



## **BARGAINING FOR COSTS OF CONVERGENCE IN ERM II**

Christian Fahrholz

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**Jean Monnet Centre of Excellence**

**Freie Universität Berlin**

**lnnestr. 22, 14195 Berlin, Germany**

**Phone: +49 (30) 838 – 54966**

**Fax: +49 (30) 838 – 52357**

**Email: [info@yourec.org](mailto:info@yourec.org)**

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### Abstract

The paper deals with the exchange-rate policies of Central Eastern European Countries (CEEC) in Exchange-Rate Mechanism II (ERM II). Starting from the point of view that accession countries are in fact credibly committed to joining EMU for political reasons-i.e. ensuring political stability in CEE, - it is shown that the provisions of ERM II provoke moral hazard of CEEC. New member countries will under identifiable conditions threaten to halt the entire enlargement process by brinkmanship. In that way, current members may be forced to reveal their willingness to pay for political stability by providing additional transfer payments in order to compensate for Maastricht costs of convergence. In line with this rationale, the entire process of transition in reference to the phase of ERM II is modelled as a two-stage Nash-threat game. The empirical analysis shows which CEEC are eligible for the brinkmanship-i.e. a '*threaten-thy-neighbour*' -strategy ct.

**Keyword :** Exchange-Rate Policies, ERM II,

#### **Author:**

Christian Fahrholz  
Freie Universität Berlin  
Jean Monnet Centre of Excellence  
Ihnestrasse 22  
D-14195 Berlin

Tel.: +49 30 838 50860,

Fax: +49 30 838 52357,

e-mail: [fahrholz@zedat.fu-berlin.de](mailto:fahrholz@zedat.fu-berlin.de);

Scholar of the DFG-graduate programme "The New Europe"  
Berlin Graduate School of Social Sciences.

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# 1 Introduction

This paper analyses the exchange-rate policies of Central Eastern European Countries (CEEC), particularly regarding their performance in Exchange-Rate Mechanism II (ERM II), i.e. the period before their admittance to the European Monetary Union (EMU). The decisions taken at the Copenhagen summit in December 2003 cleared the way for the accession countries<sup>1</sup> to the European Union (EU) in May 2004. At that time, CEEC have to enter ERM II: According to the schedule—as there is no opting-out for the prospective EU-members—they are supposed to join EMU most probably in 2007.

Analysis indicates that ERM II is not just one of several Maastricht criteria for qualifying for EMU-membership, but might provide other political incentives than its founders have initially considered. Basically, ERM II and other Maastricht criteria are to ensure an adequate level of convergence between prospective and current members of EMU. Regarding a smooth functioning of EMU, it seems to be economically desirable to require approximately the same level of convergence in an enlarged eurozone. The specific provisions of the Maastricht criteria are to guarantee that participating countries are not too heterogeneous. Whereas Maastricht addresses rather nominal convergence, the process of catching-up—i.e. real convergence—is here of particular interest. This is to say that the standards of living between current and prospective members of EMU are getting closer—usually defined by a falling gap of GDP per capita. However, fulfilling the requirements of Maastricht implies accepting particular costs in terms of output gap—i.e. more unemployment. Prospective members have basically to bear the burden of those costs of convergence entirely by themselves.

According to the rationale of Maastricht admittance to EMU seems to be an adhesion contract: If they will not be able to persevere the transition pro-

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<sup>1</sup>Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia. When analysing CEEC (hereafter synonymous to ‘accession countries’), Cyprus and Malta are not considered. These countries do not fit into the here developed argumentation.

cess of convergence, they would not attain access to EMU. Regarding ERM II, however, its implications for the incentives of policy-makers—particularly with regard to exchange-rate policy—might enable accession countries to load considerable costs of convergence onto current members. Because to that effect, the transition phase in ERM II is considered to be a bargaining game, i.e. a challenge of distributing the costs of convergence between prospective and current members of EMU.<sup>2</sup> A policy of gradual escalation—i.e. brinkmanship—could eventually result in an exchange-rate crisis thus undermining public support for European integration in CEEC. In this respect, accession countries might potentially force current members to provide somewhat pecuniary assistance. The provisions of ERM II prepare the ground for CEEC’ leverage in the according bargaining. Brinkmanship represents in respect thereof a credible threat turning CEEC’ run-up to EMU in a two-stage Nash-bargaining game.

Such threatening necessarily requires that current members of EMU are basically willing to pay for CEEC’ admittance to EU and EMU. In this context, it is presumed that western governments in Europe are interested in economic and political stabilisation of the region Central Eastern Europe (CEE). An implication of a corresponding willingness to pay is that CEEC are exposed to a thus shaped incentive structure—i.e. moral hazard. Then, if CEEC can credibly put political stability at risk, they will elicit the EU’s according willingness to pay. To put it bluntly, it is shown that the bargaining between prospective and current members of EMU consists of an exchange of sustaining public support for European integration in CEEC for some kind of financial assistance by current members of EMU. The corresponding stance of exchange-rate policy is denoted as ‘threaten-thy-neighbour’. The game-theoretic analysis points at possibly looming conflicts in the EMU-accession

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<sup>2</sup>Basically, EMU is succeeding the EU-integration process. However, it can be presumed that current members of EMU would draw on other so-called ‘members states with a derogation’—simple members of the EU, so to say—to bear the respective burden, as well. Thus, the terms ‘EU’ and ‘current members of EMU’ are used synonymous except when otherwise expressively stated.

process that have so far not been recognised.

The remainder is structured as follows. In section 2 basic assumptions for moral hazard behaviour with respect to the overall enlargement process are discussed. Different patterns of exchange-rate policies in CEEC particularly the transmission mechanisms of ‘threaten-thy-neighbour’ in context of ERM II are surveyed in section 3. The respective brinkmanship is formalised in section 4. Section 5 provides a tentative empirical illustration on basis of a stylised country Poland. In doing so, the (financial) size of a possible Nash-bargaining solution can be grasped. This contributes to a better understanding of the brinkmanship’s actual political relevance for a bargaining on costs of convergence. Section 6 sums up and dares an outlook on successful brinkmanship brought about through exchange-rate policy.

## **2 The crux and core of enlargement**

This sections inquires, first, what is at the heart—i.e. the core—of eastward enlargement. Second, it is shown how this shapes the adjustment process of CEEC towards EMU—i.e. the crux.

When analysing the enlargement process of the European Union (EU), it is assumed that it has been driven, essentially, by political rationale: Both parties—current as well as prospective members of EU—agreed on the need to stabilise the region of Central Eastern Europe in view of their specific geopolitical concerns and security policy interests.

At the beginning of the 1990s after the fall of the iron curtain political systems in CEEC changed fundamentally. Thus, they entered a rather uncertain phase. At that time, western European governments suggested an enlargement of the EU. In doing so, they were offering to export an established institutional system to CEEC.<sup>3</sup> From the point of view of the accession

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<sup>3</sup>The same is valid for the southern enlargement process of the EU such as in case of Greece, which acceded to the EU in 1981. This country had been considered as a young

countries, this option has been especially lucrative because of the incorporated economic benefits of their prospective EU-membership. Whereas the same does not necessarily hold true for current EU-members, since the accession countries' economic size is rather small and the considerable difference in living standards suggest rather few, if any, long-term economic gains.<sup>4</sup> This indicates that at the core of enlargement are political gains, i.e. reducing the uncertainty of state-interaction and stabilising the region CEE politically (cf. Baldwin, Francois and Portes, 1997, 168).

Certainly, it could be argued that CEEC are already institutionally embedded into European designs of political systems. This is indeed true. However, retracting concession would jeopardise all CEEC' efforts of preparing for EU-membership, i.e. implementing the Copenhagen criteria and the *acquis communautaire*. In that case, their integration into 'western societies' would probably be stopped or even reversed. Either way, these options are politically riskier than the current stance of integrating CEEC into the EU. Thus, the EU's willingness to pay for CEEC' membership is derived from this argumentation. Overall, we can consider the entire Eastern enlargement process as an investment in political stability of CEE. The project 'EU enlargement' acts as a the key for political stability. In this regard, however, political stability is a public good, at which CEEC on the one hand and the EU-15 on the other hand are the investors competing for sharing the initial costs of investment.

This 'EU enlargement' project exhibits a considerable difference to the former process of creating EMU. In the run-up to EMU, the EU-members have established Maastricht criteria in terms of a tying-hands strategy in order to force themselves to ensure monetary and fiscal stability in the joint currency area and to ensure an appropriate operation of the euro (cf. Willett, democracy requiring economic and political support (Friebel, Nilsson and Wallner, 1999, 2).

<sup>4</sup>Baldwin, et al. (1997) consider different scenarios of budget costs of the EU-enlargement for current members of EU. They estimate the net budget costs of EU-enlargement at max. 8 bill. ECU, i.e. 0.01% of the EU-15's GDP.

2000; Hallerberg and Vinhas de Souza, 2000, 7).<sup>5</sup> The Maastricht criteria are considered to be indicators of adequate sustainable convergence. The basic idea is that an applicant state pursuing economic policies in accordance with economic formation of the 'ins' is capable of adapting to a single monetary policy. The criteria on interest rate differentials and the government debt/GDP ratio are of minor interest, besides the exchange-rate criterion the criteria for inflation and fiscal deficit are hereafter of specific interest. According to the Treaty the fiscal deficit must not be higher than 3 per cent of GDP, whereas inflation must be no more than 1.5 percentage points higher than the average of the three lowest inflation rates in current member countries of EMU.

At present, after having set-up the 'euro-club', the incumbents want some outsiders to join them. This is the crux of the enlargement process. Contrary to the time of 1995-1997 Maastricht criteria do not provide a sophisticated tying-hands strategy of EMU-founders assuring a smooth functioning of EMU. This is not valid in respect of the enlargement process. While Greece as a potential founding member failed to qualify for EMU for the time being, the political stability of that country has not been at stake. At that moment, Greece might have been considered as an adequately consolidated democracy not requiring more European economic and political support. However, quite the contrary can be assumed in respect to CEEC. The political process and its outcomes are more uncertain when compared with the corresponding present formation in current EMU-member countries.<sup>6</sup> Thus, political stability and public support for European integration seems to be less consolidated

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<sup>5</sup>Certainly, there has been some scope for moral hazard, particularly for countries, which might have been considered as rather indispensable for constructing EMU. In case of the most divergent southern EU-members Maastricht criteria have been a quite effective disciplining: Greece, once again, did actually not qualify for being a founding member of EMU in 1999, but joined in 2001.

<sup>6</sup>The apparently high level of electoral volatility in CEEC can serve as an indicator of political uncertainty. There is a vast literature of studies on the volatility of the electorate in selected CEEC. See Birch (2001, 5-7) for a brief survey on that issue.

in CEEC. This might probably become evident if they entered ERM II at the same time with their admittance to the EU and would experience immediately thereafter a currency crisis. Such exchange-rate crisis, then, is most likely to undermine the CEEC' aspiration to EMU-membership and European integration in general.

Nominal convergence could probably be much less enforced and, thus, Maastricht criteria would become probably less effective constraints. Therefore, there might be considerable scope for moral hazard behaviour when passing through the Maastricht qualification process including ERM II. This moral hazard behaviour might trigger speculative attacks on CEEC' fixed exchange-rate regimes in ERM II. The preceding performance of fixed exchange-rate arrangements, for instance, during the former crises in 1992/93 of the European Monetary System (EMS) and in course of the Asian crisis in the late 1990s, indicate their vulnerability. Although, some countries' economic policy formation was considered to be consistent with their particular exchange-rate regime, market sentiments turned abruptly against them. Speculative attacks tested governments' credibility of a given promise to maintain a once determined fixed exchange rate (here, the standard references are Obstfeld, 1994, 1995).

Although currency crises in CEEC would not appear automatically— for instance, on account of sizable interventions by the ECB—, the then rising need to raise interest rates would eventually trigger an abandonment of the exchange-rate regime. This might probably hold all the more higher interest rates would bring about the risk of precipitating a banking crisis and a subsequent drain of capital inflows.<sup>7</sup> The latter is crucial for CEEC, because of the eminent importance to stabilise (net-) capital inflows (Begg et al., 2003; Corker et al., 2000, 1). A reversal of such capital flows could deteriorate

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<sup>7</sup>Normally, banking crises emerge at the onset of a recession. This holds in particular, if the recession follows a preceding economic activity that was fuelled by credits, capital inflows, and accompanied by an overvalued exchange-rate (cf. Bordo et al., 2001, 69-72). See (Kaminski and Reinhart, 1998) for a detailed survey of transmission mechanisms of currency and banking crises.

overall economic activity, which may cause a devaluation of a CEEC' exchange rate for this reason (Foreest and de Vries, 2002, 24). Moreover, one country's fall might trigger further speculative attacks. Such a contagion effect usually spreads among countries with similar economic fundamentals and political features as is the case in CEEC. Such a spreading currency crisis would confront current members of EMU with severe economic and political problems.

According to Bordo et al. (2001, 55) exchange rate crises are defined when there is to spot a change in parity, a relinquishment of an exchange-rate regime or an international bail-out.<sup>8</sup> Generally, such crises come along with a considerable loss in terms of output and employment. In this regard, it is presumed that rising unemployment rates would undermine the public support for European integration and hereby induce high political costs for incumbent governments in CEEC. Thus, in course of an exchange-rate crisis economic and, most notably, political integration of a specific CEEC into the EU might fail. However, this is an incidence—in accordance to the above-mentioned rationale of European integration—which the EU really wants to avoid. Therefore, knowing that the incumbents are willing to pay for their accession, CEEC could make use of the implicit risk of loosing public support for European integration by putting the exchange-rate regime deliberately at risk. According to the logic of two-level relations (Putnam, 1988) such scope for moral hazard behaviour might give CEEC leeway in intergovernmental bargaining on financial matters or similar. In this context, it is valid that the less voters are attached to European matters an, thus, the stronger they respond to aggravating unemployment rates, the higher the leverage in bargaining—this is the so-called Schelling-Paradox (Schelling, 1960). Accordingly, they might dispose of an effective brinkmanship strategy, i.e. a credible threat enabling to elicit the EU's willingness to pay.

Before we turn to a game-theoretic analysis of that brinkmanship, founda-

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<sup>8</sup>The authors also employ another index of exchange market pressure acting as an indicator for currency crises (ibid.).

tions of exchange-rate policies as well as particular transmission mechanisms of a 'threaten-thy-neighbour' in context of ERM II are explored.

### **3 Exchange-rate polices in CEEC**

#### **3.1 Synopsis of exchange-rate policies in CEEC**

Exchange-rate policy, on the one hand, is considered as comprising the choice of a specific regime and—given a fixed regime—the reference currency, central rate and (where applicable) fluctuation band; on the other hand, it has to make allowance for the underlying fiscal and monetary policy mix. Fiscal and monetary policy, when focusing on national policy objectives, have to take into account the interdependencies between the different policy areas and the reactions by rational private actors, particularly in case of a free movement of capital. Accordingly, when talking about exchange-rate policy, not only the choice of exchange-rate regime, conversion rate etc., but also the respective fiscal and monetary policies are meant.

Ideally, exchange-rate policy corresponds and fits into an optimal policy mix, which would achieve simultaneously internal and external balance. However, inflation and output (or external competitiveness) are conflicting objectives according to the typically assumed short-run trade-off expressed in the Philipps-curve. Obviously, exchange-rate regimes are not chosen once and for all, but are a corollary of certain economic conditions at a specific time. Exchange-rate regimes reflect main alternative focuses of exchange-rate policies: coping with exogenous shocks and transnational policy spill-overs, bringing down inflation, stabilising real exchange rates, sustaining the balance of payments equilibrium, dealing with large and volatile capital flows etc.

Principally, two ideal types of exchange-rate regimes and with reference to the above-mentioned trade-off can be distinguished.<sup>9</sup> First, exchange-rate

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<sup>9</sup>When exchange-rate policies are considered hereafter, it is referred to fixed exchange-rate regimes. References to floats are made explicit. A discussion of the political economy

policy can be conducted in terms of a ‘beggar-thy-neighbour’-policy, i.e. by competitive devaluations. Thus, an improvement of external competitiveness would be achieved at the expense of others in terms of exporting unemployment. Second, a government can perform exchange-rate policy, particularly in determining the external value of a currency, as a subordinated feature of a comprehensive monetary policy in terms of a disinflation strategy.

At the outset of transition with its sudden opening of CEEC’ economies, they have principally faced a choice between those two different types of exchange-rate policy. They could have selected out of a range of alternative exchange-rate policies that lie in between the two ideal types of a ‘beggar-thy-neighbour’-policy and an exchange-rate policy subordinated to a comprehensive monetary policy of price stabilisation. However, a specific problem of economies in CEEC at the end of the Cold War and after the breakdown of the Council for Mutual Economic Assistance (CMEA) was the complete restructuring of aggregate demand, i.e. demand was highly non-elastic. Accordingly, there has actually not been an option for enhancing external competitiveness in terms of a ‘beggar-thy-neighbour’-policy. Moreover, a relative low central parity would have hampered the transition in terms of reconstructing the capital stock (McKinnon, 1991, 102-103).

The opening to the world market and the initial price liberalisation have had the effect of bringing an adjustment of relative prices. When these countries under transition opened themselves to international trade, there had been an opportunity to import a price structure similar to foreign commercial partners, if local producers were forced to face a tight budget constraint. By fixing the exchange rate, in fact, the internal inflation cannot rise too much without losing competitiveness with respect to foreign producers. The local enterprises react to this pressure partly by reducing inflation, and partly by reducing the output—possibly as less productive units are pushed out of the market.

At the onset of transition it has been, firstly, necessary to get rid of the  

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of floating exchange-rate regimes is omitted in this paper.

inherited glut of money. Secondly, CEEC had (and still have) to cope with inflationary pressure arising from the well-known Balassa-Samuelson (BS)-effect. This effect is linked up with the process of equilibrating relative prices (ECB, 1999, 42). An applicable disinflation strategy can generally be based on either an exchange-rate targeting or an explicit inflation targeting. However, the former comes especially into consideration when both monetary institutions are lacking credibility and the economy is strongly integrated into the world market. At the beginning of the 1990s, monetary institutions in CEEC were actually lacking credibility. Therefore, an exchange-rate targeting in terms of a fixed exchange-rate regime for importing monetary credibility, thus providing a nominal anchor for domestic prices, has been appropriate (e.g. Fratianni and Hagen, 1992; Giavazzi and Giovannini, 1991).

At present, it is observable that bigger economies such as the Czech Republic, Hungary, and Poland have switched to rather flexible exchange-rate arrangements in course of capital market liberalisation. At the same time, extreme small open economies such as the Baltic countries still resort to very tight commitments such as currency boards.

### **3.2 Challenges in ERM II**

The main challenge for CEEC has been and still is to make the strategy of entering the EU compatible with the catching-up process. These two objectives might turn out to be contradictory with respect to the Maastricht criteria. Overall, the policy mix required achieving nominal criteria for membership in EMU, is likely to slow down economic growth. However, the CEEC' catching-up process requires relative higher inflation, rather more exchange rate variability, and particularly fiscal leeway for accommodating the accession process—i.e. compensating losers of integration. The required compliance with Maastricht criteria might be challenged in course of CEEC' passing through of ERM II.

Emphasising strategic aspects of exchange-rate policies<sup>10</sup> in CEEC—i.e.

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<sup>10</sup>(Fölsz, 2003; Fidrmuc, 2002) are recent examples in literature taking into account such

brinkmanship in terms of ‘threaten-thy-neighbour’—institutional aspects of ERM II have to be addressed. However, the focus here is on the incentive structure of prescribed exchange-rate regimes in ERM II—i.e. soft pegs—with respect to policy decision-making.<sup>11</sup> In doing so, strategic aspects of exchange-rate regime choice with regard to ERM II can be derived. In this context, also the important role of trend real appreciation and of capital inflows for the stability of fixed exchange-rate regimes in accession countries are stressed.

### 3.2.1 The design of ERM II

During the Maastricht qualification process CEEC lose to a considerable degree their monetary sovereignty and exchange rate issues become a matter of common concern according to Article 124 (ex Article 109m) of the Treaty. ERM II differs only slightly from its preceding Exchange Rate Mechanism (ERM) in the European Monetary System (EMS). The basics of its institutional design are shortly delineated in the following.

The most striking difference is the ‘hubs and spokes’-system: Central parities are only defined against the euro and not between all other participating countries. Hence, their currencies can fluctuate considerably more against each other making interventions probably less frequent.<sup>12</sup>

Interventions on the margins are binding. However, the Resolution (EU, 1997) makes the price stability objective of central banks explicitly superior

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strategic aspects.

<sup>11</sup>In respect to soft pegs only fixed, but adjustable exchange rates (with or without bands) are meant. A discussion of crawling bands or pegs and (to a large extent) currency boards is omitted as these arrangements are not relevant in the context of ERM II. Furthermore, when playing the ‘Swedish card’ (i.e., infringing the Maastricht provisions deliberately) CEEC might opt for staying outside of ERM II. Then, they might possibly turn to a beggar-thy-neighbour policy pursuing competitive devaluations. However, the focus here is that CEEC are really aspiring EMU-membership. Accordingly, this strand of discussion is not tracked hereafter anymore.

<sup>12</sup>Theoretically, the currencies of two accession countries might fluctuate up to 60 % against each other around their originally determined central parities to the euro.

to the obligations on intervention. There is also the possibility of intramarginal interventions on the basis of mutual agreement. The standard fluctuation band is  $\pm 15\%$  around the central rate alike within the EMS. According to the Resolution, decisions on central parities and the band are taken by mutual accord of the ministers of the eurozone, the ECB and the minister and central bank governor of a respective accession country intending to participate in ERM II—the European Commission and Economic and Financial Commission are only consulted. On request of an accession country, the above mentioned parties could agree on narrower fluctuations bands than the standard one alike Denmark with its present fluctuation band of  $\pm 2,25\%$  margins. Interestingly and in contrast to the provisions of the former EMS, all parties have the right to initiate a confidential procedure if central rates are deemed to need realignment. Ideally, this procedure enables to reconsider central rates before they deviate too much from real equilibrium exchange rates and currency crises become inevitable. Though realignments in terms of devaluation would infringe the provisions of the Treaty, revaluations of central parities are compatible with ERM II (Article 121, ex Article 109j). According to the schedule, the all-embracing process of passing through ERM II will most probably take 27 months. Taking into account that entering ERM II takes some lead time for determining conversion rates and bands, January 2007 seems to be a plausible suggestion for EMU-accession (cf. Baldwin et al., 2001, 19).

The legal provisions of ERM II allow for the time being only a few alternative exchange-rate regimes. Apart from the original peg with a  $\pm 15\%$  oscillation band, only conventional soft pegs are permissible. The ECB does actually not accept currency boards to be a substitute for participation in ERM II (ECB, 2002, 59-60).<sup>13</sup> Currency boards would offer accession countries an opportunity to draw on the ECB credit facilities quite directly and

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<sup>13</sup>However, accession countries that are currently operating with a currency board (e.g. Estonia, Lithuania) might not necessarily be required to, firstly, float their currency within ERM II before they, secondly, re-peg it to the euro later (ibid.).

thus impair the ECB price stability objective. Moreover, the ECB refuses unilateral euroisation as an eligible exchange-rate regime regarding the passing through of ERM II. Due to ambiguous institutional changes within the decision-making process in the ECB, the price stability of the euro might once again deteriorate. This holds when market sentiments expect the ECB to be too much attached with CEEC' concerns and to accept higher inflation in the periphery (cf. Baldwin et al., 2000). Besides, an early accession and thus too much heterogeneity inside EMU could complicate controlling in terms of monetary policy (Duisenberg, 2001). Additionally, the Council of Ministers would have no influence to determine the conversion rate at which the accession countries enter the eurozone, in case of unilateral euroisation (Buiter and Grafe, 2002, 5-6). Therefore, current members object in particular unilateral euroisation in CEEC during their transition to EMU, since CEEC would as a result load considerable economic risks onto current members.

Furthermore, current EMU-members' reluctance to allow for immediate admittance to EMU might also be reasonable because, for instance, the transmission mechanisms of monetary policy and the functioning of automatic stabilisers in CEEC are still unclear. Thus they might associate the risks of a premature inclusion of CEEC with a fear that price stability of the euro might be affected. In this respect, ERM II can be regarded as a measure to continue testing the operation of automatic stabilisers and channels of monetary policy.

### **3.2.2 Trend real appreciation and capital inflows**

The issue of overvalued real exchange rates in CEEC has been already addressed in context of the BS-effect (see above). However, with respect to the financing of catching-up and the rebuilding of the capital stock a general trend towards real exchange-rate appreciations seems unavoidable as well as desirable. The ongoing process of real convergence and building-up of the capital stock requires corresponding capital inflows. Corresponding current

account deficits balance the capital inflows. Higher real interest rates reflect that expected rates of return in CEEC are higher than, for instance, in countries of current EMU-member. Thus, capital flows ensue. In this context, Lipschitz et al. (2001, 12-14) discern a policy-dilemma: On the one hand, interest rates reflecting the real capital scarcity in accession countries, would be relative higher than in mature economies. On the other hand, considerable lower real interest rates would cause an imbalance between domestic saving and investment, thus a current account deficit and thereby capital inflows would occur. As it can be expected that risk premia in CEEC rather decline in course of their continuing integration into EU and the considerable level of free capital movement, capital flows to CEEC will probably be alleviated. In this respect, the composition of capital inflows regarding their maturity structure is of specific interest. Whereas FDI-inflows—dependent on relatively higher productivity of capital—are rather long-term capital inflows, portfolio investments are much more volatile. The persisting current account deficits will most likely exert considerable pressure on fixed exchange-rates in CEEC as long as these deficits are not backed by corresponding FDI-inflows. In general, capital inflows might have a positive impact on the institutional building of financial markets in CEEC. At the same time, however, applicant countries are going to be more exposed to sudden large shifts in capital flows deteriorating the exchange-rate regime. Provided an overvalued exchange rate does not slow down overall economic activity, further capital inflows increase the risk of exchange-rate distress. Such problems might be aggravated in the case of an institutional lag vis-à-vis western financial markets, as shortcomings in efficiency standards might lead to the creation of bubbles.

But, most notably, serious moral hazard problems arise from fixed exchange rates in context of ERM II. There are common moral hazard phenomena, for instance, when private sector takes successively ever more substantial open positions (Foreest and de Vries, 2002, 24). The progressive liberalisation of capital flows in context of the *acquis communautaire* does not necessarily stop the trend real appreciation, but makes those specific

exchange-rate policy arrangements rather shaky (Mishkin, 1999; IMF, 2000, 156-157). A further problem in this context is that current account deficits in course of real exchange rate appreciations might be considered as an indicator of a impending currency crisis. Though, a large trade deficit can also be the result of increasing confidence in economic policy formation (Mendoza and Uribe, 1999, 33). This might hold similarly in respect to trend real appreciation for distinguishing it as a real economy phenomenon or just a monetary phenomenon indicating a loss of competitiveness. For private agents such effects might be hard to distinguish in particular cases. This gives rise to multiple equilibria. Overall, ERM II provides exchange-rate regimes, which are basically prone to speculative attacks. Trend real appreciation and the decisive role of capital inflows amplify such sensitivity to currency crises.

### **3.3 Political economy of exchange-rate policy**

Due to the EU' willingness to pay for a successful integration, CEEC are exposed to a thus shaped incentive structure. The prevailing thinking in academic literature considers exchange-rate regimes—as obligatory in ERM II—predominantly in terms of a disciplining constraint (q.v. Westbrook and Willett, 1999, 83-84). Nevertheless, it is sometimes conceded that governments may be unable to comply with the necessary requirements for maintaining the fixed exchange-rate regime since they encounter political constraints (see, for instance, Bussi re and Mulder, 2000, 310). However, setting the priorities on the shaping of the overall incentive structure can enhance the understanding of exchange-rate policy formation. This is to say, that it is dealt with policy formation as endogenous (Willett, 2001, 4). In doing so, both the here considered moral hazard phenomenon and the subsequent bargaining game can be comprehended. Soft pegs in ERM II have to cope with the above-mentioned trend real appreciation and corresponding capital inflows. These factors might enhance CEEC' leverage in the bargaining game. As regards the political economy of exchange-rate policy, it has to be presumed that policy-makers are generally vote maximising. Thus, govern-

ments seek to exploit possible capacities in economic policy making in order to correspond to voters' preferences. Here, it is assumed that policy-makers are risk-averse actors who greatly discount prospective future costs due to short time horizons. Furthermore, with respect to CEEC it is plausible to take for granted that voters in CEEC mostly favour less unemployment. At the heart of exchange-rate stability in ERM II is fiscal policy. According to a simplest Mundell-Fleming model it is especially fiscal policy that can affect output and the current account under fixed exchange rates and high capital mobility. Correspondingly, exchange-rate policy can be a tightrope act while soft pegging. Deviations from an appropriate fiscal policy stance can result in exchange-rate distress. A speculative attack would be triggered as soon as agents expect the peg to be relinquished when policy makers would probably monetise the deficit (see, for instance, Wolf, 2001; Watson, 2001). With regard to CEEC, the most striking example in this context is the Czech currency crisis in 1997 (Begg, 1998). That crisis emphasises the importance of restrictive monetary policies. However, such kind of adjustment might come along with a recession. In this context, Natalucci and Ravenna (2002, 28-29) indicate that such a welfare-inferior policy would probably not be implemented when CEEC' eventual accession could not credibly denied by the incumbents.

From the point of view of political economy, it is difficult for governments—in case of fixed exchange-rates alike the soft and adjustable pegs considered here—to implement and/or to keep up tight monetary and fiscal policies (Hallerberg and Vinhas de Souza, 2000, 4-5). This is due to the fact that exchange-rate pegging gives front loaded benefits and delayed costs: If there is an output gap and a corresponding level of unemployment in CEEC, then—given downward inflexibility of prices, particularly of wages—there might be a demand for more (public) expenditure.<sup>14</sup> In particular, the political incen-

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<sup>14</sup>Note that considerable current account deficits in case of high capital mobility require rather a reduction in consumptive expenditure of government budget, even perhaps budget surpluses.

tives generated by pegged rates often fail to provide sufficient fiscal restraints to avoid possible currency crises. That is to say, because fiscal laxity would undermine a peg only after some time, forcing a discrete devaluation in the future, while, for instance, under a float budget deficits lead to an immediate depreciation. Thus, assuming that the time horizon of politicians is sufficiently short, a government may be tempted to conduct fiscal laxity (Klyuev, 2001, 4). Moreover, it is generally high capital mobility which fuels the consequential moral hazard even more. In providing lower cost financing, it might amplify the incentives to lose sight of a prudent fiscal policy, thus, reducing short-run discipline (Willett, 2001; Andrews and Willett, 1997, 490).<sup>15</sup>

In this context, Marini and Piersanti (2001) present an interesting formalised currency-crisis model. They neither bothered with CEEC, nor with the concerned literature in place here. Their model inquires the turmoil of currency crises in Latin America and Asia at the end of the 1990s. According to their analysis, especially a rise in current and expected future budget deficits results in real exchange rate appreciations, current account deficits and, ultimately, in an exhaustion of foreign reserves. If the exchange-rate policy affects private citizens welfare and accordingly their level of support for the government, the latter will favour soft pegs allowing for enlarged budget spending (in the short run). As a consequence, necessary austerity policies in order to strengthen the stability of a fixed exchange-rate regime might be delayed too long. In course of a possible monetisation of government deficits such fiscal laxity would amplify trend real appreciation. A future devaluation would become more likely.

For CEEC, the easiest way out of possible exchange-rate distress would be to jump into the euro at once. Unilateral euroisation is a regime which is

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<sup>15</sup>Hallerberg and Vinhas de Souza (2000) have searched for political business cycles in CEEC from 1990 to 1999. They also empirically prove that the combination of capital mobility and fixed exchange rates even renders an institutional arrangement such as an independent central bank designed to deter governments from generating a political business cycle redundant.

generally most effective in avoiding exchange-rate distress.<sup>16</sup> This might be the overall objective with respect to a smooth transition of CEEC to EMU, since a currency crisis might heavily disrupt the integration process. Therefore, unilateral euroisation might be, at first glance, the best choice of an exchange-rate regime with regard to the elimination of exchange rate risks. There might be several more microeconomic advantages, for instance, the lowering of transaction costs and transparency of prices. These would foster economic integration, both through increased trade and FDI. Euroisation as the tightest exchange-rate commitment seems to be advisable for extreme small open economies where trade is a considerable share of national income like, for instance, in case of the Baltic countries (Natalucci and Ravenna, 2002, 29). In such countries relative erratic exchange-rate performance would hamper stabilisation efforts (Bofinger, 1999; Eichengreen and Masson, 1998, 24).<sup>17</sup> Above all, however, the most striking difference to soft pegs in respect of policy-makers' incentive structures is that unilateral euroisation can be very unpleasant to national voters. This is precisely not valid for soft pegs. For that reason, policy makers with a sufficiently short time-horizon will most probably favour soft pegs instead of euroisation. This might particularly hold true with regard to ERM II when taking into account the EU' willingness to pay for economic and especially political stability in CEEC. Thus, eligible exchange-rate regimes in the context of ERM II on the one hand and the quasi-insurance of a likely bail-out by current members of EMU on the other hand might possibly invite governments in CEEC to excessive moral hazard. Such moral hazard might contemporary not be observable, but is rather a hold-up problem: Prior to their entrance to the EU, CEEC will probably excel at good conduct. After attaining access they might slacken the reins in

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<sup>16</sup>This has been thought about currency boards, as well. Though the fall of Argentina's Peso in December 2001 indicate that also currency board arrangements can be doomed to fail. See Wójcik (2000, 72-73) for probably increasing countries' default risks in course of unilateral euroisation.

<sup>17</sup>Note, in that manner, unilateral euroisation bring out the opportunity costs of brinkmanship.

terms of economic policy. According to Szapáry (2001) such phenomenon is denoted as a ‘weighing-in syndrome’ (Bundesbank, 2001, 26). Consequently, the respective brinkmanship can give CEEC a leeway in a subsequent bargaining on costs of convergence. At first glance, there might also be some stumbling blocks in CEEC’ brinkmanship: Given that soft pegs in ERM II are especially prone to speculative attacks the greatest possible extent of fluctuations bands—i.e.  $\pm 15\%$ —might present a countermeasure.<sup>18</sup> Moreover, such broad bands might counteract trend real appreciation. In this regard, rather undervalued conversion rates seem to be an even more appropriate countermeasure (Bofinger, 1999, 29). This is particularly valid with respect to exogenous shocks, particularly positive supply shocks (Babetski, Boone and Maurel, 2003; Keefer and Stasavage, 2001, 13).<sup>19</sup> However, the determination of an appropriate exchange rate is a certain problem.<sup>20</sup> Although

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<sup>18</sup>Even such broad bands might be not sufficient to prevent speculative attacks. In January 2003 speculators attempted to drive the Hungarian Forint (soft peg with a  $\pm 15\%$  band) above its upper limit and thus to trigger a revaluation of its central parity. Although revaluation do not really contradict the provisions of ERM II and the speculative attack was stalled, the occurrence of an attack points to the fragility of even such broad bands.

<sup>19</sup>In particular, undervalued conversion rates would undermine an overvaluation scenario and the corresponding brinkmanship strategy. Just to mention the CEEC’ position in this regard: They would rather opt for overvalued central parities in order to exacerbate their exposure to currency crises. Generally, from an economic point of view, equilibrium exchange rates would be most favourable. They would neither distort purchasing powers, competitiveness, nor contribute to a redistribution of wealth, i.e. no effects on stocks of debts and claims. Yet to be added, it can be said that undervalued conversion rates favour agents accounting for debts denominated in domestic currency, but makes agents having obligations denominated in foreign currency worse off. The opposite holds for the case of overvalued conversion rates (cf. Crombrughe, 2001, 4).

<sup>20</sup>Spain, for example, presents an interesting case: Spain joined the EMS with an overvalued exchange rate in 1989. It experienced a recession and failed to fight inflation effectively, thus, it devalued in 1992, and anew in 1993 and 1995. During the years of 1989-1992—and even before—Spain experienced considerable capital inflows. These were due to, first, expected higher rates of return, second, financial liberalisation and, third, a restrictive monetary policy and expansionary fiscal policy, which meant high interest

exchange-rate policy is a matter of common concern already prior to ERM II, CEEC would probably introduce smaller bands before entering ERM II. A subsequent widening of the fluctuation bands, though, might signal that both parties cannot agree on the ‘true’ conversion rate. Accordingly, market sentiments might shift and cause a destabilising process (s. Bofinger (1999) for a more detailed discussion). Therefore, from the point of view of current members, it is not that easy to introduce countermeasures against brinkmanship. This holds even more as the respective Council of Ministers (ECOFIN) and the European Commission—having a final say in European economic policy affairs and shared by both current and the then new EU-members—allow for issue-linkages and thus political compromise.

### 3.4 Results

To sum up, soft pegs in ERM II are basically prone to speculative attacks particularly in course of trend real appreciation. The progressive full liberalisation of capital flows in a non-mature financial surrounding might even exacerbate possible exchange rate crises. Thus, there is an impending risk of reversing capital inflows possibly deteriorating the overall European integration process. Above all, soft pegs exhibit some charming incentives for policy-makers. From the point of view of political economy, policy-makers are most notably seeking to maximise votes. Soft pegs are really great in this respect as governments can comfort voters possibly even by some more additional budget spending respectively a less rigorous austerity. This might work as long as voters and policy-makers are not bothered with a probable future breakdown of the exchange-rate regime. This moral hazard problem

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rates. An corresponding real exchange rate appreciation was also observable which is also imputed to a BS-effect. Most meaningful in this context seems to be the specific role of wages: During the two years prior to Spain’s participation in the former ERM, real wages increased moderately and did not developed significantly different to other European countries. However, after the Spanish accession both real and nominal wages rose sharply (Bacchetta, 1994, 25-27), which points in some respects to the above mentioned ‘weighing-in syndrome’.

aggravates when CEEC are considered as being too-important-to-fail. At the same time, current members of EMU do apparently not dispose of effective countermeasures. Hence, CEEC might most probably not be prevented from making use of the risk of exchange-rate crises—i.e. brinkmanship. Though, there are also some opportunity costs of such strategy indicated by the advantages of unilateral euroisation.

Overall, the implied costs of convergence in course of the Maastricht qualification process might render exchange-rate policies of CEEC a tightrope act. CEEC will probably make the most of the opportunity to load considerable costs of convergence onto current members of EMU. Trends in CEEC' economic formation, the crisis-prone ERM II arrangement, its impact on the incentive structure for policy-makers with a short-time horizon, and particularly moral hazard due to being politically too-important-to-fail prepare the ground for brinkmanship.

## 4 Game-theoretic analysis

### 4.1 Basic characteristics of the bargaining

In the following, we perform a game-theoretic analysis in order to shed light on the potential for conflict during the adjustment process within ERM II. At the same time, the analysis projects a possible solution to that conflict.<sup>21</sup> The game resembles basically a joint investment into the provision of a public good. The public good considered here is political stability in the region CEE. The two investors—a single CEEC<sub>*i*</sub> (denoted as player  $j = 1$ , whereas  $i = 1, \dots, N$ ) and the EU-15 (player  $j = 2$ ) include both current members of the EMU and ‘members with a derogation’ (s. footnote 2 on page 5)—argue over the distribution of investment costs. These costs of convergence are denoted as  $C_i^C$ , which are engendered by Maastricht criteria. The phase of ERM II is completing the project deal ‘EU enlargement’. There have

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<sup>21</sup>In the following, it is drawn on presentations at Binmore (1992), Dixit and Skeath (1999), and Rasmusen (2001) without further references.

been considerable costs for CEEC<sub>*i*</sub> and EU-15 up to then.<sup>22</sup> Although, these are sunk costs and the  $C_i^C$  are leftovers for bargaining in the final phase of ERM II. Consequently, bearing the entire  $C_i^C$  reflects each player's maximum willingness to pay for a successful passing through the phase of ERM II. The benefits of such completion of the 'EU enlargement' with regard to every single CEEC<sub>*i*</sub> are denoted as  $B_i$ .<sup>23</sup> Accordingly, every candidate country is indifferent to accession and non-accession when it has to bear  $C_i^C$  entirely alone, as is the case with the Treaty. This also applies to the EU-15: The EU-15 will never pay more than total  $C_i^C$  to a single CEEC<sub>*i*</sub>. Bearing the entire burden of the CEEC<sub>*i*</sub>'s costs of convergence makes the EU-15 just as indifferent to the accession and non-accession of CEEC<sub>*i*</sub>—i.e. the realisation of 'EU enlargement', thus securing political stability in CEE.

The investigation of strategic interaction—i.e. fighting over costs of convergence between CEEC<sub>*i*</sub> and EU-15—occurs in two steps. First, the brinkmanship is elaborated in the form of a sequential game. Second, the subsequent bargaining for redistributing the costs of convergence is analysed in terms of the Nash-bargaining solution (NBS). The game is characterised by complete but imperfect information. It is finite in that only one offer—and no counter-offers—are possible when bargaining. This corresponds to our emphasis on arguing over sharing the expenses of the initial investment costs of the 'EU enlargement' project. Given that all specifics of the game are common knowledge, the players look ahead and anticipate reciprocal best responses. Due to this property of backward induction, negotiation time is irrelevant as the game will come to an immediate solution. It is also worth noting in this context that perfect commitment in the sense of cooperative bargaining theory is assumed. This is to say, that once bargaining outcomes

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<sup>22</sup>Most notably, there have been considerable costs on account for implementing Copenhagen criteria and the *acquis communautaire*. As regards the latter, Schröder, Brücker, and Weise (2003) and Friebel, Nilsson, and Wallner (1999) provide corresponding game-theoretic analyses and considerations.

<sup>23</sup>Note that prospective economic and political benefits from enlargement are not covered, but the initial investment project costs of 'EU enlargement' are considered.

are agreed upon the decision is binding. In regards to the pay-off structures, we make allowance for the CEEC<sub>*i*</sub>'s risk preference  $\gamma_i$  and EU-15's attitude  $\delta$ .<sup>24</sup> The NBS presumes that these risk preferences are public knowledge in advance. Accordingly, the (pareto-efficient) solutions of the bargaining constitute a unique Nash equilibrium (cf. Crawford, 1982, 611-12). Overall, the particular Maastricht qualification process is presented as a two-stage Nash-threat game. Thus, it literally makes allowance for the 'threaten-thy-neighbour'-strategy, i.e. the brinkmanship. In rough outline, figure 1 drafts a version of the bargaining game  $G(C_i^C, d)$ .

The following costs arise in this game: First, there are the above-mentioned

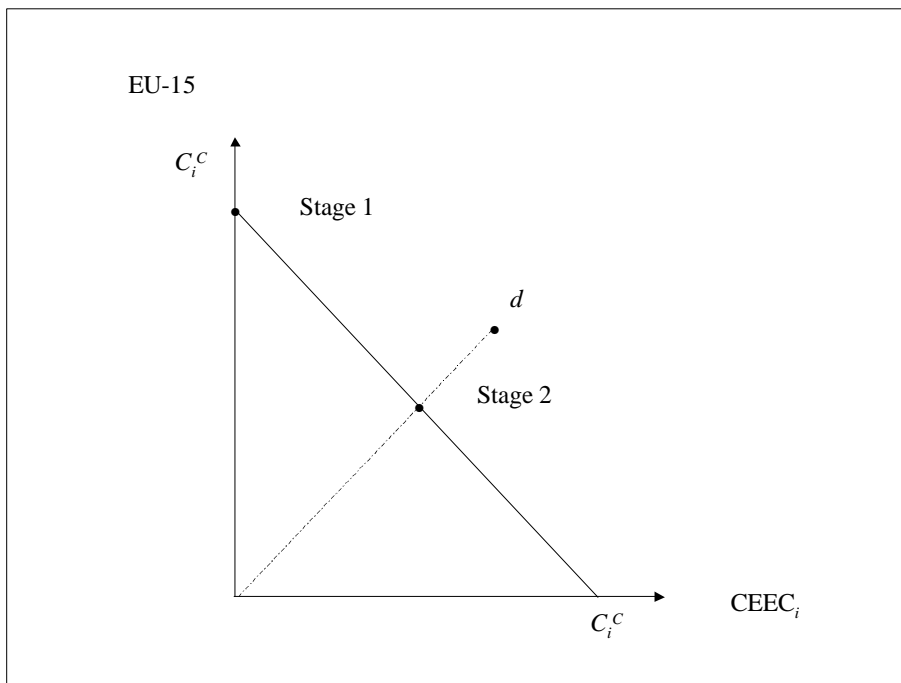


Figure 1: Bargaining for Costs of Convergence

'costs of convergence'  $C_i^C$ , i.e. the entailing output gap during the rigorous

<sup>24</sup>Note that for reasons of clearness we omit explicit risk preferences in subsequent figures.

compliance with the Maastricht criteria. According to the rationale of the Maastricht qualification process, it seems natural that CEEC<sub>*i*</sub> bear such costs entirely themselves—denoted by stage 1 in figure 1. The  $C_i^C$  are what the bargaining revolves around. If CEEC<sub>*i*</sub> succeed in the bargaining—i.e. to pass some costs of convergence on to EU-15—the game results in the new equilibrium of stage 2 (see figure 1). If the according negotiations on distributing  $C_i^C$  were to break down, then an exchange-rate crisis will occur and both players will be stuck with the disagreement point  $d$ . This pay-off comprises to a certain extent so-called 'costs of default'  $C_i^D$ , i.e. output loss in an exchange-rate crisis' aftermath.<sup>25</sup>

A currency crisis entails above all costs for CEEC<sub>*i*</sub>. However, also the EU-15 can be hit by rising costs: When a CEEC<sub>*i*</sub> experiences excessive output losses, they are automatically considered for additional funds in terms of European Regional and Structural Policy and the Common Agricultural Policy. Most notably, assuming a negative impact of exchange-rate crises on political stability and the EU-15's willingness to pay for this very issue, the EU-15 might provide extra-funding. However, the EU-15 has a particular subsidiary role: When a currency crisis occurs, then CEEC<sub>*i*</sub> will first and foremost have to bear the burden of the costs. Albeit, CEEC<sub>*i*</sub> will not accept costs higher than total  $C_i^C$ . Hence, if  $C_i^D > C_i^C$ , then the EU-15 will have to administer financial assistance within the limits of their maximum willingness to pay. Accordingly, the EU-15 will bear subsidiary costs in terms of a share  $\lambda_i$  of total  $C_i^C$ . This is to say, that the EU-15 will at most transfer funds amounting to a total of  $C_i^C$  to CEEC<sub>*i*</sub>. If it were that  $C_i^D \leq C_i^C$ , then CEEC<sub>*i*</sub> would come away empty handed. Therefore, a corresponding CEEC<sub>*i*</sub> would not be eligible for brinkmanship. The following corollary can be derived from these considerations:

$$\lambda_i = \begin{cases} 0 & \text{if } C_i^D \leq C_i^C \\ 0 < \lambda_i < 1 & \text{if } C_i^C < C_i^D < 2C_i^C \\ 1 & \text{else } C_i^D \geq 2C_i^C \end{cases} \quad (1)$$

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<sup>25</sup>Note that figure 1 depicts the rather ordinary case of  $C_i^D > C_i^C$ .

The according bargaining will probably result in a concrete share  $0 < c_i \leq 1$  of costs of convergence  $C_i^C$ , which the CEEC<sub>*i*</sub> passes on to EU-15.

The idea of brinkmanship is that CEEC<sub>*i*</sub> threatens to realise the overall worst pay-off represented in the disagreement point  $d$ . In doing so, it can under identifiable conditions redistribute some costs of convergence ( $C_i^C$ ). First, CEEC<sub>*i*</sub> must have the capacity to control a gradual escalation of risk to some extent. Although, some uncertainty and forms of irreversibility have to remain. As is the case with ‘Schelling’, CEEC<sub>*i*</sub> creates an advantageous bargaining position for itself by making sure that it will not retreat. In this context, irreversibility means making statements about its relative evaluation of disagreement and agreement—i.e. that it cannot comfortably retract from a commitment.<sup>26</sup> Additionally, markets need to respond to changes in economic policy formation in CEEC<sub>*i*</sub>. If markets remain absolutely non-reactive, then there will be no scope for any political manoeuvres by CEEC<sub>*i*</sub>. An accession country must then choose between rigorous compliance with Maastricht criteria and practising an optimal national policy mix. In doing so, they would certainly avoid any costs of convergence, but they would not be admitted to the EMU, thereby not realising the mutually beneficial investment project ‘EU enlargement’.

Successful brinkmanship is especially dependent on the two given probabilities  $p$  and  $q_i$  that are independent of each other. From the perspective of CEEC<sub>*i*</sub>,  $p$  denotes the probability of encountering a frugal EU-15. The more frugal the EU-15, the lower the likelihood for a successful brinkmanship. At this point, we take into account that CEEC<sub>*i*</sub> will already be an EU-member. In order to ensure smooth functioning within the EU, an EU-15 might view the making of side payments as an indispensable tool when seeking a CEEC<sub>*i*</sub>’s consent to an agreement, thus  $p < 1$ . At the same time

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<sup>26</sup>For example, an announced shift in monetary and fiscal policy affairs should be in fact reversible. But repealing a previously introduced law—for instance, a Christmas bonus for Polish farmers—will be most probably uncomfortable for parties in parliament.

$p > 0$ , because no rational actor is keen on just spending his money abroad without acquiring satisfying returns. Accordingly, corner solutions of  $p$  can be clearly rejected and, hence,  $0 < p < 1$ . As regards  $q_i$ , we make allowances for alternative elasticities of voters' reactions in CEEC<sub>*i*</sub> to altering costs of convergence  $C_i^C$ . We presume that national voters in accession countries react to arising costs of convergence. Voters must constantly weigh the costs against the potential benefits of EMU-accession. If they were apathetic, then policy-makers—aggregating voters' preferences—would simply never have to decide between the advantages of maintaining central parity and possible disadvantages in terms of reducing the likelihood of their re-election. This is not a realistic scenario. Consequently, we make allowance for governments weighing the advantages of maintaining an existing exchange-rate regime against the hardship of voter alienation. This is the trade-off that markets test for when practising a speculative attack. When such trade-off is absent neither a reversal of capital flows, nor speculative attacks might be triggered: the probability  $q_i$  for devaluation would be zero. However, voters' respective governments must also rank the benefits  $B_i$  of realising the 'EU enlargement' investment project—i.e. ensuring political stability in CEE—as valuable. Otherwise, they would never accept any costs of convergence and the according risk of devaluation, and subsequent exchange-rate crisis would be 1. In all instances, we presume that voters, like governments and markets, perceive trade-offs.<sup>27</sup> Correspondingly, we exclude corner solutions for  $q_i$ , thus  $0 < q_i < 1$ .

Basing exchange-rate policy on a quasi-adventuresome strategy of brinkmanship is like walking a dangerous tightrope. However, when these conditions for successful brinkmanship are met—i.e. the threat is credible—, then the EU-15 will dance obligingly to CEEC<sub>*i*</sub>'s tune. The bargaining will result in the new equilibrium of stage 2, where CEEC<sub>*i*</sub>'s share of total  $C_i^C$  is minimised (cf. figure 1 on page 26). The EU-15 burdens a corresponding share  $c_i$  of costs of convergence  $C_i^C$ . In this situation CEEC<sub>*i*</sub> is indifferent towards

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<sup>27</sup>In doing so,  $q_i$  reflects the stochastic characteristic of exchange-rate crisis.

the employment of brinkmanship and keeping track of the prescribed passing through of ERM II. The remainder of the game-theoretic investigation deals with the formal analysis. We explore the mutually best responses—i.e. Nash-strategies—, which will in the end constitute a sub-game perfect Nash equilibrium of the overall bargaining.

## 4.2 Brinkmanship ‘Threaten-thy-neighbour’

Figure 2 presents the extensive form of the threat game  $G(C_i^C, d)$ . It illustrates the possible game outcomes and shows how the ‘threaten-thy-neighbour’-strategy works. Apart from the above-mentioned costs, two different sub-

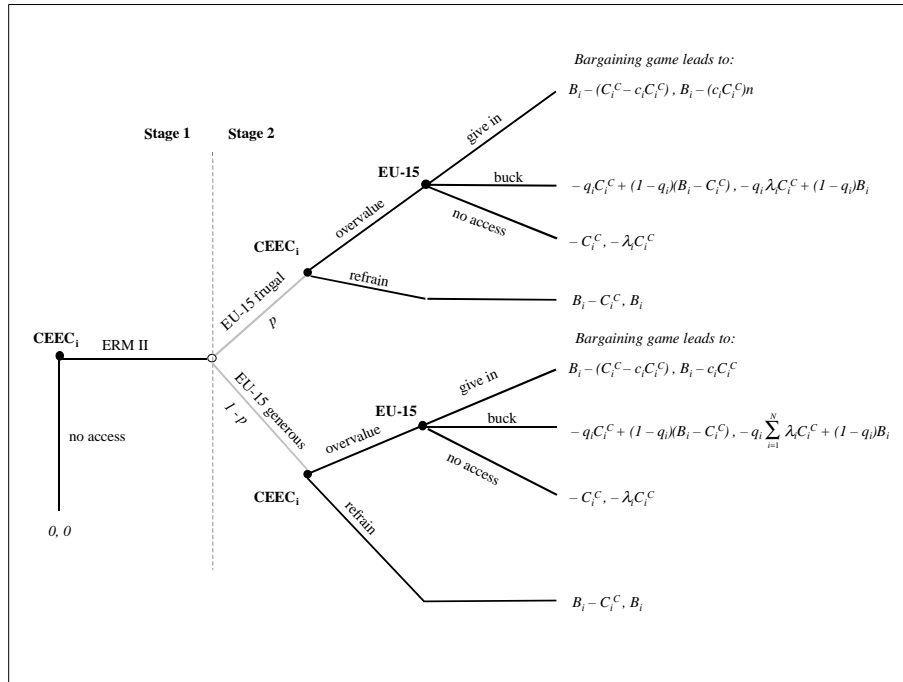


Figure 2: Two-Stage Bargaining with Brinkmanship

games due to imperfect information have to be taken into consideration. Prior to choosing a strategy, CEEC<sub>i</sub> does not know whether it encounters a

frugal or a generous EU-15. In this context, specific costs of default have to be distinguished. On the one hand, a single crisis has the potential to spread like wildfire through all  $n$  CEEC $_i$ . From the perspective of the EU-15 this would be the overall worst pay-off (see second branch of the lower sub game in figure 2). Fearing such exorbitant costs the primary goal would be to maintain public support in each CEEC $_i$  by any means necessary. From this point of view, it might be more beneficial to be generous rather than to spoil the entire process of European integration. On the other hand, the EU-15 might also display a rather reluctant attitude towards providing extra-funding. In this case the EU-15 might be mindful of the proverb, ‘If you give an inch they will take a mile’. This is to say, that the provision of extra-funding for a single CEEC $_i$  will possibly entail further payments to other CEEC $_i$ , for instance, due to the principle belief that all EU-members should be treated equally.<sup>28</sup> Accordingly, the EU-15 would have to transfer  $n$ -times of  $C_i^C$  (see upper branch of the upper sub game in figure 2). Due to the present uncertainty concerning the EU-15’s attitude towards providing extra-funding, the pay-offs for CEEC $_i$  have to be weighted with a probability  $p$  for encountering a frugal respectively  $(1 - p)$  a generous EU-15.

In regards to the players’ strategies, the CEEC $_i$ ’s feasible set of strategies in stage 1 is comprised of two choices: ‘ERM II’—i.e. to enter the convergence play—thus entering stage 2, or it can choose ‘no access’. In this case, it would forgo the benefits of integration  $B_i$ . However, if such a decision is made CEEC $_i$  would have zero cost of convergence, because it resorted to an optimal national policy mix. If CEEC $_i$  chooses ‘no access’ the EU-15 would neither receive  $B_i$ , nor be confronted with possibly providing extra-funding for CEEC $_i$ . This applies, because we rule out the possibility of default when CEEC $_i$  is following an optimal national policy mix. A re-

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<sup>28</sup>For example, the brinkmanship might result in a new institutional scheme of ‘economic and social cohesion’, which would be represented here in the specific monetary terms. Note that CEEC $_i$  will by then already EU-member. Consequently, CEEC $_i$  will have a say in European law-making.

spective economic policy formation would definitely exclude the alienation of voters and consequently speculative attacks. After having chosen ‘ERM II’,  $CEE C_i$  implements a policy mix that satisfies the Maastricht obligations.<sup>29</sup> This policy mix cannot be altered during stage 2, i.e. costs of convergence  $C_i^C$  will arise in any case. In stage 2,  $CEE C_i$  can choose to ‘refrain’ and ‘overvalue’, i.e. to pursue a brinkmanship strategy by aggravating the trend real appreciation and the according devaluation risk. However, in doing so brinkmanship is limited to *threatening* to ‘overvalue’. Respective fiscal measures are announced, but not yet implemented.<sup>30</sup> If implemented, this would indeed trigger a speculative attack and a subsequent devaluation. Then the  $CEE C_i$ ’s strategy of brinkmanship would have failed.

Due to the multiple-equilibria presumption, a current exchange-rate policy formation—i.e. the underlying fiscal and monetary policy mix—might be deemed unsustainable with the exchange-rate regime in place. An originally sound economic policy formation might at a moment’s notice roll over and trigger a speculative attack. Hence, in view of possibly disastrous fiscal policy the players’ reactions will likely be immediate. If  $CEE C_i$  choose to not ‘overvalue’—i.e. not to slacken the reins in fiscal affairs, or practise benign neglect concerning its fundamentals,—those considerations will still hold true when  $CEE C_i$  undergoes a negative exogenous shock. Then, the accession country would still need to weigh the advantages and disadvantages of keeping-up an existing exchange-rate regime.

If  $CEE C_i$  refrains from brinkmanship, it forgoes the opportunity to load costs of convergence  $C_i^C$  onto an EU-15. This would be the best pay-off from the perspective of the EU-15 as stage 1 of the bargaining game would

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<sup>29</sup>In stage 1, we simply act as if the current members of the EMU have no say in deciding whether  $CEE C_i$  enters ERM II or not. This is on no account arbitrary: Even if the current members of the EMU would deny  $CEE C_i$  access to ERM II, sovereign accession countries could certainly resort to soft pegs—corresponding to the provisions of ERM II—, and become as EU-members eligible for extra-funding in case of default.

<sup>30</sup>Wagner (1989) portrays the Cuban missile crisis as an instance of real-life brinkmanship.

remain unchanged. When  $CEEC_i$  resorts to brinkmanship—i.e. choosing ‘overvalue’,—the outcome ultimately depends on the reaction of the EU-15. The EU-15 can choose a strategy of ‘give in’ when CEEC overvalues or it can ‘buck’, i.e. to withhold a payment. Furthermore, it can also choose a strategy of ‘no access’—i.e. to deny  $CEEC_i$ ’s admittance to the EMU.

Before elaborating on the pay-off structure of game  $G(C_i^C, d)$ , we can make a simplification: Given that both players’ maximum willingness to pay for integration—i.e. realising the benefits  $B_i$  of the ‘EU enlargement’ project—corresponds to the total  $C_i^C$ , we can normalise  $C_i^C = B_i = 1$ . In doing so, we transform the bargaining game to the form of  $\Gamma(c_i, d)$ .

The pay-offs for specific strategy combinations in stage 2—pay-offs in stage 1 remain unchanged—are as portrayed in figure 3. If  $CEEC_i$  chooses a

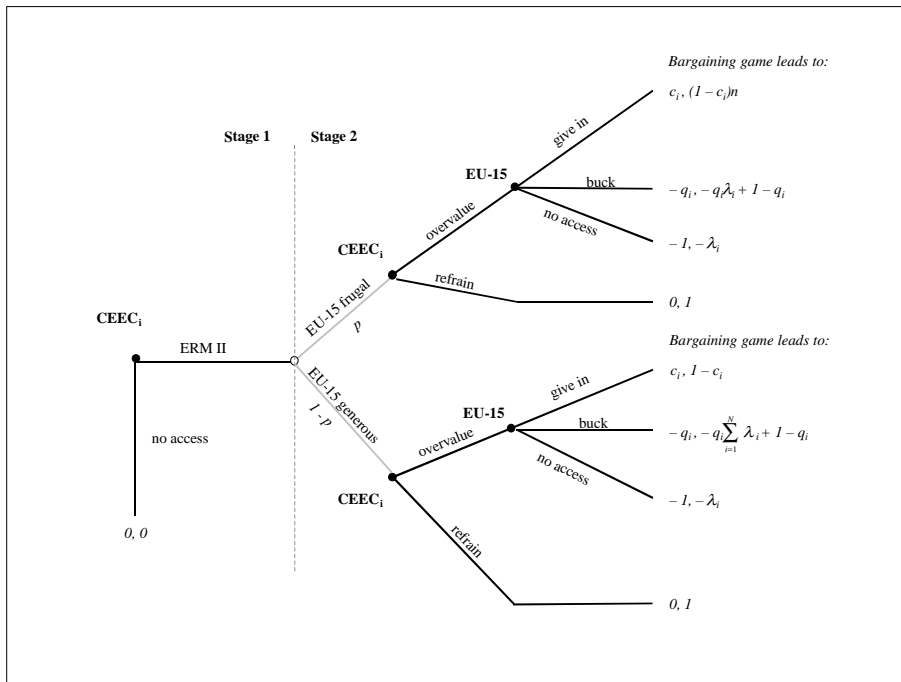


Figure 3: Transformed Two-Stage Bargaining with Brinkmanship

strategy of ‘refrain’—i.e. does not practise brinkmanship,—then it receives zero, whereat the EU-15 gets a risk-weighted  $1^\delta$ . If  $\text{CEEC}_i$  chooses to ‘over-value’, the EU-15 can ‘give in’, ‘buck’ or choose ‘no access’. When EU-15 gives in, then  $\text{CEEC}_i$  receives the aspired alleviation in amount of  $c_i$ . From the perspective of the EU-15 the pay-off is  $(1 - q_i)^\delta$ , consisting of the remaining costs of convergence which are not accepted by  $\text{CEEC}_i$ . Although, the EU-15 might also have to deal with transferring payments to all  $\text{CEEC}_i$  amounting to  $n$  times the size of  $c_i$ . If the EU-15 chooses to ‘buck’,  $\text{CEEC}_i$  might be stuck with costs of default in terms of the expected utility  $(-q_i)^{\gamma_i}$ . Simultaneously, the EU-15 receives the pay-off  $(-q_i\lambda_i + 1 - q_i)^\delta$  respectively  $(-q_i \sum_{i=1}^N \lambda_i + 1 - q_i)^\delta$  in case of contagion among all  $\text{CEEC}_i$ . If the EU-15 chooses ‘no access’ after  $\text{CEEC}_i$  has introduced the ‘threaten-thy-neighbour’-strategy then both players will realise the worst outcome:  $\text{CEEC}_i$  will be left without EU-integration and the burden of full costs (because altering a once implemented policy mix is impossible), receiving  $(-1)^{\gamma_i}$ . At the same time, the EU-15 receives a pay-off of  $(-\lambda_i)^{\gamma_i}$ . This pay-off is the same as in breaking of negotiations (disagreement point  $d$ ).

A ‘threaten-thy-neighbour’-strategy has to satisfy some necessary conditions. In particular, a successful brinkmanship has to meet a condition of effectiveness and acceptability. The effectiveness of such brinkmanship rests on the extent of  $\text{CEEC}_i$ ’s default: as the EU-15 is increasingly affected by costs, a  $\text{CEEC}_i$ ’s threat gains more credibility. That is to say, that the probability of a currency crisis arising is subject to a critical threshold. If the respective probability is too small, the EU-15 cannot be coerced into providing assistance. However, the credibility of the brinkmanship strategy is also dependent on whether the outcome is acceptable to  $\text{CEEC}_i$ . If the probability of an exchange-rate crisis is too high, then  $\text{CEEC}_i$  would abstain from a hazardous exchange-rate policy.

The  $\text{CEEC}_i$ ’s brinkmanship will be successful—i.e. eliciting the desired extra funds amounting to  $c_i$ ,—if it constitutes a credible threat. In this re-

gard, successful brinkmanship is dependent on the conditions of effectiveness and acceptability. CEEC<sub>*i*</sub>'s brinkmanship might be effective, if—from the perspective of the EU-15—the expected pay-off from a choice to ‘give in’ was higher than a decision to ‘buck’ when taking into account possible contagion. Therefore,

$$(-q_i \sum_{i=1}^N \lambda_i + 1 - q_i)^\delta < (1 - c_i)^\delta.$$

Accordingly, the minimum probability  $q_{i,min}$  has to be

$$q_{i,min} > \frac{c_i}{\sum_{i=1}^N \lambda_i + 1}. \quad (2)$$

The probability  $q_{i,min}$  for currency crisis in CEEC<sub>*i*</sub> is the lower bound of the brinkmanship. Below this level the EU-15 would choose a strategy of ‘buck’, even if it is generous.

However, when encountering a more frugal EU-15—which will be encountered with a probability of  $p$ —CEEK<sub>*i*</sub> might feel that a strategy of ‘overvalue’ is too risky. Accordingly, the acceptability condition would not be met: CEEC<sub>*i*</sub> will encounter a generous EU-15 with a probability of  $(1 - p)$ , which will choose a strategy of ‘give in’ when the effectiveness condition holds. Thus, for a given  $0 < q_i < 1$  CEEC<sub>*i*</sub> will pose a probabilistic threat, if its expected pay-off is higher than a pay-off 0 from a strategy of ‘refraining’:

$$(q_i p)^{\gamma_i} + c_i (1 - p)^{\gamma_i} > 0.$$

After resolving we obtain

$$q_{i,max} < c_i \frac{1 - p}{p}. \quad (3)$$

Accordingly, the acceptability condition depends on values for  $p$ .<sup>31</sup> Therefore, values for  $p$  have to be below a critical threshold. Otherwise,  $q_{i,max}$  would have to be smaller than  $q_{i,min}$  for some high values of  $p$ . That would render any brinkmanship fruitless—i.e. effective, but not acceptable because the

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<sup>31</sup>Note that  $p$  enters the formula for a given  $q_i$ .

likelihood of encountering a frugal EU-15 would be too high. From the proposition  $q_{i,min} < q_{i,max}$  it follows that the upper bound is

$$p_{max} < \frac{\sum_{i=1}^N \lambda_i + 1}{\sum_{i=1}^N \lambda_i + 2} < 1. \quad (4)$$

However, there is also a type of lower bound. If the probability  $p$  for encountering a frugal EU-15 is very small,  $CEEC_i$  will always find brinkmanship acceptable. This holds when

$$c_i \frac{1-p}{p} \geq 1.$$

Hence, ‘threaten-thy-neighbour’ is always acceptable for critical values

$$p^0 \leq \frac{c_i}{c_i + 1}. \quad (5)$$

If probability  $p$  for a frugal EU-15 satisfies the acceptability condition, then the following proposition has to be valid:

$$p^* \in P^*, \quad P^* := \{p^* \mid p^* < p_{max} < 1, p^* \in \mathbb{R}^+\} \quad (6)$$

In the end, the probability  $q_i$  in the brinkmanship strategy has to remain below the critical threshold  $q_{i,max}$  above that value  $CEEC_i$  will refrain from a strategy of ‘overvalue’, because it fears mutual detrimental effects. Therefore, for every fixed probability  $\bar{p}^*$  the probabilistic threat is credible when a country-specific  $q_i^*$  is an element of the finite set  $Q_i^*$ . The according proposition is:

$$q_i^* \in Q_i^*, \quad Q_i^* := \{q_i^* \mid q_{i,min} < q_i^* < q_{i,max}, q_i^* \in \mathbb{R}^+\} \quad (7)$$

When the effectiveness and acceptability conditions—i.e. propositions (2) and (3)—are satisfied, the  $CEEC_i$  will indeed practise a strategy of ‘overvalue’, ie. our ‘threaten-thy-neighbour’. In this regard, we have identified the potential for political conflict due to specific moral hazard in terms of brinkmanship. In that respect,  $CEEC_i$  disposes of their credible threat, which provides leverage in the bargaining process for redistributing the costs of convergence shifting the outcome from stage 1 to stage 2 (s. figure 1 on page

26). Such CEEC<sub>*i*</sub> are better off utilising the perverted incentive structure within the framework of ERM II. Both players will choose Nash-strategies reciprocally. Thus, there is a unique sub-game perfect Nash equilibrium in this brinkmanship game for the strategy combination of ((‘ERM II’, ‘overvalue’), ‘give in’). In the following section, we explore the details of the NBS.

### 4.3 Nash-bargaining solution

Bargaining for costs of convergence resembles a simple ‘splitting-of-the-pie’-or—for our purposes— ‘dividing-the-euro’-game. The basic difference is that both players do not maximise their piece of the pie, but minimise their respective share of costs of convergence. In the bargaining game  $\Gamma(c_i, d)$  CEEC<sub>*i*</sub> maximises the EU-15’s share  $c_i$ . The disagreement point  $d$  represents the CEEC<sub>*i*</sub>’s threat, where the pay-off is  $(-1^{\gamma_i}, -\lambda_i^{\delta})$ , as in figure 3 for the case of ‘no access’ (s. page 33). If they do not come to an agreement and negotiations break down, markets will notice that CEEC<sub>*i*</sub> and EU-15 cannot agree on an appropriate policy mix for CEEC<sub>*i*</sub> in ERM II. This will trigger a speculative attack, and an exchange-rate crisis—entailing costs of default  $C_i^D$ —ensues.

The game  $\Gamma(c_i, d)$  in stage 2 ends with Nash-bargaining on the non-empty, convex and compact set comprising any convex combination of vector  $(c_1, c_2)$  in  $\mathbb{R}^2$  (s. figure 1 on page 26). According to the NBS it has to be dealt with pareto-efficient solutions only—i.e. the convex hull in figure 1 which appears here as the cost line. The players’ utility from splitting the costs of convergence corresponds respectively to the other player’s share. The according continuous utility functions are:

$$\begin{aligned} u_1(c_i) &= c_2^{\gamma_i} \\ u_2(c_i) &= c_1^{\delta} \end{aligned}$$

The bargaining solution is derived from the weighted Nash-product:

$$NP : \Gamma(c_i, d) = (u_1(c_i) - u_1(d_1))^{\alpha_i} (u_2(c_i) - u_2(d_2))^{\beta-i} \quad (8)$$

for every  $u_j(c_i) \geq u_j(d_j)$ , where  $\alpha_i$  is the bargaining power of a CEEC $_i$  and  $\beta_{-i}$  the particular corresponding bargaining power of an EU-15 (with  $\alpha_i \geq 0$ ,  $\beta_{-i} \geq 0$ , and  $\alpha_i + \beta_{-i} = 1$ ).

In light of  $d = (-1^{\gamma_i}, -\lambda_i^\delta)$  the maximisation problem from the perspective of player 1—i.e CEEC $_i$ — is:

$$\max_{c_i} \Gamma(c_i, d) = (c_i + 1)^{\alpha_i \gamma_i} ((1 - c_i) + \lambda_i)^{\beta_{-i} \delta}$$

The according first-order condition is:

$$\frac{dNP}{dc_i} = \alpha_i \gamma_i (c_i + 1)^{\alpha_i \gamma_i - 1} ((1 - c_i) + \lambda_i)^{\beta_{-i} \delta} - (c_i + 1)^{\alpha_i \gamma_i} \beta_{-i} \delta ((1 - c_i) + \lambda_i)^{\beta_{-i} \delta - 1} = 0$$

After rearranging and taking into account different values for some combinations of the bargaining powers  $\alpha$  and  $\beta$  we derive

$$c_i^* = \begin{cases} 0 & \text{if } \frac{(1 + \lambda_i) \gamma_i \alpha_i - \delta \beta_{-i}}{\gamma_i \alpha_i + \delta \beta_{-i}} \leq 0 \\ 0 < c_i \leq 1 & \text{if } 0 < \frac{(1 + \lambda_i) \gamma_i \alpha_i - \delta \beta_{-i}}{\gamma_i \alpha_i + \delta \beta_{-i}} \leq 1 \\ 1 & \text{else } \frac{(1 + \lambda_i) \gamma_i \alpha_i - \delta \beta_{-i}}{\gamma_i \alpha_i + \delta \beta_{-i}} > 1 \end{cases} \quad (9)$$

Here, it becomes obvious that the EU-15's actual willingness to pay for CEEC $_i$ 's integration depends on the distribution of bargaining power. The less bargaining power  $\beta_{-i}$  the EU-15 exhibit and the smaller values of  $\delta$ —i.e. the more risk-averse the EU-15 is—, the higher the values for  $c_i^*$ . Consequently, CEEC $_i$  can elicit more funds amounting to  $c_i^*$  from the EU-15, as their bargaining power  $\alpha_i$  increases and they are willing to accept more risk. We recall that  $c_i^*$  is the share of costs of convergence  $C_i^C$  that is acceptable to the EU-15. Hence, we can rewrite the costs that are effectively burdened onto EU-15 as:

$$c_2^* = c_i^*$$

Correspondingly, a CEEC $_i$ 's share of costs of convergence that must be burdened in ERM II is:

$$c_1^* = 1 - c_i^*$$

With respect to a complete two-stage Nash-threat game, the overall NBS of  $\Gamma(c_i, d)$  is

$$\Gamma^*(c_i, d) = (1 - c_i^*, c_i^*). \quad (10)$$

Considering the specific characteristics of the NBS, the combination of both players' Nash-strategies (('ERM II', 'overvalue'), 'give in') can also be represented in terms of their respective reaction functions  $R_j$ . Due to complete information CEEC<sub>*i*</sub> can anticipate the EU-15's optimal choice, thus its own best response is:

$$R_{1,i}(1 - c_i) = \begin{cases} 0 & \text{if } \frac{(1+\lambda_i)\gamma_i\alpha_i - \delta\beta_{-i}}{\gamma_i\alpha_i + \delta\beta_{-i}} \leq 0 \\ 0 < c_i \leq 1 & \text{if } 0 < \frac{(1+\lambda_i)\gamma_i\alpha_i - \delta\beta_{-i}}{\gamma_i\alpha_i + \delta\beta_{-i}} \leq 1 \\ 1 & \text{else } \frac{(1+\lambda_i)\gamma_i\alpha_i - \delta\beta_{-i}}{\gamma_i\alpha_i + \delta\beta_{-i}} > 1 \end{cases} \quad (11)$$

From the perspective of the EU-15 the corresponding reaction function is:

$$R_2(c_i) = \begin{cases} 0 & \text{if } \frac{2\delta\beta_{-i} - \lambda_i\gamma_i\alpha_i}{\gamma_i\alpha_i + \delta\beta_{-i}} \leq 0 \\ 0 < 1 - c_i^* \leq 1 & \text{if } 0 < \frac{2\delta\beta_{-i} - \lambda_i\gamma_i\alpha_i}{\gamma_i\alpha_i + \delta\beta_{-i}} \leq 1 \\ 1 & \text{else } \frac{2\delta\beta_{-i} - \lambda_i\gamma_i\alpha_i}{\gamma_i\alpha_i + \delta\beta_{-i}} > 1 \end{cases} \quad (12)$$

The players' reactions functions  $R_j$  constitute the unique sub-game perfect Nash-equilibrium incorporating a specific NBS of the entire game  $\Gamma(c_i, d)$  respectively  $G(C_i^C, d)$  for every fixed  $\bar{p} | \bar{p}^* \in P^*$  and  $\bar{q} | \bar{q}^* \in Q^*$ . This is to say, that for effective and acceptable brinkmanship, the EU-15 response to CEEC<sub>*i*</sub>'s credible 'threaten-thy-neighbour'-strategy is to immediately burden itself with costs of convergence  $C_i^C$  amounting to the share  $c_i$ . Thus, CEEC<sub>*i*</sub> passes the respective costs of convergence onto current members of the EMU. When receiving  $c_i$ , CEEC<sub>*i*</sub> will abstain from further attempts to promote a hazardous exchange-rate policy in ERM II and will behave well. CEEC<sub>*i*</sub> will then push through Maastricht criteria, since there are no further opportunities to pass costs onto current members of the EMU. This is because at that point their willingness to pay for the realisation of the joint investment project 'EU enlargement'—i.e. providing the public good political stability in CEE—is exhausted.

A special variation of the generalised NBS is the so-called 'symmetric solution'. We deploy this specific NBS in the subsequent section on empirical illustration.

## 5 Simple empirical illustration

Some indicative empirical facts can shed light on this Nash-threat game. An empirical reflection of the above-mentioned pay-off structure can be drafted in respect of some stylised CEEC<sub>*i*</sub>, whereas Poland serves as a specific case of interest. In doing so, we analyse the case of Poland as an EU-member that would have already entered ERM II in May 2002—i.e. two years before the probable date of accession. In respect to  $\Gamma(c_i, d)$  we make some simplifications: First, we presume that the players are risk-neutral, so that  $\gamma_i = \delta = 1$ . Second, in regards to the players' bargaining power we refer to the symmetric NBS in the following. This is to say that the coefficients are  $\alpha_i = \beta_{-i} = 0.5$ .

Furthermore, the empirical illustration requires estimations on the costs of convergence  $C_i^C$ , costs of default  $C_i^D$ , the probability  $p$  of encountering a frugal EU-15, and the probability  $q_i$  for a shift in exchange-rate policy ensuing a currency crisis.

### 5.1 Estimations of costs

An approximate value for  $C_i^C$  can be calculated on the basis of some countries experiences within the preceding Maastricht process of convergence from 1995-1997.<sup>32</sup> In this regard, those countries have to be considered which were economic laggards alike CEEC<sub>*i*</sub>, i.e. a smaller GDP per capita than the respective average of the EMU. Correspondingly, it is assumed that these countries would have had to pass through a catching-up curtailed by mandatory Maastricht criteria. Finland, Ireland, Italy, Portugal, and Spain experienced respective output gaps. These average out yearly 2.2% GDP during 1995-1997.<sup>33</sup> However, another approach would be to estimate respective output gap data on basis of a statistical method—in particular a Hodrick-

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<sup>32</sup>This section is subject to a mayor revision.

<sup>33</sup>The calculations are based on purchasing power adjusted GDP-data indexed to the founding EMU-11 in 1994 ((Eurostat, 1999), 2002).

Prescott filter—or production function methods.<sup>34</sup> With regard to Poland, the IMF estimated an output gap of  $-2.6\%$  GDP in 2002 (IMF, 2003).<sup>35</sup> Thus,  $C_1^C = 2.6\%$  GDP p.a., whereas the subscript 1 denotes Poland. For other CEEC<sub>*k*</sub> ( $k = 2, \dots, 8$ ) we estimate  $C_k^C = 2.2\%$  GDP p.a.

As regards  $C_i^D$  we refer to past experiences with exchange-rate crises. If CEEC<sub>*i*</sub> are considered to be similar to emerging market countries subject to considerable capital inflows and high capital mobility, then it can be implied that an average output loss in course of a default amounts to  $8.8\%$  GDP. Such losses are averagely regained within an about two-year lasting recovery time.<sup>36</sup> Consequently, we estimate  $C^D = 4.4\%$  GDP p.a. for every CEEC<sub>*i*</sub>.

## 5.2 Estimations of probabilities

The results of an empirical analysis are highly sensitive to estimations of the probabilities  $p$  and  $q_i$ . Estimations on  $p$  can rely on the Strategic Power Index (Steunenbergh, Schmidtchen and Koboldt, 1999). This index measures primarily the likelihood that the EU-15 comes up with a new policy—for instance, changing the rule of budgetary policies and legislative choice in context of the provision of regional respectively structural funds etc.—or is trapped in the status quo. In reverse, we can conclude that probability  $p$  of encountering a frugal EU-15 depends on the likelihood of not altering a

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<sup>34</sup>Unfortunately, the most easiest way of calculating  $C_i^C$ —i.e. using a Hodrick-Prescott filter—is of no help because of a too small sample (real growth rates for maximum 13 years of transition). However, IMF as well as OECD sporadically publish output gap data calculated on basis of a production function method. (It is intended to project output gap data for 2004 on basis of a production function method that make particularly allowance for altering unemployment rates (see section 5.2).

<sup>35</sup>Note that positive output gaps would indicate the over-utilisation of production inputs. Consequently, only negative output gaps are actually costs of convergence.

<sup>36</sup>Data are taken from Eichengreen and Bordo (2002:43-44). The authors' sample comprises 56 countries during the period of 1973-1997. According to their analysis output losses (for crises with output losses only) in emerging markets averages  $8.84\%$  GDP (standard deviation: 8.47); recovery time lasts 2.09 years (standard deviation: 1.49) (see *ibid.*: table 8, 9).

status quo. Yet, the outcome depends particularly on the relevant institutional setting of European decision-making. The probability  $q_i$  measures the likelihood that a CEEC<sub>*i*</sub>'s government really meets their voter's demand for a revised exchange-rate policy stance because of by then socially unacceptable costs of convergence. A reversal of capital flows would be precipitated and a currency crisis would result with this probability  $q_i$ . Consequently, the investment project 'EU enlargement' destructed, i.e. political stability in the region of CEE undermined.

The strategic power index (SI) provides an appropriate estimate for  $p$ . Steunenberg et al. (1999) define power as a players' ability to affect the equilibrium outcome of a decision-making process. The power index reflects the dynamics of legislative decision-making in the EU. SI basically rests on simple assumptions about the (normal or uniform) distribution of (euclidean) preferences for ex-ante undetermined x-dimensional policy issues. Decisive issue-linkages within a decision-making process and players' preferences may vary over time. However, making only basic assumptions about the distribution of preferences allows for making probabilistic prediction about future equilibrium outcomes in a given institutional setting (see, for instance, Schmidtchen and Steunenberg (2002, 214-16) for a detailed explanation of SI).

As regards the provision of funds the precise decision-making rules are laid down in Title XVII ('Social and economic cohesion') of the Treaty amended by the Treaty of Nice: Albeit the rules for the provision of Structural Funds (European Agricultural Guidance and Guarantee Fund (EAGGF), European Social Fund (ESF), European Regional Development Fund (ERDF)) and the Cohesion Fund according to Article 161 (ex Article 130d) remain unchanged<sup>37</sup>—i.e. an unanimously acting Council—, a related article has been

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<sup>37</sup>As regards the Cohesion Fund this is especially a 'Spanish success', so to say: It has been decided to switch to qualified majority voting but this will not apply until after the adoption of the multi-annual financial perspectives applicable as from 2007.

considerably amended by the Treaty of Nice. "If specific actions prove necessary outside the funds" (Article 159 (ex Article 130b)) qualified majority voting (QMV) as well as the codecision procedure (Article 251 (ex Article 189b)—i.e. the approval by the European Parliament (EP)—is in force. The remaining problem is the timing of the respective legislative decision. In the strict sense of the NBS, we expect that the bargaining on costs of convergence will be anticipated by the players. The players are aware that the size of the EU would comprise 25 members when a bargaining on costs of convergence follows the CEEC<sub>*i*</sub>' admittance to the EU and ERM II. In this context, we presume that all CEEC<sub>*i*</sub> join the EU at the same time. Hence, the size of 25 EU-members is decisive for determining the probability  $p$ .<sup>38</sup> To be more precise,  $p$  denotes the ability of the current members of EMU to keep up with a frugal attitude towards additional funding of new members after their accession. With reference to the calculations of Steunenberg (2002) we can estimate  $\hat{p} = 0.21$  for a frugal EU-15 (ibid. 2002, 111).<sup>39</sup>

Estimations of  $q_i$  for potential voter alienation due to unwanted costs of convergence are analytically challenging. The idea is to model a measure for the elasticity of voters' demand for a current exchange-rate policy stance to altering costs of convergence in terms of unemployment. For this purpose, we can correlate voters' attitudes towards EU-membership with changes in employment. A shift in EU-aversion is of specific interest. We presume that EU-aversion and unemployment are positively connected: The more unemployment the constituents experience, the more EU-adverse they become. When perceiving that current track of economic—i.e. preparing the EMU-accession—policy does not benefit themselves, they demand a rather

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<sup>38</sup>If the EU-15 would like to prepare themselves in advance, then they should introduce a ceiling for possible funds. In fact, this is what they have indeed done. However, such a ceiling is hardly credible in context of our rationale of completing the investment project 'EU enlargement'.

<sup>39</sup>This value for  $\hat{p}$  is basically tailor-made for an EU-27. Consequently,  $\hat{p}$  is here only an approximated value. Besides, we refer to the case of normal distribution—i.e. rather homogenous preferences within an enlarged EU.

national optimal policy mix. Thus, we compare changes in EU-aversion with changes in unemployment rates. Statements concerning EU-aversion are derived from the Candidate Countries Eurobarometer (CCEB) 2001-2003.<sup>40</sup> Unaffected by absolute values of EU-aversion we can take the relative change in EU-aversion as an ‘stimulus’ within the political system. The higher the stimulus, the higher the probability that a government will alter the status quo of exchange-rate policy. Consequently, we first of all explore the ratio  $\Psi_i$  of (average) changes in EU-aversion to changes in unemployment rates.<sup>41</sup> Regarding the latter, we refer to quarterly data. In doing so, we assume that voters express rather their instantaneous view on EU-membership in an opinion poll. Then, the average change in quarterly unemployment rates  $\omega$  of the two preceding quarters of accession to ERM II is calculated. Ultimately, the probability of an exchange-rate policy shift triggering a speculative attack and a subsequent currency crisis is  $q_i = \Psi_i \omega$ .

The sample comprises only two values for each  $CEEC_i$ . Therefore, we extend the sample a little more by taking the mean value of the four  $CEEC_i$  considered here as a proxy for Poland. Nevertheless, the derived  $q_1$  is a very rough estimate.<sup>42</sup> According to figure 4 the mean value—the proxy for Poland—of the ratio of changes in EU-aversion to changes in quarterly unemployment rates is  $\Psi_1 = 3.23$ . The average change in unemployment rates of the two preceding three months of a hypothetical accession to ERM II in May 2004 is  $\omega = 0.05$ .<sup>43</sup> Therefore, our estimated  $\hat{q}_1 = \Psi_1 \omega = 0.1615$ .

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<sup>40</sup>Unfortunately, the sample comprises only aggregate data. The decomposed opinion poll is not available at present. The period 1998-2000 is not covered by any poll. The preceding Central Eastern Eurobarometer (CEEB) 1990-1997 is already put into individual components. However, the according queries are not that compatible with the CCEB. Consequently, we presently would have to make do with only two country-specific values for changes in EU-aversion.

<sup>41</sup>We refer to a mean value because of an extremely small sample (see figure 4).

<sup>42</sup>The empirical analysis of  $q_i$  is still in its infancies: The data are not reliable as well as particular features of political systems—processing and aggregating individual voter preferences—in specific  $CEEC_i$  are not included at present.

<sup>43</sup>Note that the estimation of seasonal deviation of annual trends due to business cycles

	2000/4	2001/1	2001/2	2001/3	2001/4	2002/1	2002/2	2002/3	2002/4	2003/1	2003/2	2003/3	2003/4	2004/1
<b>Czech Republic</b>														
qoq%	8,40	8,60	8,00	8,30	7,90	7,70	7,00	7,30	7,30	7,60	8,41	8,36	8,56	8,4
Abs. EU-aversion in labour force		0,02	-0,07	0,04	-0,05	-0,03	-0,09	0,04	0,00	0,04	0,11	-0,01	0,02	
Change of abs. EU-aversion in LF				43,00				44,00		51,00				
Change of abs. EU-aversion in LF to qoq%								0,02		0,16				
								0,54		3,87				
<b>Hungary</b>														
qoq%	6,10	6,10	5,70	5,70	5,60	5,80	5,60	6,00	6,00	6,50	4,62	4,60	4,71	5,2
Abs. EU-aversion in labour force		0,00	-0,07	0,00	-0,02	0,04	-0,03	0,07	0,00	0,08	-0,29	-0,01	0,02	0,05
Change of abs. EU-aversion in LF				33,00				30,00		45,00				
Change of abs. EU-aversion in LF to qoq%								-0,09		0,50				
								-1,27		6,00				
<b>Poland</b>														
qoq%	16,00	18,20	18,40	17,90	18,50	20,30	19,90	19,80	19,70	20,50	15,71	12,49	17,88	19,6
Abs. EU-aversion in labour force		0,14	0,01	-0,03	0,03	0,10	-0,02	-0,01	-0,01	0,04	-0,23	-0,20	0,43	0,05
Change of abs. EU-aversion in LF				35,00				33,00		27,00				
Change of abs. EU-aversion in LF to qoq%								-0,06		-0,18				
								11,37		-4,48				
<b>Slovakia</b>														
qoq%	18,20	19,90	19,40	19,10	18,80	19,50	18,70	18,30	18,00	18,50	14,58	14,50	14,84	15,9
Abs. EU-aversion in labour force		0,09	-0,03	-0,02	-0,02	0,04	-0,04	-0,02	-0,02	0,03	-0,21	-0,01	0,02	0,05
Change of abs. EU-aversion in LF				32,00				34,00		46,00				
Change of abs. EU-aversion in LF to qoq%								0,06		0,35				
								-2,92		12,71				

Figure 4: Table: Selected data for CEEC<sub>i</sub>

This is to say, that the probability  $\hat{q}_1$  of triggering an exchange-rate crisis because of weakening the status quo of economic especially fiscal policy is 16.15%.

Now there are all necessary values for a calculation of brinkmanship available. Based on those results, the ‘threaten-thy-neighbour’-strategy for the specific case of Poland is explored in the following subsection.

### 5.3 The case of Poland

Though the calculations for different costs and probabilities are very provisional, the case of Poland can shed some light on the rationale of the bargaining game. Given the aforementioned simplifications of  $\Gamma(c_i, d)$ —i.e. the symmetric NBS with risk-neutral actors—it is now possible to calculate the share  $c_1$  of costs of convergence that are allotted to Poland, but are burdened onto the EU-15. Since  $\gamma_i = \delta = 1$  and  $\alpha_i + \beta_{-i} = 1$  equation (9) (see p. 38) reduces to

$$c_i^* = (1 + \lambda_i)\alpha_i - \beta_{-i}.$$

Moreover, given the subsidiary role of the EU-15 and the relative high costs of convergence in case of Poland

$$\lambda_1 = \frac{C^D - C_1^C}{C_1^C} = \frac{4.4 - 2.6}{2.6} \approx 0.69.$$

(For the remaining CEEC<sub>k</sub> we simply assume that their costs of convergence  $C_k^C$  do not exceed the average costs of 2.2 % GDP p.a. alike in case of the above-mentioned current members of EMU, thus  $\lambda_k = 1$ .)

Because of the symmetric NBS with  $\alpha_i = \beta_{-i} = \frac{1}{2}$

$$c_1^* = \frac{1}{2}\lambda_1 \approx 0.35. \tag{13}$$

This is to say, that Poland passes about 35% of its costs of convergence onto current members of the EMU. However, that would only work, if the 

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is based on a broader sample covering the period from 1994 until today than shown in figure 4.

brinkmanship is effective as well as acceptable from the point of view of Poland.

The effectiveness condition (see equation (2) on p. 35 ) says that  $\hat{q}_1$  has to pass the minimum threshold  $\hat{q}_1 > q_{1,min}$ . Otherwise, the EU-15 cannot be impressed, thus choosing a strategy of ‘buck’, even if it is generous. Given that

$$q_{1,min} > \frac{c_1}{\sum_{k=2}^N \lambda_k + \lambda_1 + 1} \approx 0.04,$$

it follows that

$$q_{1,min} < \hat{q}_1 \approx 0.16. \quad (14)$$

Accordingly, Poland can indeed ‘blackmail’ the EU-15. In addition, the acceptability condition has to be met before Poland would really choose a strategy ‘overvalue’, i.e. ‘threaten-thy-neighbour’. The respective upper bound  $q_{max}$  for the acceptability condition depends on the probability  $p$  for encountering a frugal EU-15. Given our estimations of  $c_1$  and  $p$  it follows that

$$\hat{q}_1 < 1 \leq q_{1,max} < c_1 \frac{1 - \hat{p}}{\hat{p}}, \quad c_1 \frac{1 - \hat{p}}{\hat{p}} = c_1 \frac{1 - 0.21}{0.21} \approx 1.32. \quad (15)$$

This is to say, that the brinkmanship is always acceptable for Poland. The estimated probability  $\hat{p} = 0.21$  of encountering a frugal EU-15 is so small, that from the point of view of Poland possible pay-offs from choosing ‘overvalue’ are always higher than in case of choosing ‘refrain’. Certainly, acceptability is highly dependent on values of  $\hat{p}$ . By equation (4) (see p. 36) we can make out that the critical threshold for  $p_{max}$  from which onwards  $q_{1,max}$  would exceed  $q_{1,min}$  rendering the brinkmanship ineffective is

$$p_{max} < \frac{\sum_{k=2}^N \lambda_k + \lambda_1 + 1}{\sum_{k=2}^N \lambda_k + \lambda_1 + 2} \approx 0.90. \quad (16)$$

Accordingly, if the estimated probability  $p$  would be higher than  $p_{max}$ , then Poland would in any case abstain from a brinkmanship. In reverse, we can calculate the critical value  $p^0$ , from which downwards the ‘threaten-thy-neighbour’-strategy is always acceptable to Poland. According to equation (5) (see p. 36)

$$p^0 \leq \frac{c_1}{c_1 + 1} \approx 0.26. \quad (17)$$

This verifies the results of the above calculated acceptability condition—i.e. that Poland finds the brinkmanship always acceptable—, because  $\hat{p} < p^0$ .

Overall, there is indeed considerable scope for brinkmanship in case of Poland:

$$\begin{aligned} \hat{p} = 0.21 \mid \hat{p}^* \in \hat{P}^*, \quad \hat{P}^* &:= \{\hat{p}^* \mid \hat{p}^* < 0.9\}, \\ \hat{q}_1 = 0.16 \mid \hat{q}_1^* \in \hat{Q}_1^*, \quad \hat{Q}_1^* &:= \{\hat{q}_1^* \mid 0.04 < \hat{q}_1^* < 1\}. \end{aligned}$$

The simple empirical illustration of the NBS for ‘Poland vs EU-15’ indicates that the strategy combination ((‘ERM II’, ‘overvalue’), ‘give in’) constitutes the sub-game perfect Nash equilibrium of  $\Gamma(c_1, d)$ . The corresponding reaction functions of Poland  $R_{1,1}$  and the EU-15  $R_2$  of the complete Nash-threat game are

$$R_{1,1}(1 - c_1) = 1 - \frac{1}{2}\lambda_1 \approx 0.65,$$

and

$$R_2(c_1) = \frac{1}{2}\lambda_1 \approx 0.35.$$

Immediately after Poland’s accession to ERM II and their starting of brinkmanship the EU-15 burdens itself with ca. 35% of Poland’s costs of convergence  $C_1^C$  in terms of GDP p.a. In doing so, the EU-15 keeps Poland from continuing the ‘threaten-thy-neighbour’-strategy. This is to say, that Poland is in a position to elicit about 0.9% of its GDP (177.8 bill. Euro in 2002), i.e. 1.6 bill. Euro from the EU-15.<sup>44</sup> If Poland’s brinkmanship results in a new institutional scheme for the distribution of funds, so that the same amount of money in terms of GDP is transferred to all CEEC<sub>*i*</sub>, then the EU-15 would have been stuck with costs amounting to  $nc_1$ , i.e. the equivalent of 3.4 bill. Euro.<sup>45</sup> This corresponds to 0.04% of the EU-15’s GDP (ca. 8100 bill. Euro in 2002). Consequently, the possibly required fiscal transfers are only marginal costs for the EU-15. In face of considerable economic and

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<sup>44</sup>These and the following data are own calculations based on WDI- and ECB- databases, 2003.

<sup>45</sup>At the same time, the costs of spreading defaults in all CEEC<sub>*i*</sub> ( $\sum_{k=2}^N C_k^C + C_1^C$ ) amount to ca. 9 bill. Euro.

political costs of stalling European integration, completing the investment project 'EU-enlargement' is rather a cheap deal.

## 6 Conclusions

The focus of the preceding analysis has been on the particularities of CEEC' exchange-rate policies within ERM II and generally in course of their integration into EMU. Applying game-theoretical methods, it has become apparent that the political economy approach dealing with policy-decisions as endogenous is quite fruitful. The curved incentives for exchange-rate policy making due to EU' willingness to pay for CEEC' admittance to EMU contributes to excessive moral hazard behaviour. The according brinkmanship makes allowance for the subsequent bargaining on costs of convergence.

The analysis has started with the critical assumption that the enlargement decision was basically a political decision aiming at a regional stabilisation of CEE. Consequently, we arrived at the conclusion that the EU has a considerable willingness to pay for CEEC' integration. Overall, this accounts for a momentous free-riding process. Moral hazard behaviour is really not a novel phenomenon in context of European economic policy coordination. However, there is a particular difference of the convergence play in course of the enlargement process as compared to the preceding Maastricht process in the run-up to EMU. In case of the latter, Maastricht criteria had been a tying-hand strategy for the founding members of EMU. Now these provide an external constraint, whose credibility is less effective because of the particular political dimension of the enlargement process. We have considered the EU-enlargement as a joint investment project in the public good 'political stability' in CEE. Because of the CEEC' thus misconstrued incentive structure, the accession countries can elicit the EU's maximum willingness to pay for their accession by creating a scenario, which would credibly threaten to undermine their political stability. Such a credible threat can be attained by brinkmanship transmitted by exchange-rate policy, which has been denoted

as ‘threaten-thy-neighbour’.

Albeit, there is a deviation from the original term ‘beggar-thy-neighbour’, this brinkmanship bears some resemblance to it. The synopsis on exchange-rate policy formation in CEEC during the 1990s sheds some light on this view: Transition countries pursued exchange-rate policy in terms of disinflation at the outset of transition. Then, they turned more to implicit exchange-rate targeting, though, still aiming at price stability. However, exchange-rate policy will probably be exploited for output and employment concerns. Indeed, such policy stance does not aim at competitive devaluations for improving external competitiveness. Yet, it might enable CEEC to extract benefits at the costs of current members of the eurozone, i.e., by receiving some kind of extra-funding.

The transmission mechanisms and relevant conditions for a successful brinkmanship have been delineated in this paper. Basically, the transmission mechanisms are brought forward in particular by a policy mix that may be considered as unsustainable with the soft peg in some circumstances. In this regard, such fixed exchange-rate regimes, provided for by ERM II, do not present sufficient external constraint, but encourage moral hazard. CEEC might not take those rigorous steps in fiscal and monetary policies required for keeping up the fixed exchange-rate regime. Moreover, accession countries’ stability of exchange-rate regimes might be particularly at stake when economic conveniences are taken into account such as trend real appreciation and the decisive role of capital flows. Eventually, slacken the reins in terms of exchange-rate policy might put the exchange-rate regimes of CEEC in ERM II at risk, i.e. provoking a currency crisis. The game theoretic analysis in terms of a two-stage Nash-bargaining game, the application of a NBS and the subsequent empirical drafting for the case of Poland have shown that brinkmanship is very plausible. Overall, the current EU might be better off by providing additional funds, thus sustaining public support for European integration in CEEC. Consequently, the EU burdens itself with a considerable share of the investment costs in the final phase of ‘EU-enlargement’.

However, bargaining for costs of convergence implies only marginal additional costs for the current EU.

It is important to notice that a CEEC' successful brinkmanship will by no means entail a currency crisis—in that case such strategy would have failed. Furthermore, we will possibly not even observe that current members provide CEEC with extra-funding in monetary terms. The EU' willingness to pay might, for instance, rather result in a redesign of fiscal affairs and economic and social cohesion within the EU.

As current members of EMU might not dispose of direct influence on keeping CEEC from brinkmanship when they are already participating in ERM II, possibly the exclusion of soft pegs in ERM II is the last resort. Only floats would have to be allowed and ERM II fundamentally revised. However, betting on a revision of the Treaty is rather inappropriate. Another drastic measure would be to enforce a quick introduction of the euro as legal tender in CEEC. In contrast to the ECB' present attitude towards an early introduction of the euro, CEEC could be encouraged to euroise unilaterally. In doing so, current members of EMU would forestall that CEEC squeeze out their willingness to pay for economic and political stability. However, as an early introduction of the euro would probably affect the price stability of the euro, this option is to inflict a worst or a next-worst outcome on current members. Therefore, the EU might be rather exposed to a 'Catch-22'-situation.

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