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. We argue that tradables producers prefer a floating rate to allow active exchange rate policy to affect their competitiveness, while internationally exposed sectors prefer a fixed rate to provide currency stability. We find support for that argument using data on de facto and de jure exchange rate behavior for 21 countries during the period from 1992 to 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.

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1 Introduction

The choice of exchange rate regimes has been a central decision facing policymakers in transition economies. The exchange rate regime has important implications for inflation, trade, and monetary policy, and is also crucial to the eventual integration of the transition economies into the European Union and its Economic and Monetary Union.

Most of the scholarly literature on currency policy in transition economies has focused on the important economic issues it raises. However, exchange rate policy is made in a highly political context, in which special-interest, electoral, and other factors play a major role. This paper attempts to incorporate such political-economy considerations into an explanation of the exchange rate policy choices of transition governments.

We focus on the role of special-interest pressures, and of political institutions, in the making of currency policy. Exchange rate policy has differential costs and benefits for different economic agents. Economic agents that are internationally exposed, and thus subject to the risks associated with currency fluctuations, prefer stable exchange rates. On the other hand, tradables producers prefer currency flexibility, which allows exchange rate policy to enhance their ability to compete with foreigners. This leads to the hypothesis that trade openness, as well as stocks of foreign direct investment and foreign debt, will be associated with fixed rates; whereas larger tradables sectors will be associated with floating rates. We evaluate these influences, alongside standard variables from empirical models of exchange rate regime choice. We also investigate the impact of political institutions on exchange rate policymaking, hypothesizing that in new democracies such as those of Eastern and Central Europe policymakers will be particularly drawn toward using a fixed exchange rate to stabilize inflationary expectations.

Our results confirm the importance of political economy factors for exchange rate policy in the transition countries. Currency pegs are associated with economies that are more open to the world economy, whether with respect to trade, financial flows, or foreign direct investment. On the other hand, the larger the tradeables sectors are the less likely it is that a government will fix the exchange rate. We also find evidence that political institutions matter for exchange rate regime choice. Countries that are more politically open prefer fixed exchange rate regimes; a finding that is consistent with a broad literature on the political economy of exchange rate regime choice.

On the basis of these results, we use our empirical framework to assess the likelihood of the adoption of the euro in Central and Eastern Europe. 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 Central and Eastern 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.

Finally, we explore in detail a counterintuitive effect first indentified by Markiewicz (2006) and confirmed by our estimations. We find that, contrary to conventional wisdom, countries whose trade is more concentrated with Germany or the EMU are less likely to peg their exchange rates to the euro. We explain that

effect by differences in initial conditions in terms of trade with the West. Countries that have a "natural" (historically strong) trade relationship with Western Europe do not need a currency peg to stimulate economic ties, while those that start from a lower base, less integrated with Western Europe, have incentives to encourage more trade and investment by fixing their exchange rates.

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 3 discusses the sample, data and methods used in our analysis and Section 4 contains our empirical results. In Section 5 we use our analysis of the transition economies to make predictions about the timing of euro adoption decisions.

2 The Political Economy of Exchange Rate Regimes: Theory

There is substantial evidence that political economy factors have influenced economic policy in the transition countries. Fidrmuc (2000), Warner (2001), and Roland (2002) show that individuals and groups who expect to gain from market liberalization, privatization, and other structural reforms have voted (or exerted pressure through other means) in favor of the reforms. The political balance between winners and losers has been an important determinant of the speed, depth, and sustainability of reforms. Here we make similar arguments in terms of exchange rate policy.

The choice of exchange rate regime has also received significant attention in the literature, both in general and with regard to the transition economies. The general literature on exchange rate regime choice [for a survey see Broz and Frieden (2001)] indicates an important role for political economy considerations in such processes as the formation of the EU's Economic and Monetary Union, and in the choice of exchange rate regimes across Latin America. Given the importance of exchange rate policy in the transition economies, and the substantial economic and political differences between transition economies and other economies, it is worthwhile to evaluate the policy choices in this context as well.

There is a relatively small existing literature on exchange rate regime choice in Central and Eastern Europe. Klyuev (2002), von Hagen and Zhou (2005a, b), and Markiewicz (2006), for example, incorporate some political-economic factors in their work. However, they focus on explaining exchange rate regime choice using economic shocks, financial development, and other economic variables. We expand upon that literature by incorporating a wider and deeper array of political economy considerations.

The approach here builds on analyses of the special-interest and electoral politics of currency policy. The first set of factors to consider as policymakers contemplate the choice of exchange rate regime, is the heterogeneous 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. The second consideration is what policy-makers anticipate will be the implications of exchange rate policy options for them as political actors. 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. As in Frieden (2002) and Frieden et al. (2001), we 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 (See Broz et al. 2008 for survey evidence on these policy preferences).

Exporters are likely to be torn between a concern for currency stability, on the one hand, and a concern for a favorable level of the exchange rate, on the other. These two concerns conflict, inasmuch as a fixed rate rules out adjusting the nominal exchange rate to improve the competitive position of exporters. Whether exporters favor stability over competitiveness, or vice versa, is likely to depend on such factors as the price sensitivity of the consumers of exports, the ability of exporters to hedge against currency volatility, and so on. Data availability makes it impossible for us to evaluate these more nuanced considerations at this point, but we note the ambiguity of the position of exporters.

The structure of domestic political institutions also has important effects on exchange rate regime choice. Political economists argue that institutions influence a country's choice of monetary policy through their effect on policymakers' preferences for fixed exchange rates or domestic monetary policy autonomy.[1] For example, democratization and its rapid inclusion of previously excluded groups generates pressure for expansionary monetary policy; a policy that will increase inflation and put downward pressure on the exchange rate. Under these circumstances it is rational and strategic for a politician to pre-commit to a fixed exchange rate regime so as to credibly demonstrate to the public that his hands are tied.[2]

Theoretical arguments and empirical contributions have focused on a range of institutional measures and their connection to exchange rate regime choice. Leblang (1999) examines the role of democracy, Bearce and Hallerberg (2008) concentrate on political (in)stability, and Hall (2008) looks at the depth of democracy. All of

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[1] See the essays in Bernhard et al. (2003) as well as contributions from Bernhard and Leblang (1999) and Broz (2002).

[2] This argument is developed in greater detail and is tested on 120 years of data from advanced industrial countries in Eichengreen and Leblang (2002).

these papers base their arguments on the logic of credible commitments and suggest that domestic political pressures 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 perspective is especially appropriate when examining transition economies where policymakers have little (if any) reputational stockpiles to draw upon in the face of an economic crisis. Under these circumstances an external anchor may be an important component of a long-term electoral strategy. We also note that the transition economies are a unique set of countries within which to explore the effect of political institutions on exchange rate regime choice. Unlike most emerging markets these economies have experienced a relatively rapid transition to both democracy and to market economies; differences that lead us to explore different dimensions of political competition and institutional rigidity. For example, we expect that the pressures for expansionary policy will increase as democratic institutions become increasingly well established, providing expanded opportunities for citizens to make demands. These demands, in turn, may increase the desire for governments to seek an external target so as to turn back political pressures and keep inflation under control.

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

3.1 Sample and Dependent Variable

We use data from 21 transition economies during the period from 1992 to 2004.[3] 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

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[3] 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.

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.[4] The table shows that the transition countries have moved away from floating regimes and toward managed floats and pegs over time. Floats represented 46% of the country-years during the early years of transition but only 4% of the observations in the most recent period. Conversely, the percent of currency pegs has increased from 13% to 28%. Although it is less pronounced, a similar tendency toward less flexible exchange rate regimes is observed for de jure exchange rate regimes.[5]

3.2 Independent Variables

Following earlier literature, e.g., Frieden et al. (2001), we use the size of the manufacturing sector and the size of the agricultural sector 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.[6]

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

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[4] 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.

[5] 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% of the de jure pegs were actually managed floats.

[6] 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.

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

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

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.[7] We also include trade concentration which measures the importance of trade with the EU or with Germany. Conventional wisdom suggests that trade concentration should raise the likelihood of pegging as it reflects the importance of currency stability vis-à-vis a major trading partner. However, Markiewicz (2006) finds a negative effect of trade concentration on the likelihood of pegging in the transition countries. We reexamine her findings in our empirical estimations.

Most transition countries are small open economies with imports plus exports averaging about 99% of GDP. In some economies, including Estonia and the Slovak Republic, trade during the period has been more than 130% of GDP (Table 3). Even in the most closed economy in the region, Albania, imports plus exports account for 59% 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% 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% 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% of GDP whereas other countries, e.g., Belarus, Russia, and Ukraine, have been less successful with FDI below 10% 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% of GDP in the region, but similar to the other variables used in the estimations, it varies between countries. On average during the period, Bulgaria has been the most indebted transition country with external debt of 93% of GDP and Belarus has had the smallest debt burden of only 17% of GDP.

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[7] 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.

Table 2 Summary statistics and correlations

	De facto peg	De jure peg	Agric. employment	Manuf. employment	Democracy	Trade w/ Germ.	Openness	FDI	Financial development	Trade balance	Trade liberalization	Central bank independence	Inflation	External 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[a]													
Agriculture	-0.13[a]	-0.24[a]												
Manufact.	0.02	0.12	-0.76[a]											
Democracy	0.19[a]	0.23[a]	-0.35[a]	0.50[a]										
Trade w/G.	-0.13[a]	-0.12	-0.52[a]	0.51[a]	0.44[a]									
Openness	0.33[a]	0.24[a]	-0.44[a]	0.32[a]	0.08	0.36[a]								
FDI	0.19[a]	-0.03	0.06	-0.40[a]	-0.18[a]	0.22[a]	0.27[a]							
Fin. Dev.	-0.22[a]	-0.03	-0.32[a]	0.38[a]	0.31[a]	0.36[a]	0.10	-0.10						
Trade balance	-0.15[a]	-0.09	-0.28[a]	0.19[a]	-0.08	0.14[a]	-0.06	0.00	-0.01					
Trade liberal.	0.16[a]	0.22[a]	0.01	-0.02	0.51[a]	0.39[a]	-0.02	0.22[a]	0.27[a]	-0.26[a]				
CB indep.	0.18[a]	0.14[a]	-0.29[a]	0.27[a]	0.52[a]	0.33[a]	0.17[a]	-0.07	0.14[a]	-0.08	0.35[a]			
Inflation	-0.23[a]	-0.08	-0.02	0.17[a]	-0.18[a]	-0.31[a]	-0.02	-0.52[a]	0.06	0.19[a]	-0.59[a]	-0.16[a]		
External debt	0.13[a]	0.00	0.07	-0.11	0.15[a]	0.11	0.14[a]	0.21[a]	0.21[a]	-0.16[a]	0.31[a]	0.16[a]	-0.18[a]	

[a] indicates statistical significance at the 5 percent significance level

Table 3 Period averages, 1992–2004

	Agric. employment	Manuf. employment	Democracy	Trade w/ Germ.	Openness	Stock of FDI	Financial development	Trade balance	Trade liberaliz.	CB inde indpendence	Inflation	External 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

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.

3.3 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.[8]

We include most of the variables used by previous research and we add political 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% of GDP in Georgia, Kazakhstan, and the Kyrgyz Republic to 69% of GDP in Hungary. Annual CPI inflation has been below 10% in the Czech Republic and Slovakia and above 100% 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.[9]

3.4 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

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[8] 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 (2005b) 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).

[9] 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.

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 checks, we report estimations where we use instrumental variables and a lagged dependent variable.[10]

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):[11]

$$Pr(PEG_{it}) = \varphi \begin{pmatrix} \alpha + \beta_1 \, OPENNESS_{it} + \beta_2 \, TRADE \, CONCENTRATION_{it} \\ + \beta_3 \, AGR \, EMPL_{it} + \beta_4 \, MANUF \, EMPL_{it} \\ + \beta_5 \, DEMOCRACY_{it} + \beta_6 \, CEEC_i + u_{it} \end{pmatrix}$$

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 point greater likelihood of adopting a peg (0.31*0.387). As in Markiewicz (2006), trade concentration is also statistically significant and has a negative effect on the likelihood of adopting a peg.[12] A one standard deviation increase in trade concentration, e.g., from the value for Estonia in 2004 (4% of GDP) to the value for Poland (9% of GDP) reduces the likelihood of adopting a peg by 21.7 percentage points (4.349*0.05). We explore the origins of this effect in more detail later in the paper.

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[10] We also estimated a conditional logistic model grouping the data on the country level. The model yields similar results to what we report in terms of the signs on the estimated coefficients. However, due to the short time span of our data, introducing fixed effects reduces substantially the statistical significance on our key explanatory variables.

[11] The CEEC are Albania, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, the Slovak Republic, and Slovenia.

[12] 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.

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[a]	0.308[a]	0.352[a]	0.556[a]	0.134[a]
	(4.10)	(3.41)	(2.72)	(4.34)	(2.87)
Exports to Germany/GDP	−4.349[a]	−4.567[a]	−3.281[a]	−5.134[a]	−0.111
	(−3.86)	(−3.62)	(−3.63)	(−3.35)	(−0.16)
Share of agricultural employment	−1.032[a]	−0.785[b]	−0.401[c]	−1.109[b]	−0.565[a]
	(−2.78)	(−2.37)	(−1.75)	(−2.36)	(−4.13)
Share of manufacturing employment	−2.460[a]	−1.282[b]	−0.722	−2.192[b]	−0.873[a]
	(−3.49)	(2.09)	(−1.54)	(−2.44)	(−3.56)
Democracy	0.024[a]	0.025[a]	0.014[b]	0.022[b]	0.011[b]
	(2.96)	(3.56)	(2.23)	(2.37)	(2.54)
Stock of FDI/GDP		0.387[c]			
		(1.93)			
Inflation			−0.033[a]		
			(−2.93)		
Trade balance			0.545[c]		
			(1.75)		
External debt/GDP			0.001[b]		
			(2.20)		
Financial development			−0.257[a]		
			(−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[a]
					(−2.88)
Dummy for Central and East European countries	0.169[b]	0.116[c]	0.128[b]	0.115	0.202[a]
	(2.15)	(1.89)	(2.21)	(1.37)	(4.29)
Number of observations	221	217	207	190	221
Wald Chi2(# indep. variables)	58.92	65.59	135.35	40.28	66.33

The table reports marginal effects from Probit analysis. Z-statistics in parentheses. [a] ([b,c]) indicates statistical significance at the 1(5,10) percent level

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*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*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 point increase in the likelihood of adopting a peg (0.024*5.53).

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*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*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.

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

Included are only variables that are statistically significant at least at the 10% level in Table 4

4.1 Trade Concentration

Next, we explore in more detail the origins of the trade concentration effect.[13] 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.[14] In contrast, other transition countries that had no strong 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.[15]

4.2 De Jure Exchange Rate Regimes

Table 6 reports the results of the same estimations reported in Table 4 but using the de jure exchange rate regimes. The coefficient estimates on most explanatory variables

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[13] Markiewicz (2006) does not investigate in further detail the negative impact of trade concentration on the likelihood of pegging 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.

[14] 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.

[15] The correlation of trade with Germany and trade with the EMU countries is high: 0.78.

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[a]	0.105[a]	0.001[a]	0.024[a]	0.267[a]
	(3.38)	(2.97)	(4.20)	(4.66)	(2.70)
Exports to Germany/GDP	−3.477[a]	−1.408[a]	−0.015[a]	−0.281[a]	−2.928[a]
	(−5.72)	(−7.18)	(−4.41)	(−4.99)	(−2.70)
Share of agricultural employment	−0.795[a]	−0.323[a]	−0.002[a]	−0.045[b]	−0.952[a]
	(−3.23)	(−3.86)	(−2.58)	(−2.17)	(−4.47)
Share of manufacturing employment	−0.981[b]	0.356[b]	−0.003	−0.052	−0.872[c]
	(−2.47)	(2.03)	(−1.46)	(−1.56)	(−1.68)
Democracy	0.031[a]	0.016[a]	0.0002[a]	0.003[a]	0.030[a]
	(3.64)	(2.80)	(3.10)	(2.60)	(3.12)
Stock of FDI/GDP		−0.017			
		(−0.24)			
Inflation			−0.0001[b]		
			(−2.29)		
Trade balance			0.003[a]		
			(3.26)		
External debt/GDP			0.0001[a]		
			(−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[a]	0.058[a]	0.019[a]	0.017	0.191[a]
	(3.57)	(3.94)	(5.02)	(2.77)	(6.51)
Number of observations	215	211	201	184	215
Wald Chi2(# indep. variables)	55.98	170.53	71.72	48.35	81.66

The table reports marginal effects from Probit analysis. Z-statistics in parentheses. [a] ([b, c]) indicates statistical significance at the 1(5,10) percent level

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, 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.

4.3 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% probability that a peg will continue from one year to the next and, respectively, a 14% 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% 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) of Table 7 we estimate the benchmark equation adding the total external liabilities as share of GDP from Lane and Milesi-Ferretti (2007). Total liabilities are comprised 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 of Table 7 we report the estimates of the benchmark equation using the Levy-Yeyati and Sturzenegger (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.

In the rest of Table 7 we explore other dimensions of the political environment. In column 6 we substitute a measure of government polarization for our measure of democracy. This variable is statistically significant and positive, a result we interpret as consistent with the view that politicians in environments with a significant risk of political turmoil seek an external anchor to decrease the chance that the monetary tool will be used for constituent service. This is especially important in the transition economies as politically generated inflation would risk future adoption of the euro. In column 7 we use a measure of government fractionalization rather than polarization and find that is it not significant at conventional levels. This is likely a result of the fractionalization measure exhibiting substantially less variance (on the order of a third) than the polarization measure.

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

	Excluding "free falling" regimes (1)	Adding lagged ER regime (2)	Only CEE countries (3)	Adding LMF external liabilities (4)	Using LYS definitions (5)	Adding political polarization (6)	Adding gov. fractionalization (7)	Adding durable (8)	Adding interactions (9)
Imports plus exports/GDP	0.783[a]	0.216[a]	0.353[b]	0.332[a]	0.754[a]	0.583[a]	0.644[a]	0.278[a]	0.335[a]
	(4.11)	(4.14)	(2.10)	(3.32)	(2.86)	(2.99)	(4.53)	(4.23)	(3.71)
Exports to Germany/GDP	-6.609[a]	-2.980[a]	-5.796[a]	-4.234[a]	-2.909[c]	-6.921[a]	-5.459[a]	-4.032[a]	-4.160[a]
	(-3.25)	(-3.59)	(-3.30)	(-3.21)	(-1.91)	(-2.43)	(-3.85)	(-3.89)	(-4.19)
Share of agricultural employment	-1.166[b]	-0.602[b]	-1.057[c]	-0.997[b]	-1.317[c]	-1.299[b]	-0.940[c]	-0.512[b]	-0.676[c]
	(-1.99)	(-2.32)	(-1.68)	(-2.70)	(-1.81)	(-1.98)	(-1.80)	(-1.99)	(-1.76)
Share of manufacturing employment	-2.477[b]	-1.329[b]	-1.711[b]	-1.962[a]	-1.881	-2.669[b]	-2.831[b]	-0.582	-2.600[c]
	(-2.02)	(-2.58)	(-2.14)	(3.76)	(-1.00)	(-2.39)	(-2.42)	(-1.43)	(-1.88)
Democracy	0.022[a]	0.010[c]	0.031	0.018[a]	-0.0002				0.023
	(2.72)	(1.75)	(1.62)	(2.84)	(-0.02)				(0.59)
Lagged Exchange Rate Regime		0.860[a]							
		(6.16)							
External liabilities/GDP				0.152[b]					
				(2.00)					
Alternative political variables						0.146[c]	0.261	0.029[a]	
						(1.90)	(1.46)	(4.93)	
Agricultural Empl.*Democracy									-0.033
									(-0.49)
Manufacturing Empl.*Democracy									0.092
									(0.46)
Dummy for Central and East European countries	0.165[b]	0.098		0.129[c]	0.325[c]	0.343[a]	0.257[a]	0.221[a]	0.129[c]
	(2.00)	(1.64)		(1.69)	(1.84)	(3.60)	(2.89)	(4.69)	(1.87)
Number of observations	178	220	143	207	184	164	196	221	221
Wald Chi2(# indep. variables)	24.22	145.29	62.82	51.72	22.78	40.46	52.19	60.54	43.90

The table reports marginal effects from Probit analysis. Z-statistics in parentheses. [a] ([b,c]) indicates statistical significance at the 1(5,10) percent level

In column 8 of Table 7 we use a measure of the durability of a country's political system—measured as the number of years since the most recent regime change or the end of a transition period—to measure political institutions. As we discuss in the theory section this suggests that more durable governments are able to use an external peg—something necessary to prevent (hyper)-inflation as constituents gain increased access to the political system—to demonstrate their commitment to low inflation and price stability.

The last column of Table 7 adds the interactions of the sectoral employment variables with democracy to test whether these sectoral influences are channeled into policy more strongly in democratic regimes. The statistically insignificant interaction variables do not support that hypothesis. However, note that all other variables retain their statistical significance after we include alternative political variables and interaction terms.[16]

Table 8 reports additional robustness tests with alternative estimation procedures. We estimate a multinomial logit model and an ordered probit model where the dependent variable reflects exchange rate regimes with different degrees of flexibility. Specifically, the dependent variable takes three values for floating exchange rate regimes, intermediate regimes, and fixed exchange rate regimes. The intermediate regimes include managed floating exchange rate regimes as well as crawling pegs and adjustable pegs. The estimated effects from the multinomial logit model are similar to the ones we report in terms of direction, with one additional observation. Trade concentration reduces the likelihood of both pegs and floats and increases the likelihood of intermediate exchange rate regimes. This result suggests that countries with a high geographic concentration of trade try to balance the advantages of less flexible exchange rates for trade purposes and the ability to react to shocks. The ordered probit estimates also confirm our benchmark estimations.[17]

The last column of Table 8 estimates 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 three variables as

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[16] We also included variables for checks and balances with veto power as well as interaction terms of democracy with other economic variables such as the trade balance, the current account balance, and inflation. The interactions were not statistically significant. We checked the magnitude and the statistical significance of all interaction variables using the procedure developed by Norton et al. (2004) as the standard coefficient estimates and significance tests for interaction terms in nonlinear models can be misleading. As in Ai and Norton (2003), the interaction terms varied, with an S-shaped form, at different levels of the predicted variable. However, the interaction effects were not statistically significant at any of those levels, confirming the results reported in the paper. In addition to the political variables, we also included the standard deviation of economic growth rates as a proxy for the likelihood of economic shocks and the correlation coefficient of GDP growth rates with the growth rates of Germany as a proxy for similar business cycles but did not obtain statistically significant results.

[17] We also estimated a hazard rate model explaining the duration of floating and intermediate exchange rate regimes before a switch to a peg. All transition countries start off without a peg and then some adopt pegs over time. We lose about 50 observations because the model drops all observations after the switch has occurred. Also, we don't have many switches due to the short length of the time period—only 11 years. As a result, the coefficients have the same signs as in our probit model but are not as significant. Still, agricultural employment and trade concentration are significant, and the remaining variables are significant at about the 15% level.

Table 8 The determinants of de facto exchange rate regimes in transition economies. Alternative estimation techniques

	Multinomial Logit estimation. A positive/negative coefficient indicates a greater/smaller likelihood of a fixed or a floating exchange rate regime relative to the reference category: intermediate exchange rate regimes.		Ordered Probit estimation. The dependent variable is -1 for floats, 0 for intermediate ER regimes, and 1 for pegs.	Instrumental Variables estimation. The dependent variable is 1 for de facto pegs and 0 otherwise. The instruments are: 1) population size; 2) dummy for common border with an EU country; and 3) dummy for geographical location in Asia.
	The likelihood of a floating ER regime.	The likelihood of a fixed ER regime.		
Imports plus exports/GDP	-1.527	5.265[a]	1.319[b]	0.847[a]
	(0.98)	(6.47)	(2.32)	(5.01)
Exports to Germany/GDP	-129.12[a]	-76.08[a]	-6.120	-7.192[a]
	(-3.52)	(-3.00)	(-1.44)	(-6.56)
Share of agricultural employment	8.271[c]	-7.348[c]	-6.218[a]	-0.889[a]
	(1.64)	(-1.63)	(-3.90)	(-3.44)
Share of manufacturing employment	33.67[a]	-11.18	-15.699[a]	-2.120[a]
	(3.41)	(-2.58)	(-4.86)	(-3.83)
Democracy	-0.041	0.289[b]	0.093[a]	0.030[a]
	(-0.52)	(2.36)	(3.28)	(4.46)
Dummy for Central and East European countries	1.865	2.512[c]	0.883[b]	0.367[a]
	(1.27)	(1.89)	(1.97)	(3.16)
Number of observations	221		221	221
Wald Chi2(# ind. var.)	349.73		41.48	12.19

The table reports marginal effects from Probit analysis. Z-statistics in parentheses. [a] ([b,c]) indicates statistical significance at the 1(5,10) percent level

external instruments: 1) a dummy variable that equals 1 if a country has common border with an EMU member and zero otherwise; 2) a second dummy variable that equals 1 if a country is geographically located in Asia and zero otherwise; and 3) population size. The geographic proximity of a country to the EMU increases trade and trade concentration without affecting the choice of exchange rate regimes directly. Similarly, population size is associated with a smaller share of trade in GDP without affecting directly the choice of exchange rate regimes. The results show that we obtain similar effects when we use the instrumental variables estimation. Most importantly, the effects of trade openness and trade concentration remain statistically significant.[18]

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 and Slovakia have successfully fulfilled those criteria and have 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, 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

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[18] The estimation was performed using two-stage least squares with robust standard errors, clustered on the country level. We performed two tests to validate the choice of instruments. The null hypothesis of the Kleibergen-Paap rk LM Test is that the endogenous regressors are not identified by the instruments. The null was rejected at the 1.7% level providing evidence that the excluded instruments explain the endogenous variable. This was confirmed by the F-statistics that were significant at the 1% level. The null hypothesis of the Hansen J Test is that the excluded instruments are uncorrelated with the error term in the stage two equation. We fail to reject the null of the Hansen J Test indicating that the instruments are uncorrelated with the residuals in the stage two equation.

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 9, 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 a predicted probability of a peg around 50% and lower. Looking at the EU accession countries only, note that the majority (6 out of 10) have a probability of pegging around 50% and lower. This is consistent with the slow progress toward euro adoption in the region.

Inasmuch as adoption of the euro is tantamount to the most permanent of currency pegs, our results suggest that the countries operating currently under fixed exchange rate regimes may lead the way in adopting the euro. They would be followed by Slovakia, Hungary and, possibly, countries that are not current EU

Table 9 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[a]	0.91	Peg/Peg	Croatia	0.50	Managed float/MF
Latvia[a]	0.90	Peg/Peg	Slovak Rep.[a]	0.30	Managed float/MF
Bulgaria[a]	0.89	Peg/Peg	Slovenia[a]	0.18	Managed float/MF
Lithuania[a]	0.86	Peg/Peg	Poland[a]	0.18	Managed float/MF
Macedonia	0.65	Managed float/MF	Czech Rep.[a]	0.13	Float/MF
Hungary[a]	0.53	Managed float/MF	Romania[a]	0.08	Float/MF
Albania	0.51	Managed float/MF			

[a] indicates that these countries are members of the European Union

members: Macedonia, Albania, and Croatia. The Czech Republic, Romania, and Poland will probably adopt the euro at a later date.

However, expectations about euro adoption based on explanations of current exchange-rate policy do not appear particularly accurate; indeed, these predictions are already violated by the adoption of the euro by Slovenia and Slovakia. Several points can be made about this apparent inconsistency. First, a large number of countries are still waiting to decide about the euro, and our results may illuminate how accession to the Eurozone proceeds in the region. Second, while our estimates do reasonably well at predicting current currency policies, adopting the euro is not simply equivalent to adopting a unilateral fixed rate. Joining the Eurozone may also respond to broader political economy pressures associated with the more general process of European integration, so that it is likely that accession to the euro will respond to both our variables and to others. Third, our findings may be relevant to the political economy of the Eurozone *after* these countries join. That is, the kinds of political pressures that make a fixed exchange rate more or less practicable can also make the euro more or less comfortable for a country in the region. So our results may help indicate which Central and Eastern European nations are likely, as members of the Eurozone, to experience significant political and economic tensions due to membership in a common currency.

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.

One of the results in the paper challenges conventional wisdom but confirms earlier findings. 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. Time and future research will show if that and other effects reported here 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.[19] Nonetheless, the factors that raise the likelihood

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[19] 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 among the numerous other current and future members of EMU.

that a 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.

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

Variable	Definition	Source
De Facto Exchange Rate	De facto classification of exchange rate regimes	Reinhart and Rogoff (2002) Levy-Yeyati and Sturzenegger (2002)
De Jure Exchange Rate	De jure classification of exchange rate regimes	*Annual Report on Exchange Arrangements and Exchange Restrictions*, IMF
Imports plus exports (Trade Openness)	Imports plus exports of goods and services, share of GDP	*Transition Report*, EBRD, various years
Exports to Germany (Trade concentration)	Total value of exports to Germany, share of GDP	*Direction of Trade Statistics*, IMF
Share of agricultural employment	Share of agricultural employment in total employment	LABORSTA, dataset on labor statistics, International Labor Organization
Share of manufacturing employment	Share of manufacturing employment in total employment	LABORSTA, dataset on labor statistics, International Labor Organization
Democracy	Index of political regime characteristics and transitions;	Center for International Development and Conflict

Variable	Definition	Source
	higher number indicates greater level of political system democratization; range −10 to 10.	Management, Polity IV dataset, Polity 2 variable
FDI	Inward foreign direct investment, stock, share of GDP	The Vienna Institute for International Economic Studies, *wiiw Database on FDI*
Inflation	Annual percent change in the CPI	*Transition Report*, EBRD, various years
Trade Balance	Difference between exports and imports of goods and services, share of GDP	*Transition Report*, EBRD, various years
External Debt	External debt, percent of GDP	*Transition Report*, EBRD, various years
Financial Development	Credit by deposit money banks and other financial institutions to the private sector, share of GDP	*Transition Report*, EBRD, various years
Trade and Currency Market Liberalization	Index of trade and foreign exchange market liberalization; range from 1 to 5 higher number indicates greater degree of liberalization	*Transition Indicators*, EBRD, various years
Central Bank Independence	Index of central bank independence, range 0 to 1, higher number indicates greater independence	Cukierman (1992)

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