framework developed by Mundell<sup>4</sup> and McKinnon.<sup>5</sup> The OCA stream of research determines the optimality of a monetary union based on a set of criteria such as trade links, labour mobility, enhancement of monetary policy credibility, fiscal transfers, and the synchronisation of shocks across member states.

Optimal regime choice has also been linked to the source of the economic shocks, real or nominal, and the degree of capital mobility. Following Mundell<sup>6</sup> and Fleming,<sup>7</sup> the main recommendations on regime choice included adopting a floating regime if real shocks prevail, while a fixed regime should be preferable under nominal shocks. At the same time, a currency peg involves a trade-off between monetary independence and free capital mobility.

Later Frankel and Rose<sup>8</sup> pointed towards the endogeneity of OCAs, or the fact that countries may become optimal candidates for a monetary union *ex post*, after the implementation of a common monetary regime, even if they do not qualify *ex ante*. The reason is that the currency union is likely to enhance trade and the correlation of shocks in member states.

In practice exchange-rate regimes exhibit a large degree of heterogeneity even within the same official category. Fixed exchange-rates get realigned frequently or fluctuate in a relatively wide band, while some floats behave more like a peg. This observation led to a thorough re-examination of exchange-rate regime classifications, and differentiation between *de jure* and *de facto* regimes. The *de jure*, official or self-declared, regime characterisation is represented primarily by the classification system of the International Monetary Fund (IMF). Reinhart and Rogoff<sup>9</sup> and Levy-Yeyati and

<sup>4</sup> R. Mundell: The theory of optimum currency areas, in: American Economic Review, Vol. 51, 1961, pp. 657-661.

<sup>5</sup> R. McKinnon: Optimal currency areas, in: American Economic Review, Vol. 53, 1963, pp. 717-724.

<sup>6</sup> R. Mundell: Capital mobility and stabilization policy under fixed and flexible exchange rates, in: Canadian Journal of Economics and Political Science, Vol. 29, No. 4, 1963, pp. 475-485.

<sup>7</sup> M. Fleming: Domestic financial policies under fixed and floating exchange rates, in: IMF Staff Papers, Vol. 9, 1962, pp. 369-380.

<sup>8</sup> J. A. Frankel, A. K. Rose: The endogeneity of the optimum currency area criteria, in: Economic Journal, Vol. 108, 1998, pp. 1009-1025.

<sup>9</sup> C. M. Reinhart, K. S. Rogoff: The modern history of exchange rate arrangements: A reinterpretation., in: Quarterly Journal of Economics, Vol. 119, No. 1, 2004, pp. 1-48.

Sturzenegger,<sup>10</sup> provide de facto re-classifications of regimes incorporating measures of actual exchange-rate volatility. These studies find significant discrepancies between *de jure* and de facto exchange-rate regime classifications. For example, the simple correlation coefficient between the official IMF classification and that of Reinhart and Rogoff<sup>11</sup> for the 1970-2001 period is only 0.42. They find that almost half of official pegs are not de facto pegs, and over half of official managed floats are pegs or limited flexibility arrangements. This evidence challenges the previously accepted notion that exchange-rate regimes have in general become more flexible in the post-Bretton Woods period.

The recent literature re-examines the performance of different exchange-rate regimes primarily in terms of growth and inflation using the new de facto classifications in order to identify empirically which regime category is more likely to achieve superior economic outcomes. Hence, it maintains the traditionally normative perspective on regime choice. Searching for the optimal or most superior exchange-rate regime might be misguided. Countries differ in their economic and institutional characteristics, and thus their optimal or preferred choice of exchange-rate regime varies over time as well.

Theoretical explanations of regime choice from a positive perspective include political economy and fear of floating approaches. The traditional political economy literature incorporated factors such as political instability, and the tradeoff between the political costs of abandoning a peg and boosting the economy (e.g. Collins,<sup>12</sup> Edwards<sup>13</sup>).

The “fear of floating” framework of Calvo and Reinhart<sup>14</sup> focused attention on explaining why some countries with *de jure* floating regimes are de facto pegging their exchange-rates to the currency in which their foreign currency liabilities and/or assets are denominated.

The surge in international capital flows during the 1990s can help explain the growing number of formal-

ly flexible regimes. The lack of official commitment to maintaining a fixed exchange-rate reduces intervention costs in the face of potential speculative attacks under a peg. However, measures of de facto regime flexibility show that most of the countries continue to limit the flexibility of exchange-rates relative to reserves or interest rates. The revealed preference for exchange-rate stability is likely to be linked to large holdings of domestic liabilities by non-residents.

Hausmann et al.<sup>15</sup> and Eichengreen et al.<sup>16</sup> related exchange-rate management to the inability to borrow internationally in domestic currency (termed original sin). These studies highlighted that typically only a limited number of countries have the ability to issue domestic currency liabilities abroad.

The theoretical literature aimed at explaining currency mismatches in balance sheets typically utilises some form of capital market imperfections. For example, Aghion et al.<sup>17</sup> incorporate credit constraints in their analysis. Tirole<sup>18</sup> emphasises political economy considerations as the underlying institutional determinants of original sin. These include the size of domestic savings, their location (home or abroad), poor contract enforcement and domestic interest group politics that may be misaligned with foreign interests. Aghion et al.<sup>19</sup> also show that economies at an intermediate level of financial development are more unstable than very developed or underdeveloped economies. In general, this stream of research establishes that currency mismatches and capital market imperfections can have an impact on macroeconomic stability, and thus can be a factor influencing monetary policy aimed at stabilising the economy.

The objective of this comparative country analysis is to integrate some of the elements of the political economy and financial market literature with respect to regime choice.

<sup>10</sup> E. Levy-Yeyati, F. Sturzenegger: To float or fix: Evidence on the impact of exchange rate regimes on growth, in: *American Economic Review*, Vol. 93, No. 4, 2003, pp. 1173-1193; E. Levy-Yeyati, F. Sturzenegger: Classifying exchange rate regimes: Deeds versus words, in: *European Economic Review*, Vol. 49, No. 6, 2005, pp. 1603-1635.

<sup>11</sup> C. M. Reinhart, K. S. Rogoff, op. cit.

<sup>12</sup> S. M. Collins: On becoming more flexible: Exchange rate regimes in Latin America and the Caribbean, in: *Journal of Development Economics*, Vol. 51, 1996, pp. 117-138.

<sup>13</sup> S. Edwards: The determinants of the choice between fixed and flexible exchange rate regimes, NBER Working Paper No. 5756, 1996, Cambridge, MA.

<sup>14</sup> G. A. Calvo, C. M. Reinhart: Fear of floating, in: *Quarterly Journal of Economics*, Vol. 117, No. 2, 2002, pp. 379-408.

<sup>15</sup> R. Hausmann, U. Panizza, E. Stein: Why do countries float the way they float?, in: *Journal of Development Economics*, Vol. 66, 2001, pp. 387-414.

<sup>16</sup> B. Eichengreen, R. Hausmann, U. Panizza: Currency mismatches, debt intolerance and original sin: Why they are not the same and why it matters, NBER Working Paper No. 10036, Cambridge, MA 2003.

<sup>17</sup> P. Aghion, P. Bacchetta, A. Banerjee: Currency crises and monetary policy in a credit constrained economy, in: *European Economic Review*, Vol. 45, 2001, pp. 1121-1150; P. Aghion, P. Bacchetta, A. Banerjee: A corporate balance-sheet approach to currency crises, in: *Journal of Economic Theory* Vol. 119, 2004, pp. 6-30.

<sup>18</sup> J. Tirole: Inefficient foreign borrowing: A dual- and common-agency perspective, in: *American Economic Review*, Vol. 93, No. 5, 2003, pp. 1678-1702.

<sup>19</sup> P. Aghion, P. Bacchetta, A. Banerjee: Financial development and the instability of open economies, in: *Journal of Monetary Economics*, Vol. 51, No. 6, 2004, pp. 1077-1106.

### Monetary and Exchange-rate Policy

The Czech Republic and Hungary adopted an inflation-targeting monetary regime in 1998 and 2001 respectively. The Czech Republic has been implementing a managed float exchange-rate regime since the Asian crises of 1997. The empirical literature on de facto exchange-rate regimes has confirmed that the Czech regime has been a true float, which is quite rare among countries with comparable size and income levels.

Hungary widened its exchange-rate band from a narrow  $\pm 2.25\%$  to  $\pm 15\%$  in May 2001. In September 2001, the crawling peg was terminated and the central parity against the euro was fixed. A speculative attack on the band led to the devaluation of the central parity in June 2003 and its abandonment in favour of an official float in February 2008.

Empirical studies attempting to assess whether the exchange-rates have been shock absorbers or propagators in these countries have in general yielded mixed results. Borghijs and Kuijs<sup>20</sup> have found that the exchange-rate has been a counterproductive propagator of shocks in Central European accession countries, and therefore joining the monetary union would entail little opportunity cost. Lopez and Chacon<sup>21</sup> confirm this finding for Hungary, but show that the exchange-rate serves as a stabilising tool in the Czech Republic and Poland. Hence, delaying EMU entry and retaining monetary independence could be a more viable option for the Czech Republic.

In order to assess the inflation performance of the two monetary regimes, a longer term and more comprehensive perspective is needed. The two countries have comparable inflation rates presently, but exhibited divergent paths during the transition period of the 1990s. Factors such as inflation persistence, expectations, central bank independence and credibility need to be assessed.

Historically, central bank independence and scope of activities were markedly different in Hungary and the Czech Republic. The Magyar Nemzeti Bank (MNB), the Hungarian central bank authority, had been involved in maintaining the state's accounts and managing its debts since its establishment in 1924 until the early 1990s. Furthermore, the central bank had engaged in commercial profit oriented activities. The 1991 Act on the MNB formally re-defined its range of duties as a

central bank and laid the foundations of its independence. Nevertheless, it was not until 1997 that central bank financing of government debt was eliminated. In 1996, nearly 50% of all forint-denominated government debt was still held by the central bank. Given such a historical background, it is not surprising that the scope for the fiscal dominance of monetary policy had been significant in the case of Hungary.

Central Bank independence in the Czech Republic has been in general stronger, except for a setback suffered in 2000-01 under new revisions to the Central Bank Act. These were later found unconstitutional and repealed. Nevertheless, the EU maintains that the legal frameworks of both the Czech Republic and Hungary fall short of full compliance with the Eurosystem's requirements for Central Bank independence.<sup>22</sup>

A review of the inflation performance of the two countries shows divergence during the 1990s. Although both Hungary and the Czech Republic experienced annual CPI inflation in the range of 20-25% in 1993, their paths deviated afterwards. In the case of the Czech Republic the increase in the price level proved to be a one-time jump associated with post-central planning price liberalisation. In Hungary, on the other hand, inflation climbed further before it started to diminish slowly. Central bank financing of the government budget deficit was a major determinant of the poor inflationary performance.

Expectations played a significant role in inflation performance as well. In order to enhance the credibility of disinflationary policies, the Hungarian government implemented a crawling peg exchange-rate regime with a narrow band as a nominal anchor. The arrangement had the advantage of being a transparent monetary policy target while reducing seigniorage revenue only gradually. The pre-announced rate of crawl was reduced from 1.9% per month in 1995 to 0.3% per month in 2000 when the band was widened and some foreign exchange restrictions were lifted at the same time. Given aspirations for EMU membership, the composition of the peg evolved over time with the share of the USD in the basket declining from 50% in 1995 to zero in 2000, when the euro became the sole target.

From a historical perspective, fiscal prudence and inflation aversion seem to have characterised the Czech Republic, while Hungary's experience with inflation persistence and exploding paths of government debt suggest a strong preference for expansionary policies across the political spectrum. During transition to a market economy, the two countries also implemented

<sup>20</sup> A. Borghijs, L. Kuijs: Exchange rates in Central Europe: A blessing or a curse?, IMF Working Paper No. 04/2, Washington, DC 2004.

<sup>21</sup> J. R. Lopez, J. L. T. Chacon: Following the yellow brick road? The Euro, the Czech Republic, Hungary and Poland, Working Papers on International Economics and Finance E2006/02, Fundacion de Estudios de Economia Aplicada (FEDEA), Madrid 2006.

<sup>22</sup> European Central Bank: Convergence Report, May 2008, Frankfurt.

**Table 2**  
**General Government Budgetary Position and Debt Composition**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
<b>Czech Republic</b>										
General government deficit (% of GDP)	-5.0	-3.7	-3.7	-5.7	-6.8	-6.6	-3.0	-3.6	-2.7	-1.6
Total debt ( % of GDP)	15.0	16.4	18.5	25.1	28.5	30.1	30.4	29.7	29.4	28.7
Interest payable (% of GDP)	1.2	1.0	0.8	1.0	1.2	1.2	1.2	1.2	1.1	1.2
Currency composition (% of total)										
In domestic currency	86.2	88.8	90.9	97.0	97.5	96.5	90.8	87.8	88.1	88.8
In foreign currency	13.8	11.2	9.1	3.0	2.5	3.5	9.2	12.2	11.9	11.2
Euro	1.2	2.6	2.2	1.6	1.7	3.5	9.2	12.2	11.3	10.6
Other foreign currencies	12.6	8.7	6.9	1.3	0.8	0.0	0.0	0.0	0.6	0.6
Domestic ownership (% of total)	86.0	89.1	90.6	94.9	94.9	91.6	82.3	74.8	74.3	74.1
<b>Hungary</b>										
General government deficit (% of GDP)	-8.0	-5.4	-2.9	-4.0	-8.9	-7.2	-6.5	-7.8	-9.2	-5.5
Total debt ( % of GDP)	60.4	59.5	54.3	52.1	55.7	58.0	59.4	61.6	65.6	66.0
Interest payable (% of GDP)	7.6	7.2	5.3	4.6	4.0	4.0	4.4	4.1	3.9	4.1
Currency composition (% of total)										
In domestic currency	60.7	62.4	64.4	69.5	75.2	75.5	73.5	71.0	71.1	69.2
In foreign currency	39.3	37.6	35.6	30.5	24.8	24.5	26.5	29.0	28.9	30.8
Euro	26.1	27.5	33.9	29.0	23.8	23.6	24.5	26.5	28.5	29.2
Other foreign currencies	13.2	10.1	1.7	1.4	0.9	0.8	2.0	2.5	0.4	1.6
Domestic ownership (% of total)	90.3	79.5	74.5	70.0	67.3	61.5	57.5	54.2	53.1	50.9

Source: European Central Bank: Convergence Report, May 2008.

conceptually very different privatisation programmes, which had implications for the development of the local financial markets, corporate governance and the structure of international capital flows. The choice of the exchange-rate regime can then be traced to factors including past and expected inflation performance, and the level and composition of government debt.

### Fiscal Policy

Table 2 shows the development and composition of general government debt as a percentage of GDP for the two transition economies during the period from 1998 to 2007. Hungary can be clearly characterised as a heavily indebted country with the level of general government debt at over 70% of GDP in 1996. The ratio of debt to GDP declined to 52.11% in 2001 mainly as a result of good growth performance and debt retirement from privatisation proceeds, but reverted again to over 60% by 2005. General government finances remain unbalanced with the annual deficit at 9.2% of GDP in 2006 and 5.5% of GDP in 2007.

The Czech Republic, in contrast, had a moderate level of government debt throughout the 1990s reaching 18.5% of GDP in 2000. Growing budget deficits in the subsequent years led to increasing the public debt to GDP ratio to around 30%, but this is still significantly below the Maastricht Treaty limit of 60%.

While the level of taxation measured as the ratio of government revenue to GDP had been comparable across the countries at around 40% of GDP for the Czech Republic and around 43% for Hungary, Hungary's ratio of government expenditure to GDP systematically exceeded that of the Czech Republic by roughly 7-8% of GDP.<sup>23</sup> In sum, the Czech government was fiscally more conservative than its Hungarian counterpart. This is also reflected in the adoption of a medium term fiscal deficit target of 1% of GDP in the Czech Republic under a 2005 revision of the Stability and Growth Pact. This is despite the fact that a 3% deficit limit was maintained as part of the Convergence Criteria.

As a measure of the weight of the debt burden, the ratio of interest payments on government debt to GDP has been insignificant at about 1% of GDP for the Czech Republic, while it reached levels between 7 and 10% of GDP in Hungary until 2000. Although moderated, the interest burden still stands at about 4% of GDP in Hungary as of 2007. Throughout the 1990s, rather than focusing on expenditure cutbacks, the Hungarian government relied on rapid growth to gradually reduce the debt burden relative to GDP.

In the context of the "fear of floating" literature on de facto exchange-rate regime choice by Calvo and Rein-

<sup>23</sup> Ibid.

**Table 3**  
**External Investment Position**  
(% of GDP)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Czech Republic										
Net international investment position	-5.9	-5.3	-8.8	-10.4	-16.1	-20.5	-29.7	-28.8	-32.0	-35.9
Gross external debt	36.6	39.6	37.6	35.2	34.4	36.4	38.4	41.8	41.3	43.4
Gross private capital flows	18.4	26.7	22.3	21.1	26.0	19.0	19.5	-	-	-
Hungary										
Net international investment position	-67.0	-75.4	-62.9	-56.8	-64.9	-77.2	-83.5	-92.3	-101	-97.1
Gross external debt	60.5	62.2	62.8	57.9	53.3	63.7	65.5	76.3	100	112
Gross private capital flows	20.0	26.9	26.3	25.2	22.5	28.8	24.7	-	-	-

Sources: ECB, WDI.

hart<sup>24</sup> and others, Hungary's inflation performance and the resulting currency composition of public debt provide the motivation for maintaining a more rigid form of regime. After government debt holdings by the Hungarian Central Bank were terminated in 1996, the currency composition of public debt changed dramatically. The ratio of domestic currency denominated debt declined from over 90% in 1996 to 59% a year later. The share of foreign currency denominated debt remains significant at about 30% in 2007. The euro has gradually become the dominant foreign currency denomination for public debt, which was also mirrored in the currency basket of the peg. The weight of the US dollar in the currency basket was gradually lowered until the euro became the sole reference currency in 2000.

By contrast, Czech public debt has been denominated primarily in domestic currency. The lower level of government liabilities and the absence of a notable currency mismatch in the public sector balance sheet have allowed the government to move away from a currency peg in favor of a managed float regime.

Table 2 also shows the ownership structure of government debt and highlights the strength of the domestic investor base in the Czech Republic relative to that in Hungary. With over 90% of the government debt being held by domestic investors in the early 2000s and still around three-quarters by 2007, the Czech authorities did not need to worry about sudden shifts in global investor sentiment inserting pressure in this market and potentially the exchange-rate. The situation in Hungary has been quite different though. In addition to a significant share of liabilities being denominated in foreign currency, domestic ownership of public debt has also been weaker.

When governments internalise the liability position of the private sector with respect to currency mismatches

and exposure to (potentially more volatile) non-resident investment in domestic markets, these factors could generate further incentives to supply a more rigid exchange-rate regime. Therefore, we next extend this line of analysis to the economy as a whole by looking at the international investment position.

#### Financial Markets and International Investment Position

Hungary and the Czech Republic hold different investment positions vis-à-vis the rest of the world. Table 3 provides summary statistics on the external investment position of the two countries.

The Czech Republic's assets and liabilities were close to balanced throughout the 1990s, with the net investment position worsening from a moderate surplus to a deficit of 8.6% of GDP in 2000 and 35.9% of GDP by 2007. In comparison, Hungary's net international investment position was significantly negative throughout the 1990s and reached its peak deficit of 100.8% of GDP in 2006. Such an imbalance in the financial assets and liabilities of non-residents is among the highest in the EU.<sup>25</sup>

Foreign currency denominated external debt accounts for a significant portion of gross international liabilities. The ratio of external debt to GDP has been lower in the Czech Republic, but decomposing the position further can identify another important distinction. The proportion of public debt in total external debt has been significant in Hungary, while in the Czech Republic it has been minimal. Most of the external debt liabilities in the Czech Republic were incurred by banks and the non-financial private sector.

Looking at corporate exposure to exchange-rate risk also reveals greater exposure for Hungary. The share of

<sup>24</sup> G. A. Calvo, C. M. Reinhart, op. cit.

<sup>25</sup> European Central Bank: Convergence Report, December 2006 and May 2008, Frankfurt.

foreign currency loans in total loans at the end of 2002 was 56% in Hungary and only 27.2% in the Czech Republic.<sup>26</sup>

While the ratio of gross private capital flows to GDP indicates a similar level of openness for the two economies, the greater exposure to foreign exchange risk in terms of public and private sector liabilities reveals a weaker domestic investor base in Hungary. The ratio of financial assets to GDP confirms this conjecture. In 2000, financial depth stood at 4.7 times GDP in the Czech Republic and 3.1 times GDP in Hungary compared to the EU level of 8.1 times GDP. Similarly, financial intermediation (measured as the ratio of financial assets held by banks to financial assets held by all other sectors) in the Czech Republic is close to the EU average of 44%, while the indicator for Hungary was half the EU average in 2000.<sup>27</sup> Overall, these indicators suggest the development of deeper financial markets in the Czech Republic than in Hungary.

### Conclusions

In terms of traditional Optimum Currency Area criteria such as trade integration and synchronisation of economic cycles, both the Czech Republic and Hungary have made significant headway towards becoming good candidates for EMU membership. The eurozone countries are the dominant trading partners for both countries and the degree of co-movement in GDP growth has increased since 1999. According to Frankel and Rose<sup>28</sup> on the endogeneity of OCAs, we can expect the degree of synchronisation to increase in the future given greater integration, and therefore, more similar exposure to shocks. This would be especially true for coordinated monetary policy conduct with respect to the ECB. Hence, pegging the currency to the euro under ERM II could facilitate this process, although implementing a peg in a financially open economy poses a challenge due to potential speculative attacks or misalignment. Slovakia's recent experience under ERM II serves as an example of the diminished practical relevance of ERM II as the central rate of the Slovak koruna with respect to the euro was revalued based on a mutual agreement by 8.5% in March 2007 (less than two years ahead of eurozone accession in January 2009).

For the reasons outlined above, participation in ERM II for a minimum of two years prior to EMU ac-

cession may be risky and unattractive even for countries committed to adopting the euro. For countries where a floating exchange-rate has been serving as a shock absorber, ERM II can represent a costly step back.

This paper applies the "fear of floating" literature on exchange-rate regime choice to explain the motivation to adopt the euro and enter ERM II as early as possible. Fiscal dominance of monetary policy, inflation persistence and the resulting currency mismatches in public and private sector balance sheets are significant factors driving exchange-rate regime choice towards less flexible forms. Differences in domestic financial market development and liability exposure to exchange-rate risk between the Czech Republic and Hungary account for the fact that the Czech Republic is reluctant to enter ERM II even though it already meets most of the Convergence Criteria. Hungary on the other hand had been implementing an exchange-rate peg consistent with ERM II, but falls significantly short of meeting the Convergence Criteria, forcing it to postpone official entry into ERM II and abandon its soft peg in favour of floating.

The analysis has highlighted a conflict between short-term and long-term policy objectives for Czech policymakers. This suggests that the framework of ERM II should perhaps be reconsidered in light of the new challenges that potential euro-area entrants face, especially as they become more financially developed and integrated in global markets. Arguably, it would be politically difficult to change the ERM framework, but it might prove equally costly over the medium to long term to ignore the changing landscape.

The width of the exchange-rate band under ERM II had been changed once previously in 1993 when participating currencies came under attack. In an environment characterised by large and volatile capital flows, maintaining an explicit exchange-rate band can be quite costly. An alternative could be to support a target band of +/-15%, but without the explicit obligation to intervene to preserve the peg. Greater uncertainty about intervention to defend the band would likely discourage speculative attacks, while the criterion of exchange-rate stability could be still assessed on a case-by-case basis for new entrants. At the same time, the analysis has also shown that new entrants in weaker financial positions, such as Hungary for example, would still have an incentive to maintain a more rigid regime (if feasible, or at least de facto) as a hedge against increasing the burden of foreign currency denominated liabilities.

<sup>26</sup> A. Anzuini, A. Levy: Financial structure and the transmission of monetary shocks: Preliminary evidence for the Czech Republic, Hungary and Poland, Bank of Italy Working Paper No. 514, 2004.

<sup>27</sup> A. Anzuini, A. Levy, *ibid.*

<sup>28</sup> J. A. Frankel, A. K. Rose, *op. cit.*