

## **The Political Economy of Exchange Rate Regimes In Transition Economies**

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**Abstract.** We show that political economy factors play an important role in shaping the exchange rate policies of transition economies. Preferences originating in the manufacturing and agricultural sectors as well as from actors involved in attracting external investment influence the flexibility of the exchange rate. We also find that preferences associated with exposure to international trade and financial development matter for exchange rate policy. These conclusions are based on quantitative analysis of the de facto exchange rate behavior of 21 countries over the period 1992-2004. Our empirical results serve as the basis for predictions regarding the adoption of the euro in the EU accession countries and other countries in Central and Eastern Europe.

Keywords: Political economy; Exchange rate regimes; Transition economies; EMU; euro

### **1. Introduction**

Exchange rate policies have undergone tremendous change over the last decade. Countries in Western Europe have abandoned their national monies, opting instead for a single currency. The financial crisis of 1997 that swept through Southeast Asia led countries in that region to shift to more flexible exchange rate policies. And countries in Latin America have experimented—albeit with varying degrees of success—with policies that provide for increased exchange rate stability. The transition countries of Central and Eastern Europe have also implemented a variety of exchange rate policies: countries such as Hungary and the Czech Republic have allowed their currency to float while others such as Estonia and Bulgaria have established a currency board.

What influences the choice of exchange rate regime? The deep determinants of international economic policy have long been the concern of scholars from economics, finance, and political science. We continue this line of research by focusing on exchange

rate regime choice in the transition economies. This focus is valuable for several reasons. First, exchange rate choice has been a central issue in most transition economies, yet it has received little serious political economy attention. Second, the transition economies of Eastern and Central Europe share many institutional and historical similarities, which facilitates comparison. Third, many of these nations face important choices about whether and when to adopt the euro, and their exchange rate policies to date may help shed light on this decision.

This paper presents a political economy analysis of currency policy choice in the transition countries. Existing studies of transition-country exchange rate regime choice tend to focus on purely economic factors, drawing for example on optimum currency area considerations to argue that exchange rate policy is driven by the nature of economic shocks, the level of trade openness and the targeted inflation rate (e.g., Markiewicz 2006; Von Hagen and Zhou 2005a, 2005b). We do not deny the importance of these factors, but we argue that their implications depend importantly on the preferences and positions of political actors.<sup>1</sup>

We argue that internationally exposed economic agents prefer a stable exchange rate, while tradables producers prefer flexibility that allows exchange rate policy to enhance their ability to compete with foreigners. This leads to the expectation that trade openness, as well as stocks of foreign direct investment and foreign debt, will be

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<sup>1</sup> The importance of political economy factors in understanding transition processes was recognized as policymakers had varying degrees of success in implementing financial stabilization and welfare enhancing policies. These experiences gave rise to a large literature on the political economy of transition emphasizing the importance of domestic gains and losses. Citizens who expect to lose from market liberalization, privatization and structural reforms vote (or exert pressure through other means) against political parties and policymakers that implement such reforms (Fidrmuc 2000; Warner 2001; Roland 2002). These considerations, we argue, should also influence exchange rate policy.

associated with fixed rates; while larger tradables sectors will be associated with floating rates.

We find evidence for both effects. However, we also report counter-intuitive findings: countries whose trade is more concentrated with Germany are *less* likely to peg to the euro, and democratic countries are *more* likely to peg. Both results are somewhat divergent from findings elsewhere in the literature, and we attempt to explain them below.

Our arguments and evidence are presented in the following sections. We start with arguments linking domestic political and economic conditions to exchange rate regimes. Section three discusses the sample, data and methods used in our analysis and section four contains our empirical results. In section five we use our analysis of the transition economies to make predictions about the timing of euro adoption decisions. While the accession agreements require that EU members adopt the euro, there is broad flexibility in terms of the timing of adoption. In addition, there are a number of countries in Eastern and Central Europe that are not yet members of the European Union. We use our sample of transition economies to make forecasts about the potential for euro adoption in both of these sets of countries.

## **2. The political economy of exchange rate regimes: theory**

As policymakers contemplate the choice of exchange rate regime, they must take two sets of factors into account. First, they need to be concerned for the currency policy preferences of their constituents, especially those whose political influence is substantial enough to affect the fortunes of politicians. To understand this, we need to explore the policy preferences of major economic actors. Second, policymakers need to consider the

implications for them as political actors of a range of exchange rate policy options. To analyze this, we need to look at the policy implications of political institutions and the career or other interests of politicians themselves.

Many economic agents can be expected to have clear preferences over the exchange rate regime. We can stylize the choice facing governments, and interest groups, as between fixing and floating the currency, thus between exchange rate *stability* and exchange rate *flexibility*. Exchange rate *stability* reduces uncertainty about a price of great importance to those involved in cross-border economic activity. However, currency *flexibility* allows policymakers to vary the exchange rate, especially to devalue and make domestic products cheaper relative to foreign goods.

The tradeoff between exchange rate stability and the freedom to vary the currency's value tends to pit two broad groups against one another, based on how highly they value the two conflicting goals. Tradables producers are helped by depreciation, so we expect opposition to a fixed exchange rate to come especially from the tradables sectors, manufacturing and agriculture.

On the other hand, exchange rate volatility principally affects those with substantial cross-border interests. Foreign investors, lenders and borrowers dislike the unpredictability associated with substantial fluctuations in currency values, which are often not amenable to hedging at longer time horizons. We expect those with cross-border economic interests to be more favorable toward fixing the value of the national currency.

The structure of domestic political institutions also has important effects on exchange rate regime choice. Politicians in democracies, it has been argued, are likely to

choose flexible exchange rate regimes because it affords them monetary policy autonomy. This autonomy is more valuable in democracies than in dictatorships as policymakers have to satisfy political interests from across a wide range of constituencies and over a large electorate. The presence of these domestic political pressures, however, can also work against the adoption of a flexible exchange rate. Cognizant of inflationary demands, policymakers who value price stability may commit to a fixed exchange rate regime in order to remove monetary policy from the political arena. The use of an external target allows them to claim that their “hands are tied” as monetary policy is focused on an international rather than on a domestic objective. This effect should be more pronounced in the transition countries where policymakers in new democracies try to balance the satisfaction of domestic constituent demands with the pressures for price stability.

To summarize, then, we expect clear divisions over the exchange rate regime among economic actors. Cross-border investors, debtors, and traders will favor a fixed rate; exporters may also want a stable exchange rate. Producers of tradable goods – manufacturers and farmers – will favor a variable rate that maintains the national ability to depreciate the currency (and some exporters may be in this camp). This masks much nuance and complexity, of course, but gives rise to clear empirically relevant predictions: the principal supporters of fixing exchange rates will be firms and industries with major cross-border investments, markets, or other business interests; the principal opponents will be tradables producers. With respect to domestic political institutions, we expect democratic governments to be more likely to peg than the alternatives.

### 3. Empirics

Sample and Dependent Variable. We use data from 21 transition economies during the period from 1992 to 2004.<sup>2</sup> Appendix A lists all countries and Appendix B details the definitions and the sources of the variables used in the analysis. It is common in the recent literature to adopt two measures of exchange rate regimes – de jure regimes and de facto regimes. The de jure classification was obtained from the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions and the de facto classifications are based on Reinhart and Rogoff (2002).

Table 1 shows the distribution of the de jure and the de facto exchange rate regimes for three sub-periods. The regimes were grouped into three broad categories – pegs, floats and intermediate.<sup>3</sup> The table shows that the transition countries have moved away from floating regimes and toward managed floats and pegs over time. Whereas floats represented 46 percent of the country-years during the early years of transition, they were only about 4 percent of the observations in the most recent period. Conversely, the percent of currency pegs has increased from 13 percent to 28 percent. Although it is less pronounced, a similar tendency toward less flexible exchange rate regimes is observed for de jure exchange rate regimes.<sup>4</sup>

Independent Variables. Following earlier literature, e.g. Frieden, Ghezzi and Stein (2001) we use the size of the manufacturing sector and the size of the agricultural sector

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<sup>2</sup> We could not obtain data on key variables such as agricultural and manufacturing employment for Armenia, Tajikistan, Turkmenistan, and Uzbekistan and therefore we do not include these countries in the analysis.

<sup>3</sup> One could group the exchange rate regimes otherwise, e.g. by distinguishing between soft pegs and hard pegs (currency boards) or by redefining floats to include managed exchange rate regimes with no preannounced boundaries as in Markiewicz (2006) but the general tendencies are similar.

<sup>4</sup> As can be expected, there are differences between the announced policies and the actual policies. For example, after 2000, only 10 percent of the de jure floats were actually floats and 15 percent of the de jure pegs were actually managed floats.

to proxy for the importance of the tradables sectors. We use two variables: the value added for each sector as percent of GDP, and employment in each sector as percent of the overall employment in the economy. Although we estimate the models using both measures, our preferred measure is employment as it captures more precisely how broad-based the importance of a sector is. Greater agricultural and manufacturing employment are expected to decrease the likelihood of a peg.<sup>5</sup>

Table 2 shows that employment in the manufacturing sector has accounted for 19 percent of overall employment in the transition countries and agricultural employment has accounted for 24 percent. There are however substantial differences between countries as revealed in Table 3. For example, whereas the share of manufacturing employment is below 10 percent in Albania and the Kyrgyz Republic, it is above 25 percent in the Czech Republic and Slovenia. Similarly, the share of agricultural employment ranges from 6 percent in the Czech Republic to 67 percent in Albania.

Fixed exchange rates benefit groups with significant cross-border interests. We include a measure of trade openness (imports plus exports as percent of GDP), which in an indirect way indicates how important cross-border trade is for the country's economic agents and thus how significant will be these interests in fixing the exchange rate. We expect trade openness to increase the likelihood of a peg. Trade concentration, as discussed further below, may have an ambiguous effect on the likelihood of a peg. We

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<sup>5</sup> Export oriented industries benefit from devaluation only if their operations do not depend heavily on imported inputs. Similarly, import competing interests stand to gain from devaluation unless they are in an industry with low pass through where exchange rates have little influence on prices. Testing these hypotheses requires detailed data on the structure of the economy that are not available for a large number of countries and years. In general, while we believe that outcomes are driven by preferences operating through a political process, the lack of data on the size and influence of groups (particularly cross-nationally) forces us to look at aggregate economic features as a proxy for the size of underlying interest groups.

also include the stock of foreign direct investment as percent of GDP as a measure of the importance of international investment, again on the principle that firms with cross-border activities will favor currency predictability. We expect countries with a large presence of foreign capital to be more likely to fix their exchange rates.<sup>6</sup>

Most transition countries are small open economies with imports plus exports averaging about 99 percent of GDP. In some economies, including Estonia and the Slovak Republic, trade during the period has been more than 130 percent of GDP (Table 3). Even in the most closed economy in the region, Albania, imports plus exports account for 59 percent of GDP. Furthermore, trade with Germany, the largest economy in Europe is important for many countries. For example, trade with Germany accounted for more than 10 percent of GDP for the Czech Republic, Hungary, the Slovak Republic, and Slovenia. The stock of inbound FDI as percent of GDP stands at about 22 percent of GDP on average for the period. Some countries, e.g. Azerbaijan, Estonia, Hungary, and Kazakhstan have attracted significant amounts of FDI, more than 30 percent of GDP whereas other countries, e.g. Belarus, Russia, and Ukraine, have been less successful with FDI below 10 percent of GDP.

We also include foreign debt as percent of GDP as a measure of how widespread currency risk exposure is in the economy. Greater foreign currency liabilities make devaluations costly for a wider range of businesses, households, and governments and is expected to increase the likelihood of pegging. External debt has been about 47 percent of GDP in the region, but similar to the other variables used in the estimations, it varies

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<sup>6</sup> Table 2 shows that the correlation of trade openness and the dummy variables for de facto and de jure pegs is positive and statistically significant. Greater FDI is also associated with a greater likelihood of de facto pegs. Conversely, the correlation of the share of agricultural employment and the peg dummies is negative and statistically significant. The correlations of the share of manufacturing employment and the exchange rate dummies are not statistically significant.

between countries. On average during the period, Bulgaria has been the most indebted transition country with external debt of 93 percent of GDP and Belarus has had the smallest debt burden of only 17 percent of GDP.

We also include a measure of democracy from the Polity IV dataset that ranges from -10 for autocratic regimes to 10 for fully developed democracies. We should note that there is significant variation in the depth of democracy among the transition countries in the early years of transition and, also, at the later years of our sample. For example, in 2004 the average cross-country democracy rating was 5.66 with a standard deviation of 5.86.

Control Variables. The standard economic approach, related to optimal currency area considerations, weighs factors that affect the effectiveness and desirability of an independent monetary policy. In this framework, inflation should increase the incentives to peg the exchange rate and the synchronicity of business cycles should increase the likelihood of a peg. Financial development, as a proxy for the effectiveness of monetary policy, is expected to reduce the likelihood of a peg. Several factors are expected to reduce the sustainability (hence desirability) of a peg: budget deficit, the current account deficit or the trade deficit, unemployment, and capital account openness.<sup>7</sup>

We include most of the variables used by previous research and we add political

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<sup>7</sup> The empirical evidence on these hypotheses in the transition economies is mixed. Greater trade openness is associated with a greater likelihood of pegging in Von Hagen and Zhou (2005b) and in Aisen (2004). The effect is not statistically significant or is opposite to expected in Klyuev (2002), Markiewicz (2006), and Von Hagen and Zhou (2005a). Trade concentration has a positive effect on the likelihood of adopting a peg in Von Hagen and Zhou (2005 b) and a negative effect in Markiewicz (2006). Similarly, Von Hagen and Zhou (2005b) and Markiewicz (2006) find that financial development decreases the likelihood of a peg whereas Von Hagen and Zhou (2005a) report the opposite effect. Klyuev (2002) and Markiewicz (2006) find that high inflation is associated with a lower likelihood of a peg and Von Hagen and Zhou (2005b) find that the effect of inflation is not statistically significant. There is some evidence that small budget deficits are associated with a greater likelihood to peg whereas the effect of high unemployment is not significant (Klyuev 2002).

economy variables. We also include a measure of Central Bank independence. Countries with less central bank independence might prefer to peg their exchange rate in order to sustain low inflation. However, they may also be less capable of sustaining disciplined monetary policy that is necessary to maintain a peg.

The transition countries have had varying macroeconomic outcomes. For example, credit to the private sector as percent of GDP ranged from 16 percent of GDP in Georgia, Kazakhstan, and the Kyrgyz Republic to 69 percent of GDP in Hungary. Annual CPI inflation has been below 10 percent in the Czech Republic and Slovakia and above 100 percent in a number of countries including Armenia, Ukraine and Bulgaria. In terms of central bank independence, Poland occupies the top position and Azerbaijan is at the bottom.<sup>8</sup>

Empirical Methodology. In all estimations, the dependent variable is a dummy variable taking the value 1 if a country has adopted a fixed exchange rate and 0 otherwise (managed floats and floats). Later in the paper we discuss the results of additional estimations where we vary the classification of regimes. The estimations are performed using the probit methodology. We recalculate and report the estimated coefficients into marginal effects to make the interpretations of the results easier. All standard errors are adjusted for intragroup correlations (clustered standard errors). In addition, we use the Huber/White estimator of variance (robust estimation). To avoid potential endogeneity we include only lags of the independent variables. Following Keele and Kelly (2006) we do not include lags of the dependent variable in the main results. In the robustness

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<sup>8</sup> The index of central bank independence obtained from Cukierman et.al. (2002) provides one value for all years. Therefore we cannot trace the changes to central bank independence over time.

checks, we report estimations where we use instrumental variables and a lagged dependent variable.

We start with a benchmark equation that includes trade openness, trade concentration, the share of agricultural employment, the share of manufacturing employment, democracy and a dummy variable for Central and East European countries (on the principle that countries outside this region are different enough to make comparison difficult)<sup>9</sup>:

$$\text{PEG} = \alpha + \beta_1 \text{OPENNESS} + \beta_2 \text{TRADE CONCENTRATION} + \beta_3 \text{AGR EMPL} + \beta_4 \text{MANUF EMPL} + \beta_5 \text{DEMOCRACY} + \beta_6 \text{CEEC} + u$$

Then we add different groupings of the variables discussed in the previous sections.

#### **4. Results**

Table 4 reports the estimation results using the de facto measures of exchange rate regimes. There are several statistically significant effects across all estimations. Openness is positive and statistically significant indicating that the likelihood of a peg is greater in countries where a large portion of the economic activity is carried out across borders. The size of the effect is not negligible. Using the estimates from the benchmark equation in column (1), a one standard deviation increase in the share of trade leads to a 12.0 percentage points greater likelihood of adopting a peg ( $0.31 * 0.387$ ). Trade concentration is also statistically significant and has a negative effect on the likelihood of adopting a

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<sup>9</sup> The CEEC are Albania, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, the Slovak Republic, and Slovenia.

peg, counter to conventional wisdom.<sup>10</sup> The effect of trade concentration is economically large. A one standard deviation increase in trade concentration, e.g. from the value for Estonia in 2004 (4 percent of GDP) to the value for Poland (9 percent of GDP) reduces the likelihood of adopting a peg by 21.7 percentage points ( $4.349 \times 0.05$ ). We return to consider these somewhat surprising result below.

The sectoral composition of employment is important. A greater share of agricultural employment and a greater share of manufacturing employment are associated with a smaller likelihood of adopting a fixed exchange rate regime. Using the coefficient estimates from column (1), a one standard deviation increase in the share of agricultural employment leads to a 16.5 percentage points smaller likelihood of adopting a peg ( $1.032 \times 0.16$ ). A one standard deviation increase in the share of manufacturing employment is associated with a 19.7 percentage points smaller likelihood of adopting a peg ( $2.460 \times 0.08$ ). These are not small effects. The share of agricultural employment is statistically significant in all specifications and the share of manufacturing employment is statistically significant in five of the six models.

Turning to political structures, countries with democratic systems are more likely to operate under a de facto peg. This result is consistent with the idea that policymakers in democracies have used an external exchange rate regime to insulate monetary policy from domestic political demands. The coefficient estimate on democracy is positive and statistically significant in all specifications. Also, the size of the effect is relatively large. A one standard deviation increase in the democracy index leads to a 13.3 percentage points increase in the likelihood of adopting a peg ( $0.024 \times 5.53$ ).

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<sup>10</sup>The same effect was obtained using other measures of trade concentration: trade with Germany as percent of overall trade, trade with the EMU members as percent of GDP, and trade with the EMU members as percent of overall trade.

In the specification reported in column (2) of Table 4, we add foreign direct investment. The positive and statistically significant coefficient indicates that a larger presence by foreign firms in the economy is associated with a greater likelihood of adopting a peg. In terms of the size of the effect, a one standard deviation increase in the stock of FDI as percent of GDP is associated with a 8.1 percentage points greater likelihood of adopting a peg ( $0.387*0.21$ ).

In column (3) we add inflation, the trade balance, external debt as percent of GDP, and financial development. These variables are included often in empirical models of exchange rate regime choice. The coefficient estimates of all four variables are statistically significant and have the expected signs. The likelihood of a peg is greater when inflation is low, the trade deficit is small, the external debt is large, and when the financial system is less developed. It is interesting to point out that replacing the trade balance with the current account balance in the same model does not produce a statistically significant result. This argues for a political economy channel by which the trade balance has an impact on policy. In principle, the purely economic effect of the two should be similar. However, inasmuch as the trade deficit implicates interest groups more directly – it reflects problems in import and export competition – its significance implies the importance of political economy considerations as opposed to purely economic ones.

In terms of the magnitude of the effects, a one standard deviation increase in inflation lowers the likelihood of a peg by 6.2 percentage points ( $0.032*1.89$  as inflation is in logarithm). This is not a particularly strong effect given the large standard deviation of inflation in the sample. An increase in the trade deficit to GDP ratio by one standard deviation lowers the likelihood of a peg by 4.9 percentage points ( $0.545*0.09$ ). A one

standard deviation increase in financial development leads to about 5.6 percentage points lower likelihood of adopting a peg ( $0.257 \times 0.22$ ). A one standard deviation increase in external debt as percent of GDP increases the likelihood of a peg by 2.8 percentage points ( $0.001 \times 27.92$ ).

Table 5 summarizes the sizes of the effects discussed in this section. Overall, while the effects of the macroeconomic variables are statistically significant, their importance is substantially smaller compared to the cross-border, sectoral and political structure influences. This conclusion is also supported by looking at column (4) of Table 4 where we see that the EBRD measure of international trade and foreign exchange market liberalization, and the index of central bank independence are not statistically significant.

#### *Trade concentration*

Next, we explore in more detail the origins of the trade concentration effect.<sup>11</sup> Because of their geographic, historical, and cultural proximity to Western countries, some of the transition economies, e.g. the Czech Republic, Hungary, and Slovakia, experienced a large increase in trade with Germany and other EU countries immediately after the collapse of communism. For these countries, the growth of trade links to the Western markets was not in doubt. Therefore, the benefit of fixing the exchange rate in order to increase trade linkages might not have been important enough to justify foregoing independent monetary policy.<sup>12</sup> In contrast, other transition countries that had no strong

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<sup>11</sup> Similar to us, Markiewicz (2006) also obtains a negative effect of trade concentration on the likelihood of pegging in the transition countries. She does not investigate this effect in greater detail but conjectures that economies with significant geographic concentration of trade are more prone to shocks and would, therefore, prefer the flexibility of a float or a managed float. Here we explore an alternative explanation.

<sup>12</sup>The Czech Republic, Hungary, Slovakia, and Slovenia, which are the transition countries with the greatest volume of trade with Germany and the EMU as percent of their GDP never had a de facto peg against the DM or the euro during our sample period.

historical or geographical reason to anticipate close economic ties with the EU had a stronger incentive to adopt a peg in the hope that it would stimulate economic links with the European Union. In other words, the marginal impact of a currency peg could be expected to be small for countries that had “natural” trade ties with Germany and the rest of the EU, while the marginal impact of a currency peg might be substantial for more peripheral countries.

To test this hypothesis, in column (6) we add the “initial” volume of trade with Germany measured as the average trade with Germany over GDP during the early years of transition from 1992 to 1995. As the results show, the negative effect of trade concentration is indeed driven by the “initial” trade with Germany. Countries that started off with substantial trade links to the West decided to keep a flexible exchange rate thereafter.<sup>13</sup>

#### *De jure exchange rate regimes*

Table 6 reports the results of the same estimations reported in Table 2 but using the de jure exchange rate regimes. The coefficient estimates on most explanatory variables have the same signs as for de facto regimes and are generally statistically significant. However, the sizes of the effects are substantially smaller. Note, for example, that the marginal effect of trade openness and FDI is several times smaller for de jure regimes than for de facto regimes. In general, the influences rooted in the real economy are much more pronounced when we consider the de facto regimes. This makes sense,

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<sup>13</sup> The correlation of trade with Germany and trade with the EMU countries is high: 0.78. In addition to initial trade concentration, we also experimented with two variables from gravity models – a dummy variable for common border with an EMU member country and distance of capital from Berlin. These variables were not statistically significant and did not affect the estimated coefficient on trade concentration.

as we would expect economic agents in the real economy to be concerned first and foremost about the *actual* currency policy in place, rather than the stated one.

*Additional effects and robustness checks*

Table 7 reports additional estimations of the benchmark equation using de facto exchange rate regimes. In the first equation we exclude the “freely falling” exchange rate regimes. These are the country/years when the exchange rate is in a downward spiral during a financial crisis or during price liberalization. Excluding the “free falling” observations reduces the sample from 221 observations to 178 observations. The results in Table 7 show that the estimated coefficients have the same signs and roughly the same significance levels as reported earlier.

In the second column of Table 7 we revert to the original sample but we add the lagged exchange rate regime. The statistically significant and large (close to 1) coefficient estimate on the lagged dependent variable shows that exchange rate regimes are persistent. There is an 86 percent probability that a peg will continue from one year to the next and, respectively, a 14 percent probability that it would end. Holding constant the lagged exchange rate regime, we obtain similar effects on the variables in our benchmark equations.

Then, in the third column of Table 7 we estimate the benchmark equation with data on the countries in Central and Eastern Europe only, which reduces the sample size to 143 observations. Yet, the estimated coefficients are similar in statistical significance to those reported earlier. One exception is democracy which is statistically significant only at the 12<sup>th</sup> percent level. The sizes of the coefficients are also close to those in the

benchmark estimation. For example, the coefficient on trade openness is 0.353 whereas in Table 4, column (1) it is 0.387.

In column (4) we estimate the benchmark equation adding the total external liabilities as share of GDP from Lane and Milesi-Ferretti (2007). Total liabilities comprise of international debt and equity liabilities, foreign direct investment, and financial derivatives. Confirming our results using FDI and external debt separately, the results in column (4) show that countries with greater external liabilities are more likely to peg their exchange rate.

In the fifth column we report the estimates of the benchmark equation using the Levi-Yeyati and Stuzenegger (2005) definition for de facto exchange rate regimes. The correlation of the Reinhart and Rogoff definition for pegs with the definition of Levi-Yeyati and Stuzenegger for the transition economies is 0.52. Therefore, we can expect to obtain different results. Indeed, the results are weaker in terms of statistical significance of the individual explanatory variables and the overall fit of the model. Specifically, democracy and the share of manufacturing employment are not statistically significant.

Finally, in column (6) we estimate an instrumental variables model treating trade openness and trade concentration as endogenous. Even though the models were estimated with lagged independent variables, one could argue that trade may increase in anticipation to reduced currency volatility in the near future, i.e. international trade may increase if a country is expected to peg its currency. We use two dummy variables as external instruments. One dummy variable equals 1 if a country has common border with an EMU member and zero otherwise. A common border may stimulate trade without affecting the exchange rate regime independently. The second dummy variable equals 1

if a country is geographically located in Asia and zero otherwise. These are former Soviet republics which have more established trade relationships with Russia and the Far East rather than with Western Europe. The results show that we obtain similar effects when we use the instrumental variables estimation. Most importantly, the effects of trade openness and trade concentrations remain statistically significant.<sup>14</sup>

In addition to the estimations reported in Table 7, we also used an ordered probit methodology where the dependent variable takes more than two values that are ordered in terms of the flexibility of the exchange rate regime, e.g. floats, managed floats and pegs. We also used a multinomial logit to estimate the likelihood of adopting exchange rate regimes with different degrees of flexibility. These estimations are available on request. The estimated effects from these models are similar to the ones we report in terms of direction, with a few additional observations. For example, trade concentration reduces the likelihood of both pegs and floats and increases the likelihood of managed exchange rate regimes which suggests that countries with a high geographic concentration of trade balance the advantages of less flexible exchange rates for trade purposes and the ability to react to shocks.

In terms of additional variables, we also included the budget balance which was not statistically significant. We also included an interaction variable of the share of manufacturing and agricultural employment with the democracy variable to test whether these sectoral influences are channeled into policy more strongly in democratic regimes. The influence of manufacturing interests does not appear to depend on the depth of democracy. However, we obtain some (weak) evidence that the influence of the

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<sup>14</sup> The estimation was performed using two-stage least squares with robust standard errors.

agricultural sector is weaker in more democratic environments. We also included the standard deviation of economic growth rates as a proxy for the likelihood of economic shocks but did not obtain statistically significant results.

Furthermore, we included the correlation coefficient of GDP growth rates with the growth rates of Germany as a proxy for similar business cycles. Only four of the 21 transition countries had negative growth correlations with Germany (Georgia, Moldova, Romania, and Ukraine) which were, however, small in absolute magnitude: about  $|-0.15|$ . Two countries: Hungary and Slovenia, had positive and relatively large correlation coefficients (greater than 0.30). However, the growth correlations of most countries were small in size. Including them in the regressions did not yield a statistically significant coefficient and did not change the statistical significance of the remaining coefficients.

## **5. Implications for the adoption of the euro**

All EU accession countries are required by their accession agreements to adopt the euro. However, the timing of the adoption is not specified. An EU member country can join the euro zone after a 2 year period during which it maintains low inflation and low interest rates, stable exchange rate vis-à-vis the euro, a low budget deficit, and low public debt as a percent of GDP. Of the transition countries, only Slovenia has successfully fulfilled those criteria and has adopted the euro as legal tender while the remaining countries have struggled with the requirements.

The CEEC countries' progress in the direction of euro adoption has been slow. In almost all instances, either inflation rates or fiscal positions, or both, have been inconsistent with the Maastricht criteria. Few if any CEEC governments seem strongly oriented toward implementing the measures necessary for euro adoption, so that the time

frame for adopting the euro has been put off to 2010-2012 – perhaps indefinitely. To be sure, the decided lack of enthusiasm for extension of the euro zone demonstrated by some current euro members must play a role in the behavior of CEEC governments.

It would seem, in any event, that those interested in exchange rate predictability via entry into the EMU do not have the upper hand in the policy-making process at present. This is somewhat perplexing, as one might expect that small open economies in close proximity to the EMU countries, trading extensively with the EMU, would rush to adopt the euro despite associated hardships. This is not happening. Can our results illuminate these developments? We find that trade openness is associated with pegging the exchange rate as expected. However, we also find that there are countervailing forces to this effect. Specifically, countries that have already established trade ties to the West have little incentive to peg their exchange rate as a tool to stimulate further international trade. Furthermore, firms involved in international trade are conflicted about their preferences over the exchange rate regime. While greater overall trade openness increases the likelihood of pegging the exchange rate, the influence of two sectors with traditional trade involvement – agriculture and manufacturing, have the opposite effect. Hence, despite the importance of international trade, these countries may be unwilling to press for euro adoption at the expense of a contraction.

The implications of the model for adopting the euro are summarized in Table 8, where we report the predicted probabilities of fixed exchange rate regimes only for the sample of countries in Central and Eastern Europe. We include CEE countries that are not currently in the EU as they would probably become candidates to join the EU and the EMU in the foreseeable future and also because they may decide to adopt the euro

unilaterally. The predicted probabilities are based on a model estimated only for the CEE countries using the benchmark equation discussed above and adding inflation, the fiscal balance, and foreign direct investment. We obtain similar rankings of the countries in terms of the likelihood of adopting a peg using other specifications. The table reports the predicted probability of a fixed exchange rate using the country characteristics from 2005, one year after the last observation in our data set. We do not have data on exchange rate regimes for that year but we can use the values of the explanatory variables to obtain out-of-sample predictions. We also report the de jure and de facto exchange rate regimes in 2004.

The predicted probability of a peg ranges from 0.91 in Estonia to 0.08 in Romania. The top four countries in terms of predicted probability of pegging: Estonia, Latvia, Bulgaria, and Lithuania actually have pegs. The bottom two countries: the Czech Republic and Romania are the only two countries that have de jure floats (although in practice they manage their exchange rates). Most countries, 8 out of 13, have predicted probability of a peg around 50 percent and lower. Looking at the EU accession countries only, note that the majority (6 out of 10) have a probability of pegging around 50 percent and lower. This is consistent with the slow progress toward euro adoption in the region.

Our results suggest that the countries operating currently under fixed exchange rate regimes will, as a group, lead the way in adopting the euro. They are followed by Slovakia, Hungary and, possibly, countries that are not current EU members: Macedonia, Albania, and Croatia. The Czech Republic, Romania, and Poland will probably adopt the euro at a later date. Clearly, our predictions are already violated by the adoption of the euro in Slovenia which satisfied the Maastricht criteria fairly easily. However the process

of euro adoption is in its early stages; the next few years will reveal the patterns of new EMU membership across the region.

## **6. Conclusions**

This paper shows that political economy factors have been at least as important in shaping exchange rate regime choices in the transition countries as economic factors that are usually considered in the literature. Influences originating in the international trade and investment sectors have a particularly pronounced effect. Trade openness, trade concentration, the size of the tradables sectors, and the presence of foreign firms play an important role in explaining which countries peg their exchange rates. Furthermore, political institutions, namely the depth of democracy, have an influence that is separate from the economic effects and the distributional effects of exchange rate regimes.

Two of the results in the paper challenge conventional wisdom. Greater trade concentration with Germany and the EMU countries has been associated with a smaller rather than greater likelihood of pegging the exchange rate. The countries with the closest economic ties to Western Europe have not opted for pegging. Furthermore, countries with more developed democracy have been more likely rather than less likely to peg the exchange rate. Time (and future research) will show if these effects are transient given the transition nature of the sample countries or are more general.

We use our estimations to provide predicted probabilities of entry into the euro zone, although it is certainly the case that pegging the exchange rate is not the same as entering into a monetary union.<sup>15</sup> Nonetheless, the factors that raise the likelihood that a

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<sup>15</sup> EMU entry cannot be reversed easily, which may serve to boost expectations of financial stability; but it also removes the option for currency policy in the event of a large shock. EMU entry also gives a country voice in the setting of monetary policy, although the transition countries would be relatively minor actors

country would peg its currency are similar to the factors that would raise the likelihood for adopting the euro. Consistent with casual observations of actual policies, our results suggest that the likelihood of adopting the euro in the near future is relatively small for most countries in the region.

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among the numerous other current and future members of EMU.

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Appendix A. Countries used in the estimations.

Albania	Latvia
Azerbaijan	Lithuania
Belarus	Macedonia, FYR
Bulgaria	Moldova
Croatia	Poland
Czech Republic	Romania
Estonia	Russian Federation
Georgia	Slovak Republic
Hungary	Slovenia
Kazakhstan	Ukraine
Kyrgyz Republic	

## Appendix B: Variable Definitions and Sources

<b>Variable</b>	<b>Definition</b>	<b>Source</b>
<b>De Facto Exchange Rate</b>	De facto classification of exchange rate regimes	Reinhart and Rogoff (2002) Levi-Yeyati and Sturzenegger (2000)
<b>De Jure Exchange Rate</b>	De jure classification of exchange rate regimes	<i>Annual Report on Exchange Arrangements and Exchange Restrictions</i> , IMF
<b>Imports plus exports (Trade Openness)</b>	Imports plus exports of goods and services, share of GDP	<i>Transition Report</i> , EBRD, various years
<b>Exports to Germany (Trade concentration)</b>	Total value of exports to Germany, share of GDP	<i>Direction of Trade Statistics</i> , IMF
<b>Share of agricultural employment</b>	Share of agricultural employment in total employment	LABORSTA, dataset on labor statistics, International Labor Organization
<b>Share of manufacturing employment</b>	Share of manufacturing employment in total employment	LABORSTA, dataset on labor statistics, International Labor Organization
<b>Democracy</b>	Index of political regime characteristics and transitions; higher number indicates greater level of political system democratization; range -10 to 10.	Center for International Development and Conflict Management, Polity IV dataset, Polity 2 variable
<b>FDI</b>	Inward foreign direct investment, stock, share of GDP	The Vienna Institute for International Economic Studies, <i>wiiw Database on FDI</i>
<b>Inflation</b>	Annual percent change in the CPI	<i>Transition Report</i> , EBRD, various years
<b>Trade Balance</b>	Difference between exports and imports of goods and services, share of GDP	<i>Transition Report</i> , EBRD, various years
<b>External Debt</b>	External debt, percent of GDP	<i>Transition Report</i> , EBRD, various years
<b>Financial Development</b>	Credit by deposit money banks and other financial institutions to the private sector, share of GDP	<i>Transition Report</i> , EBRD, various years
<b>Trade and Currency Market Liberalization</b>	Index of trade and foreign exchange market liberalization; range from 1 to 5 higher number indicates greater degree of liberalization	<i>Transition Indicators</i> , EBRD, various years
<b>Central Bank Independence</b>	Index of central bank independence, range 0 to 1, higher number indicates greater independence	Cukierman et. al. (1992)

Table 1. Exchange rate regimes in the transition economies, 1992 – 2004.

De Facto Exchange Rate Regimes			
	Pegs	Managed floats	Floats
1992-1996	13.4	40.3	46.3
1997-2000	23.4	55.8	20.8
2001-2004	27.7	68.7	3.6
De Jure Exchange Rate Regimes			
	Pegs	Managed floats	Floats
1992-1996	29.8	34.3	35.9
1997-2000	21.6	58.1	20.3
2001-2004	26.6	59.5	13.9

Notes: Reported are the percent of transition countries that had a certain regime in a given period.

Table 2. Summary statistics and correlations

	De facto peg	De jure peg	Agric. employ ment	Manuf. employ ment	Democrac y	Trade w/ Germ.	Open ness	FDI	Fin. developm ent	Trade balance	Trade liberalizati on	Central bank independe nce	Inflation	Eternal debt
Mean	0.21	0.27	0.24	0.19	5.14	0.05	0.99	0.22	0.35	-0.07	3.80	0.57	255.4	46.52
SD	0.41	0.44	0.16	0.08	5.53	0.05	0.31	0.21	0.22	0.09	0.78	0.16	1085.6	27.92
Min	0	0	0.04	0.03	-7.0	0.00	0.43	0.001	0.05	-0.31	1	0.25	0.10	3.1
Max	1	1	0.72	0.37	10.0	0.23	1.80	1.43	1.33	0.23	4.3	0.89	15606.5	145.6

*Correlations*

DF peg														
DJ peg	0.60*													
Agriculture	-0.13*	-0.24*												
Manufact.	0.02	0.12	-0.76*											
Democracy	0.19*	0.23*	-0.35*	0.50*										
Trade w/G.	-0.13*	-0.12	-0.52*	0.51*	0.44*									
Openness	0.33*	0.24*	-0.44*	0.32*	0.08	0.36*								
FDI	0.19*	-0.03	0.06	-0.40*	-0.18*	0.22*	0.27*							
Fin. Dev.	-0.22*	-0.03	-0.32*	0.38*	0.31*	0.36*	0.10	-0.10						
Trade balance	-0.15*	-0.09	-0.28*	0.19*	-0.08	0.14*	-0.06	0.00	-0.01					
Trade liberal.	0.16*	0.22*	0.01	-0.02	0.51*	0.39*	-0.02	0.22*	0.27*	-0.26*				
CB indep.	0.18*	0.14*	-0.29*	0.27*	0.52*	0.33*	0.17*	-0.07	0.14*	-0.08	0.35*			
Inflation	-0.23*	-0.08	-0.02	0.17*	-0.18*	-0.31*	-0.02	-0.52*	0.06	0.19*	-0.59*	-0.16*		
External debt	0.13*	0.00	0.07	-0.11	0.15*	0.11	0.14*	0.21*	0.21*	-0.16*	0.31*	0.16*	-0.18*	

Notes: \* indicates statistical significance at the 5 percent significance level.

Table 3. Period averages, 1992-2004.

	Agric. employ ment	Manuf. employ ment	Democrac y	Trade w/ Germ.	Open ness	Stock of FDI	Fin. developm ent	Trade balance	Trade liberaliz. independen ce	CB inde penden ce	Inflation	Eternal debt
Albania	0.67	0.05	5.08	0.01	0.59	0.13	0.47	-0.27	4.14	0.51	33.32	41.46
Azerbaijan	0.37	0.07	-5.54	0.01	1.01	0.73	0.21	-0.04	2.85	0.25	377.61	17.54
Belarus	0.21	0.25	-3.23	0.02	1.29	0.06	0.22	-0.06	1.69	0.49	453.45	16.90
Bulgaria	0.25	0.24	8.31	0.04	1.05	0.15	0.55	-0.06	4.16	0.55	120.98	93.46
Croatia	0.18	0.21	0.54	0.04	0.98	0.15	0.57	-0.19	4.14	0.44	178.25	44.54
Czech Republic	0.06	0.28	10.00	0.16	1.18	0.28	0.59	0.01	4.25	0.73	7.33	35.07
Estonia	0.11	0.23	6.00	0.04	1.53	0.37	0.31	-0.15	4.14	0.78	100.16	47.16
Georgia	0.53	0.06	4.92	0.00	0.79	0.17	0.16	-0.16	3.59	0.73	1528.97	44.88
Hungary	0.08	0.22	10.00	0.14	1.10	0.39	0.69	-0.05	4.25	0.67	14.92	62.92
Kazakhstan	0.26	0.10	-4.23	0.02	0.91	0.36	0.16	0.03	3.32	0.44	401.85	48.63
Kyrgyz Republic	0.51	0.07	-3.00	0.03	0.84	0.20	0.16	-0.06	4.07	0.52	153.09	78.77
Latvia	0.17	0.19	8.00	0.03	1.03	0.20	0.25	-0.12	4.16	0.49	90.05	58.87
Lithuania	0.19	0.18	10.00	0.04	1.08	0.15	0.17	-0.09	4.11	0.78	132.19	31.15
Macedonia, FYR	0.21	0.23	6.69	0.06	0.94	0.16	0.37	-0.12	4.05	0.41	180.68	36.00
Moldova	0.47	0.09	7.15	0.02	1.13	0.19	0.29	-0.16	3.93	0.73	240.58	70.58
Poland	0.21	0.21	9.00	0.06	0.56	0.15	0.35	-0.04	4.25	0.89	16.45	42.77
Romania	0.38	0.22	7.15	0.04	0.66	0.11	0.19	-0.05	4.10	0.34	81.85	25.45
Russian Federation	0.13	0.21	5.31	0.02	0.62	0.07	0.29	0.11	3.02	0.49	243.52	54.07
Slovak Republic	0.08	0.26	8.17	0.13	1.35	0.15	0.56	-0.06	4.22	0.62	9.55	47.67
Slovenia	0.10	0.33	10.00	0.12	1.12	0.13	0.39	-0.03	4.25	0.63	26.21	33.65
Ukraine	0.22	0.21	6.38	0.01	0.92	0.07	0.29	-0.02	2.79	0.42	568.88	25.41

Table 4. The determinants of de facto exchange rate regimes in transition economies, 1993-2004

	Dependent variable: 1 if de facto peg, 0 otherwise				
	(1)	(2)	(3)	(4)	(5)
Imports plus exports/GDP	0.387*** (4.10)	0.308*** (3.41)	0.352*** (2.72)	0.556*** (4.34)	0.134*** (2.87)
Exports to Germany/GDP	-4.349*** (-3.86)	-4.567*** (-3.62)	-3.281*** (-3.63)	-5.134*** (-3.35)	-0.111 (-0.16)
Share of agricultural employment	-1.032*** (-2.78)	-0.785** (-2.37)	-0.401* (-1.75)	-1.109** (-2.36)	-0.565*** (-4.13)
Share of manufacturing employment	-2.460*** (-3.49)	-1.282** (2.09)	-0.722 (-1.54)	-2.192** (-2.44)	-0.873*** (-3.56)
Democracy	0.024*** (2.96)	0.025*** (3.56)	0.014** (2.23)	0.022** (2.37)	0.011** (2.54)
Stock of FDI/GDP		0.387* (1.93)			
Inflation			-0.033*** (-2.93)		
Trade balance			0.545* (1.75)		
External debt/GDP			0.001** (2.20)		
Financial development			-0.257*** (-2.58)		
Trade and currency market liberalization				0.073 (0.86)	
Central bank independence				-0.102 (-0.35)	
Exports to Germany/GDP 1993-1995					-6.471*** (-2.88)
Dummy for Central and East European countries	0.169** (2.15)	0.116* (1.89)	0.128** (2.21)	0.115 (1.37)	0.202*** (4.29)
Number of observations	221	217	207	190	221
Wald Chi2(# indep. variables)	58.92	65.59	135.35	40.28	66.33

Notes: The table reports marginal effects from Probit analysis. Z-statistics in parentheses. \*\*\*(\*\*,\*) indicates statistical significance at the 1(5,10) percent level.

Table 5. The effect of a one-standard-deviation increase in the explanatory variables on the likelihood of adopting a de facto peg.

Variable	Effect	Variable	Effect
Imports plus exports/GDP	12.0	Stock of FDI/GDP	8.1
Exports to Germany/GDP	-21.7	Inflation	-6.2
Share of agricultural employment	-16.5	Trade balance	4.9
Share of manufacturing employment	-19.5	External debt/GDP	2.8
Democracy	13.3	Financial development	-5.6

Note: Included are only variables that are statistically significant at least at the 10 percent level in Table 4.

Table 6. The determinants of de jure exchange rate regimes in transition economies, 1993-2004

	Dependent variable: 1 if de jure peg, 0 otherwise				
	(1)	(2)	(3)	(4)	(5)
Imports plus exports/GDP	0.276*** (3.38)	0.105*** (2.97)	0.001*** (4.20)	0.024*** (4.66)	0.267*** (2.70)
Exports to Germany/GDP	-3.477*** (-5.72)	-1.408*** (-7.18)	-0.015*** (-4.41)	-0.281*** (-4.99)	-2.928*** (-2.70)
Share of agricultural employment	-0.795*** (-3.23)	-0.323*** (-3.86)	-0.002*** (-2.58)	-0.045** (-2.17)	-0.952*** (-4.47)
Share of manufacturing employment	-0.981** (-2.47)	0.356** (2.03)	-0.003 (-1.46)	-0.052 (-1.56)	-0.872* (-1.68)
Democracy	0.031*** (3.64)	0.016*** (2.80)	0.0002*** (3.10)	0.003*** (2.60)	0.030*** (3.12)
Stock of FDI/GDP		-0.017 (-0.24)			
Inflation			-0.0001** (-2.29)		
Trade balance			0.003*** (3.26)		
External debt/GDP			0.0001*** (-3.20)		
Financial development			-0.0001 (0.84)		
Trade and currency market liberalization				0.0001 (0.02)	
Central bank independence				-0.006 (-0.50)	
Exports to Germany/GDP 1993-1995					-1.942 (-1.11)
Dummy for Central and East European countries	0.147*** (3.57)	0.058*** (3.94)	0.019*** (5.02)	0.017 (2.77)	0.191*** (6.51)
Number of observations	215	211	201	184	215
Wald Chi2(# indep. variables)	55.98	170.53	71.72	48.35	81.66

Notes: The table reports marginal effects from Probit analysis. Z-statistics in parentheses. \*\*\*(\*\*, \*) indicates statistical significance at the 1(5,10) percent level.

Table 7. The determinants of de facto exchange rate regimes in transition economies, 1993-2004. Dependent variable: 1 if de facto peg, 0 otherwise.

	Excluding “free falling” regimes	Adding lagged ER regime	Only CEE countries	Adding LMF external liabilities	Using LYS definitions for ER regimes	Instrumen tal variables estimation
	(1)	(2)	(3)	(4)	(5)	(6)
Imports plus exports/GDP	0.783*** (4.11)	0.216*** (4.14)	0.353** (2.10)	0.332*** (3.32)	0.754*** (2.86)	0.946*** (4.15)
Exports to Germany/GDP	-6.609*** (-3.25)	-2.980*** (-3.59)	-5.796*** (-3.30)	-4.234*** (-3.21)	-2.909* (-1.91)	-7.161*** (-6.40)
Share of agricultural employment	-1.166** (-1.99)	-0.602** (-2.32)	-1.057* (-1.68)	-0.997** (-2.70)	-1.317* (-1.81)	-0.972*** (-3.48)
Share of manufacturing employment	-2.477** (-2.02)	-1.329** (-2.58)	-1.711** (-2.14)	-1.962*** (3.76)	-1.881 (-1.00)	-2.520*** (-2.85)
Democracy	0.022*** (2.72)	0.010* (1.75)	0.031 (1.62)	0.018*** (2.84)	-0.0002 (-0.02)	0.031*** (4.89)
Dummy for Central and East European countries	0.165** (2.00)	0.098 (1.64)		0.129* (1.69)	0.325* (1.84)	0.356*** (3.16)
Lagged Exchange Rate Regime		0.860*** (6.16)				
External liabilities/GDP				0.152** (2.00)		
Number of observations Wald Chi2(# indep. variables)	178 24.22	220 145.29	143 62.82	207 51.72	184 22.78	221 12.48

Notes: The table reports marginal effects from Probit analysis. Z-statistics in parentheses. \*\*\*(\*\*, \*) indicates statistical significance at the 1(5,10) percent level.

Table 8. Predicted and actual exchange rate regimes.

Country	Predicted probability of a peg in 2005	De jure/de facto exchange rate regimes in 2004	Country	Predicted probability of a peg in 2005	De jure/de facto exchange rate regimes in 2004
Estonia <sup>a</sup>	0.91	Peg/Peg	Croatia	0.50	Managed float/MF
Latvia <sup>a</sup>	0.90	Peg/Peg	Slovak Rep. <sup>a</sup>	0.30	Managed float/MF
Bulgaria <sup>a</sup>	0.89	Peg/Peg	Slovenia <sup>a</sup>	0.18	Managed float/MF
Lithuania <sup>a</sup>	0.86	Peg/Peg	Poland <sup>a</sup>	0.18	Managed float/MF
Macedonia	0.65	Managed float/MF	Czech Rep. <sup>a</sup>	0.13	Float/MF
Hungary <sup>a</sup>	0.53	Managed float/MF	Romania <sup>a</sup>	0.08	Float/MF
Albania	0.51	Managed float/MF			

Notes: <sup>a</sup> indicates that these countries are members of the European Union.