Can EU Conditionality Remedy Soft Budget Constraints in Transition Countries?

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Soft budget constraints (SBCs) are a persistent feature of transition economies and have been blamed for i.a. a lack of fiscal consolidation and sluggish growth. EU eastward enlargement has – among other things – been conditioned on tackling SBCs. This paper analyzes such outside conditionality theoretically and empirically. First, modelling the SBC problem as a war of attrition between the applicant countries' government and firms we find that outside conditionality can foster SBC hardening. Yet, toughening the EU stance or reducing the number of enlargement rounds may have ambiguous effects. Second, estimating SBC hardening in a partial adjustment model by measuring the reaction of employment to output changes we find that EU conditionality did indeed help candidates to fight SBCs.

Key Words: soft budget constraint, EU enlargement, war of attrition.
JEL: F15, D78, P21, P26, P30, G30

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Abstract

Soft budget constraints (SBCs) are a persistent feature of transition economies and have been blamed for i.a. a lack of fiscal consolidation and sluggish growth. EU eastward enlargement has – among other things – been conditioned on tackling SBCs. This paper analyzes such outside conditionality theoretically and empirically. First, modelling the SBC problem as a war of attrition between the applicant countries' government and firms we find that outside conditionality can foster SBC hardening. Yet, toughening the EU stance or reducing the number of enlargement rounds may have ambiguous effects. Second, estimating SBC hardening in a partial adjustment model by measuring the reaction of employment to output changes we find that EU conditionality did indeed help candidates to fight SBCs.

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1 Introduction

The problem of soft budget constraints (SBCs) – the lack of financial discipline at the firm level, whether state or private owned – remains a persistent feature of many transition economies (e.g. Kornai (2001), EBRD (1999, ch.7)). Yet in view of the progressing eastward enlargement of the European Union, many observers have concluded that since future membership depends on a series of key economic and institutional performance measures, problems inherited from the socialist past such as SBCs would be overcome.[1] For example, the EBRD (2001) comments:

[1]Obviously this supposed beneficial impact from outside conditionality arises for a number of economic and/or political problems and from the conditionalities imposed by a host of institutions. For example, Perotti (1998: 1706) notes in the context of monetary policy in transition countries: "(...) there is a clear benefit in the commitment value created by international institutions with a reputation for tough lending criteria such as the IMF and the World Bank."

> "It is therefore important to recognise that international integration can complement domestic factors in advancing reforms and in strengthening economic performance. The EU accession process has been a strong influence on the direction and pace of reform for the ten candidate countries (...), and this has helped to counter the influence of domestic vested interests."
>
> (EBRD, 2001: 11)

This paper uses the case of SBCs in transition economies in the context of EU eastward enlargement with its membership conditions to study – both theoretically and empirically – the mechanics and effectiveness of such outside conditionality.

The pioneering work on soft budget constraints in the context of socialist economies and later transition economies has be carried out by Kornai (1979, 1980). Recent major overviews of the theoretical and empirical literature are given in Kornai, Maskin and Roland (2002), Maskin and Xu (2001), Kornai (2001), Dewatripont and Roland (2000) and Maskin (1999). The SBC syndrome is typically understood as a dynamic commitment problem at the governmental level; namely, the government repeatedly demands financial discipline at the firm level, but is *ex post* – due to social or political costs – unable to enforce its demands and ends up bailing out firms (Schaffer (1989)). Hence countries are stuck in the SBC status quo. Manifestations of an SBC are subsidies, tax arrears, credit arrears, wage arrears, etc. The consequences of SBCs are – apart from the immediate negative impact on allocative efficiency and, related to this, the phenomena of shortages (e.g. Kornai (1980), Quian (1994)) – a lack of fiscal consolidation, problems of international competitiveness, financial bubbles, a lack of innovation and not least a negative impact on overall economic growth (e.g. Kornai (2001), Huang and Xu (1999), Bai and Wang (1999) Quian and Xu (1998)).

The present paper complements the existing literature, which focuses mainly on the causes and consequences of SBCs, by pursuing a different line of research. We develop and test a framework where the SBC is assumed to exists as part of the status quo, i.e. the government is repeatedly forced to accept SBCs at the firm level. What then is important in our model and estimations are the following questions. What are the effects of adding outside conditionality into the game between firms and government? When can such outside demands challenge the status quo and alter the game in favor of hard budget constraints? Has the EU conditionality of the enlargement process helped to remedy SBCs in the candidate countries?

In our theoretical part we model the issue of SBC and outside conditionality as a game between the national government and firms. The government

aims for and benefits from hard budget constraints (HBCs) but is unable to enforce such a policy against the will of the firms, as firms – for which the SBC is in fact a subsidy – block any reform. Further, both players would benefit from EU membership, but only the government can lead the negotiations, i.e. only it has the power to submit or to postpone the country's membership application. Hence the players can hold each other hostage and a war of attrition unfolds. In this waiting game – in the spirit of Alesina and Drazen (1991) – the firms hope for the government to push for membership of the EU even though the SBC issue is unresolved, while the government – with reference to the announced EU membership conditions – may delay application hoping for firms to tighten their budgets. The game is won by the player willing to wait the longest for his favorite outcome to materialise. In this setting we find that once the outside institution (EU) imposes a tough conditionality demanding HBCs, the game does change in favor of the government, hence EU conditionality can remedy the SBC problem by solving part of the dynamic commitment problem. Furthermore, we introduce uncertainty as to the type of the EU, i.e. with some probability the EU may admit an unreformed country. And we study the effect of altering the number of future enlargement rounds, which affects the costs of delay for both players. With these assumptions a number of scenarios are derived in which the outside conditionality may or may not help to tackle the SBC issue.

In the empirical part of this paper, we examine the fundamental hypothesis of our theoretical model. Does the event of obtaining candidate status in the EU enlargement process trigger a change in firm behavior indicating a hardening of budget constraints? Since the degree of budget discipline is difficult to measure directly, we build our empirical investigation on indirect measures, namely, the adjustment of employment to changes in demand and output. In a first step, we formalise the idea that under SBCs firms will display a higher labour-to-output ratio and in fact a slower adjustment speed of the employment level to outside shocks. Secondly, from this model we can construct the simple partial adjustment relation that forms the basis for our econometric analysis. We obtain the following results: Entering into candidate status vis-à-vis the EU corresponds to a change in the labour-to-output-adjustment relation in the direction of HBC. This holds both compared to the time period prior to becoming a candidate as well as compared to transition countries outside the circle of potential EU applicants. Thus we find in our empirical part as well that outside conditionality can (and has) help(ed) transition countries to tackle the SBC problem.

The theoretical explanations of SBCs found in the literature take several different angles, for example: a) political economy type explanations, where the government tolerates an SBC in return for political support, or in order to

avoid unemployment (e.g. Shleifer and Vishny (1994)); b) commitment problems, caused, for example, by inefficiencies in credit allocation (Dewatripont and Maskin (1995)) or by interdependencies between enterprises (Berglöf and Roland (1998)); c) principal agent type problems, caused, for example, by insider control (Li (1998)) or by information asymmetries between government and firms (Bai and Wang (1998)). Solutions to the SBC problem – different from outside conditionality – have been proposed corresponding to the approaches to explaining it. Demonopolisation, devolution (or federalism), financial sector reforms, etc are all suggested as cures to the SBC phenomena (e.g. Dewatripont and Roland (2000), Quian and Roland (1998)). On the other hand, more closely related to the present approach – though not dealing with SBCs – are Alesina and Drazen (1991) dealing with fiscal stabilisation, Perotti (1998) dealing with financial sector reform in transition economies and Heinemann (2000) examining the strategic effects when creating the EMU. In each of these papers outside conditionality could generate a beneficial impact by dragging the economy out of its status quo.

Section 2 introduces the model, and examines the impact from different firm, government and EU parameters on SBC hardening. Section 3 presents empirical evidence whether the candidate status of transition economies and the associated EU conditionality did indeed have an impact on SBC hardening. Section 4 concludes the paper.

2 A simple model of outside conditionality

Consider a non-EU country where an SBC problem exists. Even though the government, g, benefits from HBCs it is unable to enforce this policy due to some dynamic commitment problem. Firms, f, benefit from SBCs and can maintain the status quo by continuously refusing to cooperate. Thus the problem of the SBC persists and can only be tackled through a regime change. The government desires this regime change but lacks the tools to enforce it against the will of the firms.[2] The power of firms to maintain the status quo is counterbalanced by the prospects of an EU membership, whereby the EU has imposed some membership conditions concerning the hardening of SBCs. Both players benefit from an EU membership of the country. But only the government can negotiate with the EU, i.e. the government of a given country has the power to submit or to postpone the membership application

[2]The reason for the existence of the SBC problem is of no concern. However, what is decisive for our paper is that firms have the power to maintain the status quo. If the government could enforce an HBC on its own, the issue of an SBC would not materialise to begin with – hence there would also be no role for outside conditionality.

for the current enlargement round. Thus a war of attrition unfolds between g and f. The government can attempt, via a delay in the EU membership application, to force firms into compliance with a pro HBC regime shift, while firms can block the regime shift, via their refusal to cooperate, hence exerting pressure to obtain an EU membership despite a persisting SBC problem.

The membership conditions that the EU – as an outside institution – has imposed include financial micro (and macro) discipline.[3] The conditionalities may be enforced to varying degrees. The actual toughness of the outside institution is unknown to both agents. The perceived probability of the EU being soft – allowing the country to enter despite of the SBC issue – is p, i.e. the distribution of the EU type is know, but not the actual realisation. Thus p expresses the probability that the particular applicant country is allowed to become a member for political, geographic or other reasons despite persisting SBCs. Note that p can, and most probably does, vary for different candidate countries.[4]

In the status quo (SBCs continue) payoffs for g and f alike are normalised to zero. Any change from the status quo commands the following present value payoffs: The gains for g of the country becoming an EU member are α. The government's total benefits associated with HBCs, for example stemming from the fiscal stabilisation following the removal of SBCs, are given by σ. The gains for f from the country becoming an EU member are β. The present value of all costs that firms face when removing SBCs – including both the risk of bankruptcy but also potential efficiency gains from HBCs – is τ. All parameters $\alpha, \sigma, \beta, \tau > 0$.

The sequence of the game is as follows:

- Step zero: EU opens enlargement round and imposes HBC condition.
- Step one: f choose to discipline budgets (HBC) or to maintain the status quo (SBC).
- Step two: g chooses to submit or not to submit a membership application, i.e. to push forward with or postpone EU negotiations.
  - If the country displays an HBC and a membership application is submitted, the EU accepts the new member with certainty.
  - If the country displays an SBC and a membership application is submitted, the EU accepts the new member with probability p (soft EU)

[3]Here we envisage items such as the Copenhagen Criteria of 1993.

[4]The strong political backing that is provided by e.g. Greece to Cyprus or Germany to Poland makes it highly unlikely that these countries could fail in the first enlargement round regardless of the actual status of implementation of the *acquis*, and hence these countries may not be measured by the same yardstick as other applicants.

or rejects the applicant with probability $1-p$ (hard EU).

- Step three: If g does not submit an application or if the country is rejected on grounds of a SBC, the game starts anew with probability $(1-\phi)$.

Thus the game may end – possibly after some periods of delay – with either EU membership and HBCs or with EU membership and SBCs. Further, if the game starts again from the beginning there is a "closing the door" probability $0 < \phi < 1$, i.e. the risk that there will be no further enlargement rounds, and hence the game will end with no membership and continiuation of SBCs (the status quo) into the indefinite future. Also, it follows immediately that once a HBC is obtained in step one it will be g's dominant strategy to submit an application and push for membership, which will result in the certain government payoff $\alpha + \sigma$. Also, and more importantly, in step two if a country places an application but is rejected on grounds of an SBC, information on the actual EU type is disclosed – altering the payoffs of the next round. Only the government can call this action (unveil information). Once the EU type is established to be tough, the game alters into a trivial version where payoffs for firms and government become either zero for ever or $\beta - \tau$ and $\alpha + \sigma$ respectively. However, from the government's perspective, calling on this option – forcing the EU to disclose its type – bears the risk of the EU turning out to be soft. Hence, the country would enter with persisting SBCs (payoffs β and α for firms and government respectively).

A first immediate result is:

Lemma 1. *If $\beta - \tau < 0$, then neither a fully credible and committed government nor outside conditionality can enforce a regime shift in favor of HBC.*

This says that if the costs of hardening budgets are too high, or if firms do not value an EU membership very much, then the government cannot enforce budget discipline, also not via the outside conditionality. Hence in the remainder of the paper we assume $\tau < \beta$.

Players discount the future. Payoffs realised in subsequent periods are discounted at the rate of time preference $\rho_j\,,\ j = g, f$ for the government and firms respectively. This gives a discount factor $\frac{1}{1+\rho_j}(1-\phi)\,,\ j = g, f$, where $(1-\phi)$ was the probability that the game will continue to the next round. Thus waiting is costly. Yet the players are willing to wait for some time in order to obtain their favorite outcome, i.e. hoping for the other player to give up.[5] This war of attrition game is won by the player willing to wait

[5]For the government, giving up means submitting an application and pushing for EU membership even though SBCs persists. For firms, it means disciplining the SBC into an HBC.

the longest for his favorite outcome to materialise, see Alesina and Drazen (1991) for a version with incomplete information or Hendricks et al. (1988) for a complete information variant.

The favorite outcomes of the two players are: the government wins if HBC discipline is obtained and the country becomes an EU member ($\alpha + \sigma$). For firms the favorite outcome depends on p. For a large enough p the firm wins if the government applies for EU membership even though SBCs persists – membership may or may not result immediately, depending on the EU type. However, for a low p, firms and government agree on the best possible outcome. Formally:

Lemma 2. *Firms and government agree on the favorite outcome, namely to switch to a regime with HBC and to submit an application, if*

$$p < (\beta - \tau)\frac{\rho_f + \phi}{\beta(\rho_f + \phi) + \tau(1 - \phi)} \tag{1}$$

If Lemma 2 is fulfilled the game ends immediately with HBC and EU membership.[6] Lemma 2 states that for a strict EU – a low p in the sense of (1) – firms and government will agree on their strategies, and none of the players benefits from waiting. Thus in a sense lemma 2 already answers the question posed by this paper: outside conditionality can remedy the SBC problem. As is clear from intuition, the condition in (1) is less likely to be fulfilled, if the costs of hardening SBCs, τ increases, and if the future means more to firms (i.e. if either ρ_f or ϕ decrease). Thus in terms of policy, one can immediately conclude that a direct compensation by the EU to the applicant country's firms for the costs of budget disciplining (reducing τ), or a tough closing-the-door-policy (large ϕ), increases the power of the outside conditionality.[7] In the remainder of the paper we assume that p is larger than the critical value stated in (1). With this assumption the firms and government interests are opposed and hence a war of attrition setting exists.

Two limiting cases complete the introduction of the model. First consider how the game would change if the EU were fundamentally and credibly committed to strict conditionality. Setting $p = 0$ the government action is

[6] Lemma 2 is derived by solving the inequality $(\beta-\tau) > p\beta+(1-p)\left(\frac{1-\phi}{1+\rho_f}(\beta-\tau)\right)$ for p, i.e. the critical p is determined by equating the firms loosing payoff $(\beta-\tau)$ with the winning payoff, whereby the winning payoff has a probability p of obtaining EU membership with an SBC (β) and a probability $1-p$ of rejection today and hence a tough EU, such that membership at best can be obtained in the next period with an HBC ($\frac{1-\phi}{1+\rho_f}(\beta-\tau)$).

[7] As a matter of fact the official position of the EU is that there is no limit on the number of future enlargement rounds ($\phi \to 0$) which would, by lemma 2, weaken the impact of the set conditionality.

effectively of no concern to the outcome, and the game is reduced to a simple decision of firms between SBC (payoff: 0) and HBC (payoff: $\beta - \tau$). Given lemma 1, membership and HBC will result immediately since $\beta > \tau$. Second consider the game if there were no EU, i.e. consider a country for which EU membership is no option. Accordingly setting $\alpha = \beta = 0$, it immediately turns out that the SBC problem will persist indefinitely.

2.1 Solution with EU conditionality

The war of attrition is won by the player willing to wait the longest for his favorite outcome to materialise. Using pure strategies only and since except for the type of the EU the game may be played under complete information there will, however, be no substantial delay. Instead the losing player will give up right away rather than enduring any delay (Hendricks et al., 1988). In settings of incomplete information the game may feature some delay (Alesina and Drazen, 1991). In either case what is decisive for determining the winner of the game is to establish the maximum waiting times that government and firm are willing to accept and how these waiting times are affected by the parameters of the model. The maximum willingness to wait of the firms is defined by equating the value of winning at time $\bar{t}_f$ and the value of giving up immediately:

$$p\beta \left(\frac{1-\phi}{1+\rho_f} \right)^{\bar{t}_f} + (1-p)(\beta-\tau) \left(\frac{1-\phi}{1+\rho_f} \right)^{\bar{t}_f+1} = \beta - \tau \qquad (2)$$

The right-hand side is simply the present value of giving up right away, i.e. the country implementing HBCs and thus becoming an EU member. On the left-hand side we have the present value to the firms from the government applying for an EU membership at time $\bar{t}_f$ while SBCs persist. The first term on the left-hand side is the probability that the country faces a soft EU and actually enters at time $\bar{t}_f$ with an SBC times the value from entering with a soft budget. While the second term on the left hand side is the probability of facing a hard EU – this fact being established only after the government has launched an unsuccessful application in period $\bar{t}_f$ – and hence entering in the next enlargement round with an HBC times the value of entering minus the cost of hardening budgets. From (2) one can solve for the maximum waiting time of the firm.

$$\bar{t}_f = \ln \left(\frac{(\beta-\tau)(1+\rho_f)}{(\beta-\tau)(1-p)(1-\phi)+\beta(1+\rho_f)p} \right) \ln \left(\frac{1-\phi}{1+\rho_f} \right)^{-1} \qquad (3)$$

Fully parallel to this the problem of the government can be stated by

equating the favorite outcome at time $\bar{t}_g$ with giving up immediately:

$$(\alpha+\sigma)\left(\frac{1-\phi}{1+\rho_g}\right)^{\bar{t}_g} = p\alpha + (1-p)(\alpha+\sigma)\left(\frac{1-\phi}{1+\rho_g}\right) \tag{4}$$

The left hand side is the value of winning at time $\bar{t}_g$, while the right hand side is the value of giving up today, hence either becoming a EU member while SBCs persist (payoff α) with probability p or establishing the type of the EU to be hard with probability $1-p$, and hence enforcing HBCs and becoming an EU member in the next enlargement round (payoff $\alpha+\sigma$). From (4) the maximum waiting time of the government is:

$$\bar{t}_g = \ln\left(\frac{(\alpha+\sigma)(1-p)(1-\phi)+\alpha(1+\rho_g)p}{(\alpha+\sigma)((1+\rho_g)}\right)\ln\left(\frac{1-\phi}{1+\rho_g}\right)^{-1} \tag{5}$$

Due to the sequential nature of the game, when firms are 'tough' i.e. maintain SBCs, then the government, if it decides to postpone the enlargement negotiation for the present round (punish the firms), can at best achieve the favorite outcome in the next enlargement round. Formally we can state:

Lemma 3. *The government wins the game if* $\bar{t}_g > \bar{t}_f + 1$*, resulting in HBC and EU membership.*

The reasoning of lemma (3) is the common intuition behind the war of attrition where the player that can establish – either by demonstrating his ability to wait (incomplete information) or because his ability to wait is known (complete information) – that he is willing to wait longer, wins the game, because the other player – after realising the other's ability to hold out longer – maximises his payoff by giving up right away (see Bliss and Nalebuff (1984), Alesina and Drazen (1991), Hendricks et al. (1988)). The basic reasoning of lemma (3) can thus be summarised by formulating the function $h = \bar{t}_g - \bar{t}_f - 1$, which for positive values says that the government is winning, and for negative values says that the firms are winning. Plugging in (5) and (3) and rewriting gives:

$$h = \frac{\ln\left(\frac{(1-p)(1-\phi)}{1+\rho_g}+\frac{p\alpha}{\alpha+\sigma}\right)}{\ln\left(\frac{1-\phi}{1+\rho_g}\right)} + \frac{\ln\left(\frac{(1-p)(1-\phi)}{1+\rho_f}+\frac{\beta p}{\beta-\tau}\right)}{\ln\left(\frac{1-\phi}{1+\rho_f}\right)} - 1 \tag{6}$$

2.2 Results

In the following the reaction of h to changes in the various parameters will be examined.

Government and firm parameters

When differentiating h with respect to the gain, cost and time preference parameters of the two players, the central war of attrition results emerge. Expressed in terms of the governments chances of winning we can state:

Proposition 1. *The government's maximum waiting time increases relative to the firms' maximum waiting time, i.e. the government's chances of winning – the applicant country joining the EU with a HBC – increase, when:*

i) the government's payoff from EU membership, α, decreases

ii) the government's payoff from HBC, σ, increases

iii) the government becomes more patient, i.e. ρ_g decreases

iv) the firms' payoff from EU membership, β, increases

v) the firms' cost from implementing HBC, τ, decrease

vi) the firms become less patient, i.e. ρ_f increases.

Proof of the proposition, i.e. the signs for the various derivatives of h, as well as of all further results of this model is given in a separate appendix available from the authors upon request. The results stated in proposition 1 have a clear intuition interpretation. A government too eager to get the country into the EU may forgo the beneficial effect of outside conditionality and pressure for an EU membership, even though SBCs prevail. Similarly, if the benefits of HBCs for the government become more substantial, its ability to wait for its favorite outcome increases. On the other hand, if firms obtain substantial benefits from EU membership, then the cost of postponement are high and firms will give up earlier. Conversely, given higher costs of hardening SBCs, firms will be willing to wait longer, hoping for their favorite outcome – membership with SBCs. Finally, patience – as always in the war of attrition – is a good strategy for winning the game.

In terms of policy, proposition 1 *(i)*, for examples, gives a novel perspective on the strict rejection of the Commission's proposals for the future Common Agricultural Policy by several governments of the candidate countries. In fact this might not be so much a signal to Brussels as to their own firms and economies, namely that the national government is not ready to seek membership at any price, i.e. has the power to wait. Similarly, proposition 1 *(ii)* could read that the package deal, where EMU is part of the long-term enlargement project, implies that HBCs become more important for national governments, again strengthening their position vis-à-vis firms.

Finally, from proposition 1 *(iv)* and *(v)*, it follows that if the EU aims at helping candidates to implement a regime shift in favor of HBCs then increasing the benefits that firms obtain from EU membership (for example reserving full market access to members only) and dampening or compensating the costs resulting from budget hardening (firm restructuring) would be sensible policy measures.

Tough versus soft EU conditionality

The probability of the EU being soft, p, and the probability of closing the door, ϕ, affect both the government's as well as the firms' willingness to wait. Starting with the perceived probability that the country faces a soft EU, i.e. is permitted to join as a member even though the SBC problem persists, one finds that the government's maximum waiting may de- or increase for an increase in p. In particular, the following result can be stated:

Lemma 4. *An increase in the probability, p, that the EU is soft will make the government*

i) less willing to wait if $\alpha > (\alpha + \sigma)\frac{1-\phi}{1+\rho_g}$

ii) more willing to wait if $\alpha < (\alpha + \sigma)\frac{1-\phi}{1+\rho_g}$

For proof, see separate appendix. In case i) the government's maximum waiting time falls if the probability that the EU is soft increases. In fact what the condition $\alpha > (\alpha + \sigma)\frac{1-\phi}{1+\rho_g}$ says is that losing the game today is worth more than winning it tomorrow. Put differently, the winning-to-losing payoff has such a narrow margin (σ is relatively small) that the government is unwilling to even endure a single round of delay (and the risk of closing the door). However, in case ii) the government will be willing to wait longer if the probability that the EU is soft increases. This is the case since an increase in p means that when the government pressures for EU membership in order to disclose the type of the EU, it faces the larger risk that the country might actually be permitted to enter the EU without having disciplined SBCs. On the other hand, for the firms, we find that $\frac{\partial \bar{t}_f}{\partial p} > 0$. By speculating on a larger chance of being able to join the EU with an SBC, firms' maximum waiting time always increases as p increases. Thus the overall effect of an increase in p depends on the degree by which the two players' maximum waiting times increase in reaction to an increase in the perceived probability that the EU is soft. To facilitate further comparison we set the rate of time preference for the two players equal to zero ($\rho_g = \rho_f = 0$). There is still discounting in the model, since $\phi > 0$.

Proposition 2. *Consider the probability level* $\hat{p} = 1 + \frac{\alpha}{2\sigma} - \frac{\beta}{2\tau}$ *that the EU is of the soft type.*

i) If $p > \hat{p}$*, then there exists a critical* ϕ^c*,* $0 < \phi^c < 1$ *such that*

(a) for a high risk of closing the door in the sense of $\phi > \phi^c$ *an increase in p worsens the chance that the government is winning the game;*

(b) while for a low risk of closing the door in the sense of $\phi^c > \phi$ *an increase in p improves the chance that the government is winning the game.*

ii) If $p < \hat{p}$*, then for any level of* ϕ *an increase in p worsens the chances of the government winning the game.*

For proof, see separate appendix. Proposition 2 says that the generally expected case, where an increased probability that the EU is soft, i.e. permitting applicants even though their SBC problem is unresolved, reduces the government's chances of winning and thus increases the chances of applicants entering with SBCs, does not apply for all parameter constellations. In particular, if the EU is perceived as relatively soft in the sense of $p > \hat{p}$ then if sufficiently many enlargement rounds are planned (*i(b)*) a further increase in EU softness benefits the government, hence making it more likely that the government's favorite outcome will occur. What is happening is that, by increasing the softness of the EU, the government has an increased risk that when unveiling the information regarding the EU type, the country may in fact be permitted to enter despite being in bad shape. Hence the government's willingness to wait, i.e. postpone membership negotiations, increases sufficiently as a reaction to an increased probability that the EU is soft, such that the firms' willingness to wait will be outpaced.[8] The possibility that such a scenario may occur depends critically on the value of $\hat{p}$. The value of $\hat{p} = 1 + \frac{\alpha}{2\sigma} - \frac{\beta}{2\tau}$ is only within the parameter range, i.e. $1 > \hat{p} > 0$ if $\frac{\alpha+2\sigma}{\sigma} > \frac{\beta}{\tau} > \frac{\alpha}{\sigma}$.

Corollary 1. *If* $\frac{\alpha+2\sigma}{\sigma} < \frac{\beta}{\tau}$*, then* $\hat{p} < 0$ *and hence we are in case i) in proposition 2. If* $\frac{\beta}{\tau} < \frac{\alpha}{\sigma}$*, then* $\hat{p} > 1$ *and hence we are in case ii) in proposition 2.*

[8] In terms of the official EU position only case *(b)* in proposition 2 *(i)* applies, since officially there is no limitation of the number of future enlargement rounds, rather each applicant will be allowed to enter as soon as judged to be ready on grounds of its merits. However, in reality – given the fixed costs (e.g. reorganising the EU institutions) that each enlargement round causes – it appears that ϕ is larger than zero. Further, as will be shown below, an increase in ϕ need not strengthen the government's position.

Thus for a sufficiently large σ the scenario of case *i)* in proposition 2 will always exist, such that for a low enough risk of closing the door, ϕ, i.e. maintaining many future enlargement waves, an increase in EU softness – being more tolerant towards SBCs – will in fact improve the chances that candidates enter with an HBC. Yet, this case would be considered by most observers to be rather unusual case, in the sense that it says that the applicant's government is very eager to obtain HBCs while the EU is not.

The effects of closing the door

Next the effect of altering the probability that the the game may end ϕ stems also both from reactions in $\bar{t}_g$ and $\bar{t}_f$. Again for simplicity we assume equal rates of time preferences $\rho_g = \rho_f = \rho$ and calculate $\frac{\partial h}{\partial \phi}$ (see separate appendix). The following result can be stated:

Proposition 3. *There exists a critical* $p^c < 1$ *such that for all cases where* $p > p^c$*:*

i) If $\frac{\alpha+\sigma}{\alpha} > \frac{\beta}{\beta-\tau}$*, i.e. the government's win/lose ratio is greater than the firms' win/lose ratio, then* $\frac{\partial h}{\partial \phi} < 0$*, i.e. an increase in the probability of no further enlargement rounds harms the government's chances of winning.*

ii) If $\frac{\alpha+\sigma}{\alpha} < \frac{\beta}{\beta-\tau}$*, i.e. the government's win/lose ratio is less than the firms' win/lose ratio, then* $\frac{\partial h}{\partial \phi} > 0$*, i.e. an increase in the probability of no further enlargement rounds improves the government's chances of winning.*

For proofs, see separate appendix. In plain words proposition 3 says that the player that has more at stake in the game (i.e. the larger win/lose ratio) is hurt by a higher risk of closing the door, i.e. is more likely to lose the game. One immediate policy conclusion that can be derived from this finding is that an EU that suffers from a relatively soft image can only improve the chances of applicants displaying budget discipline by limiting the number of enlargement rounds if the government of the applicant country has less at stake than the firms. Otherwise, keeping the enlargement process open (reducing ϕ) is the superior option. However, proposition 3 applies only for high levels of p. In order to be able to derive results for low levels of p one has to simplify the analysis further by assuming $\rho_g = \rho_f = 0$. One can now state:

Proposition 4. *There exists a critical* $p^k > 0$ *such that when* $p < p^k$*:*

i) for $\phi \to 1$ a further increase in ϕ reduces the government's chances of winning, i.e. $\frac{\partial h}{\partial \phi} < 0$.

ii) for $\phi \to 0$

(a) $\frac{\partial h}{\partial \phi} > 0$ if $\frac{\alpha+\sigma}{\sigma} > \frac{\beta-\tau}{\tau}$, i.e. the government's chances of winning are improved when the risk of closing the door rises.

(b) $\frac{\partial h}{\partial \phi} < 0$ if $\frac{\alpha+\sigma}{\sigma} < \frac{\beta-\tau}{\tau}$, i.e. the government's chances of winning are reduced when the risk of closing the door rises.

For proof see separate appendix. Thus in terms of policy, proposition 4 says that, assuming the EU is interested in aiding the budget hardening process in the applicant countries and assuming that the EU is perceived as tough (p low), then a policy of closing the door can only be beneficial if we are in case *(ii) (a)*, i.e a situation where $\frac{\alpha+\sigma}{\sigma} > \frac{\beta-\tau}{\tau}$, which says that the government's ratio of winning over the gain from winning must be larger than the firms' ratio of losing over the cost of losing. Only in such a situation does closing the door promote the regime switch towards HBCs. In all other cases, keeping the enlargement process open (reducing ϕ) will again help the applicants to harden SBCs.

To sum up, our model predicts that a conditionality for membership in the EU can increase the probability that a country implements an HBC vis-à-vis its enterprise sector. The model does not, however, state that accession candidates will necessarily enforce HBCs in all cases. The outcome of the war of attrition between government and firms depends on whether enterprises or the government has more at stake in the enlargement process. Moreover, a tough application of the accession criteria by the EU and limiting the number of future enlargement rounds will only under certain parameter constellations aid the budget constraint hardening process.

3 Empirical evidence

The empirical part cannot possibly test all the different propositions of the model presented in Section 2. Instead we focus an an examination of the underlying hypothesis that the status of being an accession candidate to the EU has resulted in a removal of SBCs. In particular we estimate the state of budget hardening both comparing individual countries before and after the official start of negotiations and comparing transition countries inside and outside the pool of EU applicants.

As discussed in the introduction, the SBC syndrome can manifest itself in many channels of external financing: fiscal subsidies, tax or credit arrears,

the renegotiation of administrative prices, etc.: see Dewatripont et al.(2000), Kornai (1998). Consequently, the empirical literature applies various measures of the SBC syndrome: governmental budget balances, subsidies, wage and credit arrears, etc.: see Kornai et al. (2002), Maskin and Xu (2001). However, neither do these measures cover all channels by which the SBC syndrome may affect the behavior of the enterprise sector, nor is any of these measures a sufficient condition for the presence of SBCs (Schaffer, 1998). Not surprisingly, the empirical literature on the SBC syndrome in transition countries yields inconclusive results.[9] Moreover, many indicators of SBCs are only available for few a time-series observations, rendering an analysis of the impact of candidate status impossible.

Against this background, we take a different route for measuring SBCs here. Instead of measuring them directly, we focus on the adjustment of employment to output changes in transition economies. Starting with Kornai (1979, 1980) labour hoarding is recognised as one of the key features of the SBC syndrome. Enterprises that expect a bail-out tend to hire more labour than enterprises that operate in an environment with HBCs. Consequently, one expects that economies where SBCs persist tend to produce more labour intensively, and tend to adjust their labour force less swiftly to demand shocks than their counterparts with HBCs. Hence our tests examine whether or not candidate countries display (i) a long term lower labour to output ratio and (ii) a faster adjustment of labour demand to output shocks.

3.1 Model specification

Consider first the standard case of the labour demand of a risk-neutral firm operating in an environment with price (demand) uncertainty and under HBCs. The conditions in the product market are characterised either by a favorable state with a high price level $\overline{P}$, which is expected to emerge with the probability p in each period, and an unfavorable state with a low price $\underline{P}$, which occurs with probability $1-p$. Thus the expected price is

$$P^e = p\,\overline{P} + (1-p)\,\underline{P}. \tag{7}$$

For such a firm, the expected profits are $\pi^e = P^eY - wL - rK$ where Y is output and L and K denote labour and capital respectively; and w and r

[9] As an example, the EBRD transition report ranks Belarus below all accession candidates with respect to enterprise reform and enforcement of financial discipline in the enterprise sector (EBRD, 2001, p. 14), while Carlin et al. (2001) find on the basis of a comprehensive survey of 3,300 firms in 25 transition countries that the enforcement of HBCs is comparable in Belarus to the enforcement observed in the Czech Republic and Slovenia.

denote the wage and interest rate. If the firm is a price-taker and has to fix its labour input and production at the beginning of each period – i.e. before the actual price on its product market is revealed – then the profit maximising labour demand, given a short-run fixed capital stock $\bar{K}$ and a standard Cobb-Douglas production function, $Y = AL^a K^{1-a}$, is:

$$L_h^* = \left(\frac{aAP^e}{w}\right)^{\frac{1}{1-a}} K \;=\; \frac{a}{w}\; P^e\; Y \;=\; \lambda_h\, Y, \tag{8}$$

Thus, λ_h denotes the optimal labour-to-output ratio in the case of HBCs.

Consider now the situation of the same firm operating under an SBC. The firm still maximises profits, but it can expect to receive a subsidy S in the unfavorable state $1-p$. As introduced above, the literature contains many variants of the SBC phenomenon, but in one way or the other, the size of these subsidies is positively correlated to the size of the firms, i.e. to the output and employment of the firm (e.g. Carlin et al., 2001; Shleifer and Vishny, 1994). Formally, assume that the SBC transfer $S(Y, L)$ is a function of output and labour, where $S(0, 0) = 0$ and $\frac{\partial S}{\partial Y},\ \frac{\partial S}{\partial L},\ \frac{\partial Y}{\partial L} > 0$. Under consideration of the SBC, the firm's profit function becomes

$$\pi^e = P^e Y + (1-p)\, S(Y, L) - wL - rK$$

maximisation of which results in the optimal labour input

$$L_s^* = \;\frac{a}{w - (1-p)\frac{dS}{dL}}\; P^e\; Y \;=\; \lambda_s\, Y\ . \tag{9}$$

Thus λ_s denotes the optimal labour-to-output ratio in the case of an SBC. Note that a well-defined solution of equation (9) requires that $w > (1-p)\frac{dS}{dL}$. Since the partial derivatives of $S(Y, L)$ are positive, and since $\frac{\partial Y}{\partial L}$ is positive, we have $dS/dL > 0$ and can state:

$$\lambda_s > \lambda_h\,. \tag{10}$$

Thus, the optimal ratio of the labour force to output in an enterprise operating under SBC is larger than the optimal ratio of its counterpart operating under HBC. This illustrates – the intuitively compelling result – that an excessive level of employment can be taken as an indicator of SBCs.

To determine the equilibrium labour demand, we have so far assumed that the development of prices follows a stationary process, where the probability of a high price and the counter-probability of a low price is the same in each period. This is hardly a realistic description of real-world processes, where price levels in the product markets vary widely such that $P_t^e \neq P_{t-1}^e$. As a

consequence, firms have to adjust output and their labour force to changes in expected price levels. Since hiring and firing of labour involves costs, the firm will not immediately adjust its labour force to the level desired in the long-run equilibrium. A simple way to specify the dynamics of such a system with adjustment costs is a partial adjustment model,

$$L_t - L_{t-1} = \gamma \left(L_t^* - L_{t-1} \right), \qquad 0 < \gamma < 1,$$

where the actual change in the labour force is only a fraction of the desired change, and the speed of adjustment is determined by the parameter γ. Thus the parameter γ measures the costs of adjustment relative to the costs of being in disequilibrium. Since SBCs – as shown above – reduce *ceteris paribus* the costs of being in disequilibrium, we must have:

$$\gamma_h > \gamma_s \tag{11}$$

whereby h and s denote the situation under hard and soft budgets respectively. Substituting for L^* and bringing the lagged dependent on the right hand side yields

$$L_t = \gamma_j \, \lambda_j \, Y_t + (1 - \gamma_j) \, L_{t-1}, \qquad j \in \{h, \, s\}, \tag{12}$$

which forms the basis for the specification of our estimation model.

3.2 The data

For the empirical analysis we pool aggregate employment and output data from 21 transition countries in the period 1990-99. Our sample comprises the ten accession candidates to the EU [10] and 11 non-candidate countries[11]. The candidate status was granted to the accession candidates officially in the middle of the 1990s. This allows us to use the variance of economic behavior in the accession countries both before and after the candidate status was granted, as well as the variance of economic behavior across candidate and non-candidate countries for the empirical analysis. However, our data base is, with ten time-series observations, rather small, and adjustment to the new institutional and economic environment is not yet completed in the transition economies.

We use real GDP and total employment data from the UN/ECE Common Database (UN/ECE (2002), appendix tables B.1 and B.5), which are derived

[10] Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, Slovenia.

[11] Azerbaijan, Armenia, Belarus, Croatia, Georgia, Kyrgyz Republic, Kazhakstan, FYR Macedonia, Russian Federation, Ukraine, Uzbekistan.

from national statistics and statistics of the CIS, as output and employment variables. Both variables are used in index form, in order to control for initial differences in labour productivity across countries. Both indexes are denominated to the year 1989.

3.3 Estimation results

On basis of the partial adjustment model in (12) we start our analysis by estimating the equation

$$L_{it} = \alpha + \beta_1 Y_{it} + \beta_2 D^*_{it} Y_{it} + \beta_3 L_{i,t-1} + \beta_4 D^*_{it} L_{i,t-1} + \beta_5 Trend_t + \beta_6 D^*_{it} Trend_t + \beta_7 D_{it} + u_{it}, \quad (13)$$

where L_{it} is the aggregate employment index, α a constant, Y_{it} aggregate output index, D_{it} a dummy variable which has a value of 1 if country i possesses a candidate status at time t, and zero otherwise, $Trend_t$ a time trend, and u_{it} the disturbance term. The subscript i denotes the ith country ($i = 1, ..., 21$), and the subscript t the tth year ($t = 1, ..., 10$).

Thus, we complemented the model in (12) by a time trend, which should capture other factors which persistently change the labour-to-output ratio such as labour augmenting technological progress. For the countries which do not possess a candidate status at period t, we can identify the structural parameters of the model γ_{non} and λ_{non} from the estimated coefficients as $1-\beta_3$ and $\beta_1/(1-\beta_3)$, respectively. We follow the usual convention in assuming that the disturbance term is specified as a two-way error-component model, i.e. that $u_{it} = \mu_i + \upsilon_t + \nu_{it}$ where μ_i denotes the country-specific fixed effect, υ_t a year-specific fixed effect, and ν_{it} is white noise. This can be justified by country specific characteristics and common macroeconomic shocks. We started by estimating the model with the full set of time and country dummies and then tested for their significance jointly as well separately.

For the countries that possess candidate status, the parameters γ_{can} and λ_{can} are calculated as $(1 - \beta_3 - \beta_4)$ and $(\beta_1 + \beta_2)/(1 - \beta_3 - \beta_4)$, respectively. Thus, if $\beta_4 < 0$, the adjustment parameter $\gamma_{can} > \gamma_{non}$, and, hence, the speed of adjustment is higher in the candidate countries. The interpretation of the coefficient β_2 is less straightforward: if $\beta_2 < 0$, and if $\beta_4 < 0$, too, then $\lambda_{can} < \lambda_{non}$, and, hence, the long-run ratio of employment with respect to output is smaller in the candidate countries relative to the non-candidate countries. However, if $\beta_4 < 0$, even a zero or positive value of the coefficient β_2 can yield a $\lambda_{can} < \lambda_{non}$. We therefore present the implicit values of the structural parameters together with the estimation results.

Table 1: *Pooled Estimation Results*[1,2] *of Partial Employment Adjustment Model*

Y_{it}	D_{it}*Y_{it}	$L_{i,t-1}$	D_{it}*$L_{i,t-1}$	$Trend$	D_{it}*$Trend$	D_{it}	$Const.$	R^2
A. Total Sample (21 countries), 1990-99[3,4]								
0.116	-0.060	0.839	-0.158	0.313	-0.953	25.346	6.900	0.97
(4.86)	-(2.11)	(26.11)	-(2.52)	(2.42)	-(3.69)	(4.15)	(1.51)	
B. Candidate countries (10 countries), 1990-99[3,5]								
0.206	-0.122	0.804	-0.131	0.529	-1.235	29.201	-0.071	0.89
(7.76)	-(4.01)	(10.06)	-(1.77)	(1.43)	-(3.12)	(3.42)	-(.01)	

1 Numbers in parenthesis denote t-statistics.
2 All regressions include country dummies.
3 LSDV regression with Prais-Winsten heteroscedasticity corrected standard errors.
4 Implicit parameter values: $\gamma_{non} = 0.161$, $\gamma_{can} = 0.369$, $\lambda_{non} = 0.720$, $\lambda_{can} = 0.176$.
5 Implicit parameter values: $\gamma_{non} = 0.196$, $\gamma_{can} = 0.327$, $\lambda_{non} = 1.020$, $\lambda_{can} = 0.250$.

Results for the total sample

We begin to estimate equation (13) for the total sample. Although country and time dummies were highly significant jointly, it turns out that the time dummies are not significant when tested separately.[12] Consequently, we present here the estimates of the model with the significant country-specific effects only. As shown in section A of Table 1, both the coefficients of the interaction dummies of the candidate status with the lagged employment variable and the output variable have a negative sign and are statistically significant, which implies that:

(i) the estimated adjustment parameter γ_{can} is significantly larger than γ_{non}, i.e. countries which possess a candidate status at time t have a higher speed of adjusting their labour force to equilibrium levels,

(ii) the estimated parameter λ_{can}, which determines the ratio of employment to output in the long-run, is significantly below λ_{non}, i.e. coun-

[12]Both country and time dummies are jointly significant with an observed F-statistic of 4.21, which has a p-value of well below one percent under the null distribution of $F(29,172)$. The observed F-statistic for the significance of the time dummies (given the existence of the country-specific effects) is 1.36, which has a p-value of above 5 per cent under the null distribution of $F(9,172)$, and the observed F-statistic for the significance of the country dummies is 5.30, which has a p-value of well above 1 per cent under the null distribution of $F(20,172)$. These results emphasize the importance of country-specific effects in the partial employment adjustment equation.

tries which possess a candidate status at time t tend to have a lower employment-to-output ratio.

Thus, these estimates confirm the hypothesis that accession candidates tend to have lower labour-to-output ratios and a higher speed of adjusting employment to output shocks than non-candidate countries. However, it is worth noting that the values of the long-run coefficient λ_{can} seem to be implausible low. This is perhaps a hint that the results suffer from some estimation bias, a problem which is discussed in detail at the end of this section.

Does the candidate status affect the SBC problem?

One possible objection against estimating equation (13) is that the development of the output and employment variables may have affected the decision to grant the candidate status. In order to address the problem of a possible endogeneity, we conceived two alternative experiments: firstly, we estimated equation (13) for accession candidate countries only, in order to examine whether we can observe a change in economic behavior within the same group of countries before and after candidate status was granted by the EU. Second, we split the sample into two time periods, 1990-94 and 1995-1999, in order to examine whether we observe a difference in economic behavior between the countries that become candidates later and the non-candidate countries in the periods before and after candidate status was granted.

As can be seen in section B of Table 1, the results of the candidate country sample are close to those of the total sample: we observe again that both the coefficients of the interaction dummies of the candidate status with the lagged employment variable and the output variable have a negative sign and are still statistically significant.[13] Thus, the regression based on the (later) candidate country sample shows again that:

(i) granting the candidate status is associated with a higher speed of adjustment

(ii) granting the candidate status is associated with a lower labour-to-output ratio relative to the period before the countries become accession candidates.

[13]The coefficient for the interaction dummy with the lagged employment variable is statistically significant only at the 10 per cent level.

Country group differences pre and post enlargement option

To further investigate the mechanics of the outside conditionality, consider the following. If the EU had only started membership negotiations with those countries that had obtained a regime with HBCs, than this altered performance must already be observable prior to the official start of membership negotiations. Hence we compare the situation in candidate and non-candidate countries in the first and second half of the 1990s.

Table 2: *Pooled Estimation Results*[1,2] *of Partial Employment Adjustment Equation, 1990-94 and 1995-99*

Y_{it}	D_i *Y_{it}	$L_{i,t-1}$	D_i *$L_{i,t-1}$	$Trend_t$	D_i * $Trend_t$	*Const.*	R^2
A. Total Sample (21 countries), 1990-94[3,4]							
0.222	0.004	0.775	-0.086	0.962	-0.792	1.980	0.95
2.13)	(.04)	(6.9)	-(.55)	(1.08)	-(.77)	(.12)	
B. Total Sample (21 countries), 1995-99[3,5]							
0.202	-0.126	0.624	-0.029	-0.226	-0.423	28.199	0.99
(4.1)	-(1.87)	(11.08)	-(.2)	-(1.46)	-(1.78)	(4.23)	

1 Numbers in parenthesis denote t-statistics.
2 All regressions include country dummies.
3 LSDV regression with Prais-Winsten heteroscedasticity corrected standard errors.
4 Implicit parameter values: $\gamma_{non} = 0.225$, $\gamma_{can} = 0.310$, $\lambda_{non} = 0.984$, $\lambda_{can} = 0.727$.
5 Implicit parameter values: $\gamma_{non} = 0.376$, $\gamma_{can} = 0.405$, $\lambda_{non} = 0.536$, $\lambda_{can} = 0.188$.

Table 2 reports the results from the estimation of a variant of equation (13):

$$L_{it} = \alpha + \beta_1 Y_{it} + \beta_2 D_i^* Y_{it} + \beta_3 L_{i,t-1} + \beta_4 D_t^* L_{i,t-1} + \beta_5 Trend_t + \beta_6 D_i^* Trend_t + \beta_7 D_i + u_{it}, \quad (14)$$

where the dummy variable D_i has the value of 1, if the country belongs to the group of (later) accession candidates, and 0 otherwise. The disturbance term is specified as $u_i t = \mu_i + \nu_{it}$, since again the country-specific effects have turned out to be highly significant.[14] Interestingly enough, the estimate in section A of Table 2 shows that both candidate dummies turned

[14]The observed F-statistic in regression A and B for the significance of the country dummies is 2.70 and 4.17, respectively, which yields in both cases a p-value of well above 1 per cent under the null distribution of $F(20,78)$.

out to be statistically insignificant in the pre-candidate period. Moreover, the regression results reported in Section B of Table 2 show that the interaction dummy with the output variable becomes statistically significant (at the 10 percent-level) after the candidate status has been granted. Thus we can – with the appropriate caution, given our sample size of five time series observations – state:

(i) there is no observable significant difference of employment adjustment between the later candidate and the non-candidate countries in the early 1990s.

(ii) the labour-to-output ratio in the candidate countries falls relative to the non-candidate countries after the candidate status has been granted (post-1995).

Thus the candidates for accession to the EU have changed their economic behavior with respect to labour hoarding and the adjustment of employment to output shocks after the candidate status was granted. However, the dynamic fixed effect estimator that we have applied is subject to a simultaneous equation bias due to the presence of the lagged dependent variable (Nickell, 1981; Kiviet, 1995). Although the fixed effect estimator avoids the inconsistency which arises if the country-specific effects are correlated with the other explanatory variables, serial correlation of the disturbance terms in equations (13) and (14) introduces endogeneity between the ν_{it} and the lagged employment variable. The estimation bias declines with the time dimension of the panel, but it may be substantial in the case of our small sample (Judsen and Owen, 1999). In Appendix 1 we therefor present a consistent GMM estimator, which largely confirms the results of our fixed effects estimations.

4 Conclusion

This paper has theoretically and empirically examined the question of whether or not the EU conditionalities that are imposed in the process of eastern enlargement can help the applying countries to tackle the persisting problem of SBCs. Governments in transition countries are unable to enforce a regime of HBCs without the cooperation of industries and firms. Yet, firms, for which SBCs are a subsidy, may block the regime switch. The prospect of EU membership – which benefits both government and firms – can change the balance of power in the applicant country, since, while firms hold the key to implementing HBCs, the government holds the key to negotiating EU membership. Hence both parties can hold each other hostage.

This fundamental reasoning is captured in our model, where a war of attrition setting is used to study the impact of several policy parameters. Firms and government play a waiting game in enforcing HBCs and in negotiating the country into the EU. The EU has conditioned membership on the enforcement of HBCs, yet the actual toughness of the conditionality is uncertain. We find that external conditionality can play an important role in resolving the SBC issue. However, we also show that outside conditionality may be less powerful if, for example, the applicant's government is too eager to get the country into the EU, or if the outside conditionality is soft. Furthermore, some counter-intuitive results emerge: For example, we find that within our model for certain parameter constellations, a toughening of EU conditionality (i.e. stricter enforcement) need not warrant victory of the government in the war of attrition. On the contrary, faced with a tougher EU, the government may be tempted to submit an application despite SBCs persisting. Also, as concerns the possibility to limit the number of future enlargement rounds (closing the door), we show that such a policy need not foster a regime shift towards HBCs under all conditions.

In the empirical part of the paper, we examine our underlying hypothesis on the impact of outside conditionality for 21 transition countries over a 10-year period. We base our estimations on the relation between output and employment. We show in a micro framework that the labour-to-output ratio, and more importantly, the adjustment speed of labour demand to output shocks can be taken as indicators of the softness of budget constraints. The partial adjustment model we derive from this framework forms the basis for our empirical analysis. In particular, we find that those transition countries that hold a membership option have a lower long-run ratio of labour to output and display a swifter adjustment of labour demand to output shocks. This result is found measured across all 21 transition economies as well as across time (i.e. before and after the announcement of candidate status). The latter measure does in fact allow us to disentangle the causality issue surrounding candidate status and SBC hardening somewhat. Thus, in line with our theoretical model, we find that the imposed conditionality on future members of the EU has indeed resulted in a measurable hardening of budget constraints.

Appendix 1

GMM estimations of the partial labour adjustment equation

There are several methods of controlling for group-specific effects; see Anderson and Hsio (1981), Arrelano and Bond (1991), Arrelano and Bover (1995), Ahn and Schmidt (1995) and Kiviet (1995). Here, we apply the one- and two-step GMM estimators proposed by Arrelano and Bond (1991), which tend to perform better than the Anderson-Hsio estimator with our sample size (Judson and Owen, 1991). The Arrelano-Bond estimators assume that the error term is not serially correlated (tested below). Moreover, Arrelano and Bond (1991) provide a Sargan-test for over-identifying restrictions.

Since models which incorporate interaction dummies with the lagged dependent variable cannot be used, we estimated for both country groups the pre- and post-candidate periods separately. The regression diagnostics in Table A1 show that the null hypothesis of valid over-identifying restrictions is not rejected by the Sargan-test in most regressions. Note that Arrelano and Bond (1991) found evidence that the Sargan-test may over-reject the null of valid over-identifying restrictions in the presence of heteroscedasticity. For inference on model specification, the Sargan-test based on the two-step estimator is more appropriate in this case. Indeed, while the Sargan-test in the one-step regressions rejects the null of valid over-identifying rejections, it is not rejected in the two-step regression in Section B (Table A1). However, autocorrelation of the residuals is present in some cases. Note that the presence of first-order autocorrelation does not, in contrast to second-order autocorrelation, imply that the estimates are inconsistent. The two-step estimator increases the efficiency of estimation substantially, but may bias coefficients and the standard errors downwards. Although in our case coefficients and t-statistics between the one-step and the two-step regressions are rather similar, we recommend the one-step estimates for inference (Arrelano and Bond, 1991).

Table A1 shows that the GMM estimators yield much lower coefficients in all samples for the lagged dependent variable, and, hence, higher values for the adjustment parameter γ. This is as expected in the literature (Kiviet, 1995, Judson and Owen, 1999). However, although the size of the structural parameters has changed relative to the LSDV-estimates, the GMM estimates support the general results of the paper: (i) a comparison of the periods before and after candidate status was awarded shows that the speed of adjustment has increased at least moderately, while the long-run labour-to-output ratio has fallen substantially (sections A and B of Table A1); (ii) in the period after the candidate status was granted the speed of adjustment in the

candidate countries is substantially above that of non-candidates, while the long-run ratio of labour to output is substantially below (Sections B and D of Table A1); (iii) in the period before candidate status was granted there is no clear pattern: the adjustment parameter in the later candidate countries is estimated to be higher than that of the non-candidates, but the long-run ratio of labour to output is also estimated to be higher in the later candidate countries compared to the non-candidates (Sections A and C in Table A1).

Table A1: *Results of LSDV and GMM-Estimations of Labour Adjustment*[1]

	Y_{it}	$L_{i,t-1}$	T_t	*Const.*	R^2	Wald-test[2]	γ	λ
A. Candidate Countries, 1990-95								
LSDV[3]	0.213	0.672	0.013	9.374	0.75	-	0.33	0.65
	(6.31)	(7.63)	-(.03)	(.93)				
Arrelano-Bond[4]	0.280	0.549	-0.236	-	-	458.70	0.45	0.62
(one-step)	(7.01)	(3.4)	-(.37)					
Arrelano-Bond[5]	0.261	0.576	-0.267	-	-	25466.13	0.42	0.61
(two-step)	(17.14)	(14.59)	-(1.74)					
B. Candidate countries, 1996-99								
LSDV[6]	0.076	0.595	-0.650	31.271	0.60	-	0.41	0.19
	(1.4)	(3.73)	-(2.64)	(2.26)				
Arrelano-Bond[7]	0.094	0.522	-0.746	-	-	105.45	0.48	0.20
(one-step)	(2.35)	(3.93)	-(4.09)					
Arrelano-Bond[8]	0.129	0.486	-0.791	-	-	583.57	0.51	0.25
(two-step)	(2.71)	(5.75)	-(9.42)					

1 Partial Labour Adjustment Equation. Numbers in parentheses denote t-statistics; the LSDV regressions include country dummies.
2 $\chi^2(3)$-statistic for the Wald-test of the joint significance of the coefficients.
3 The $F(9,47)$-statistic for the joint significance of the country dummies: 3.93 (Pr>F=0.0009).
4 The χ^2-statistic for the Sargan test of over-identifying restrictions is 8.5 ($\Pr > \chi^2(14) = 0.86$); the t-statistics for the Arrelano-Bond test of first- and second-order autocorrelation of the residuals is -1.46 and -0.22, respectively.
5 The χ^2-statistic for the Sargan test of over-identifying restrictions is 5.8($\Pr > \chi^2(14) = 0.97$); the t-statistics for the Arrelano-Bond test of first- and second-order autocorrelation of the residuals is -1.26 and -0.5, respectively.
6 The $F(9,37)$-statistic for the joint significance of the country dummies: 2.29 ($\Pr > F = 0.037$).
7 The χ^2-statistic for the Sargan test of over-identifying restrictions is 61.89 ($\Pr > \chi^2(29) = 0.0004$); the t-statistics for the Arrelano-Bond test of first- and second-order autocorrelation of the residuals is -0.29 and 1.97, respectively.
8 The χ^2-statistic for the Sargan test of over-identifying restrictions is 8.61 ($\Pr > \chi^2(29) = 0.9999$); the t-statistics for the Arrelano-Bond test of first- and second-order autocorrelation of the residuals is -0.02 and -1.91, respectively.

Table A1 (cont.):

	Y_{it}	$L_{i,t-1}$	T_t	*Const.*	R^2	Wald-test[2]	γ	λ
C. Non-candidate countries, 1990-95								
LSDV[9]	0.130	0.803	0.401	5.746	0.75	-	0.20	0.66
	(2.05)	(9.53)	(.69)	(.44)				
Arrelano-Bond[10]	0.126	0.713	0.201	-	-	102.64	0.29	0.44
(one-step)	(1.62)	(5.87)	(.3)					
Arrelano-Bond[11]	0.120	0.700	0.260	-	-	1822.07	0.30	0.40
(two-step)	(16.29)	(20.02)	(2.44)					
D. Non-candidate countries, 1996-99								
LSDV[12]	0.202	0.624	-0.226	22.707	0.73	-	0.38	0.54
	(3.5)	(9.03)	-(1.31)	(3.39)				
Arrelano-Bond[13]	0.135	0.670	-0.082	-	-	77.0	0.33	0.41
(one-step)	(2.06)	(7.99)	-(.45)					
Arrelano-Bond[14]	0.124	0.703	-0.067	-	-	804.58	0.30	0.42
(two-step)	(2.02)	(24.71)	-(.73)					

9 The $F(9,47)$-statistic for the joint significance of the country dummies: 3.06 ($\Pr > F = 0.004$).
10 The χ^2-statistic for the Sargan test of over-identifying restrictions is 14.15 ($\Pr > \chi^2(14) = 0.44$); the t-statistics for the Arrelano-Bond test of first- and second-order autocorrelation of the residuals is -2.25 and -1.47, respectively.
11 The χ^2-statistic for the Sargan test of over-identifying restrictions is 8.13 ($\Pr > \chi^2(14) = 0.88$); the t-statistics for the Arrelano-Bond test of first- and second-order autocorrelation of the residuals is -1.41 and -0.92, respectively.
12 The $F(10,41)$-statistic for the joint significance of the country dummies: 7.02 (Pr>F=0.0000).
13 The χ^2-statistic for the Sargan test of over-identifying restrictions is 28.6 ($\Pr > \chi^2(29) = 0.49$); the t-statistics for the Arrelano-Bond test of first- and second-order autocorrelation of the residuals is -2.46 and 0.34, respectively.
14 The χ^2-statistic for the Sargan test of over-identifying restrictions is 9.08 ($\Pr > \chi^2(29) = 0.99$); the t-statistics for the Arrelano-Bond test of first- and second-order autocorrelation of the residuals is -1.76 and 0.56, respectively.

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