Can EU conditionality remedy soft budget constraints in transition countries? [1]

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Abstract

Soft budget constraints (SBCs) are a persistent feature of transition economies and have been blamed for a lack of fiscal consolidation and sluggish growth. EU eastward enlargement has been conditioned on tackling SBCs. This paper analyzes such outside conditionality theoretically and empirically. First, by modeling the SBC problem as a war of attrition between the applicant countries' governments and firms, we find that outside conditionality can foster SBC hardening. Second, estimating SBC hardening in a partial adjustment model by measuring the development of labor productivity, we find that EU conditionality did indeed help candidates to tackle SBCs.

JEL classification: F15, D78, P21, P26, P30, G30

1.   Introduction

This paper investigates the mechanics and the effectiveness of outside conditionality on hardening soft budget constraints (SBCs). SBCs, i.e. the lack of financial discipline at the firm level, remain a persistent feature of many transition economies, as Kornai, Maskin, Roland (2003), Kornai (2001) and EBRD (1999) attest. From the perspective of the eastward enlargement of the European Union, membership is conditional on a series of key economic and institutional performance measures, so that such problems inherited from the socialist past must be overcome.[2] The conditionality imposed by the old EU member states on the new members from Central and Eastern Europe[3] is evident in the Copenhagen Criteria. Of particular relevance to this paper is the demand for adherence to the aims of a monetary union, which evokes the Maastricht fiscal policy criteria that impose a constraint on state transfers to firms and the *acquis communautaire* rules concerning competition policy and industrial policy that restrict the payments of subsidies to loss-making enterprises. Furthermore, the European Commission emphasizes decentralization of credit allocation and the privatization of state banks as important components of financial sector reform. However, the degree to which EU conditionality is enforced in the enlargement process is an open issue.[4]

Kornai (1979 and 1980) is the pioneering work on SBCs in socialist, and later transition, economies and attributes the phenomenon to government paternalism. Schaffer (1989) states that the government demands financial discipline at the firm level, but it is unable to enforce its demands ex post because of the social or political costs, so that it ends up bailing out firms. Shleifer and Vishny (1994) and Hillman *et al.* (1987) take a political economy approach and argue that the government tolerates the SBC in return for political support or in order to avoid unemployment. However, these theories cannot explain

differences in the occurrence of SBCs under different systems, because they do not derive the SBC endogenously. Dewatripont and Maskin (1995) close this gap in the theoretical literature by deriving the tension between *ex ante* intention and *ex post* behavior in a centralized credit system from economic principles. In most of the existing literature the SBCs syndrome is explicitly or implicitly attributed to a dynamic commitment problem of some central agent or authority, e.g., the government or a bank, to commit credibly not to bail out firms in financial distress. Kornai, Maskin and Roland (2003), Maskin and Xu (2001), Kornai (2001), Dewatripont and Roland (2000) and Maskin (1999) provide recent overviews of the theoretical and empirical literature.

Manifestations of the SBC phenomenon are soft loans, budgetary subsidies, tax arrears, credit arrears and wage arrears. In addition to the negative impact on allocative efficiency, the consequences of SBCs are excess demand for labor and other resources, the phenomenon of shortage described by Kornai (1980) and Qian (1994), a lack of fiscal consolidation, financial bubbles, a lack of innovation and a negative impact on overall economic growth as Kornai (2001), Bai and Wang (1999) and Qian and Xu (1998) discuss. Proposed solutions to the SBC problem included demonopolization, devolution or federalism, and financial sector reform, as Dewatripont and Roland (2000), Qian and Roland (1998) and Dewatripont and Maskin (1995) develop. Although not addressing SBCs directly, Alesina and Drazen (1991), which deals with fiscal stabilization, Perotti (1998), which addresses financial sector reform in transition economies, Heinemann (2000), which examines the strategic effects in the EMU, and Brücker *et al.* (2004), which models the EU enlargement negotiations are related more closely to our approach. These papers find that outside conditionality has a beneficial impact by dragging the economy out of its *status quo* situation.

The present paper develops and tests empirically a framework in which the SBC is assumed as the *status quo* because of either an underlying mechanism such as soft credits granted by a centralized or state-owned banking sector (Dewatripont and Maskin, 1995) or sheer paternalism in the state-firm relationship (Kornai, 1980; Schaffer, 1989). We model this *status quo* bias as a war of attrition between the national governments and firms, similar in spirit to Alesina and Drazen (1991). On its own the government is unable to harden SBCs. The effect of adding outside conditionality to the domestic game between firms and government is explored to determine how such outside demands can alter the outcome of the game in favor of hard budget constraints (HBCs). In the empirical part, we consider how obtaining candidate status in the EU enlargement process may promote HBCs, by estimating a partial adjustment model based on an indirect measure of budget hardening, namely labor productivity. Controlling for selection bias, we find that candidate countries have both a lower labor-to-output ratio in the long run and a higher speed of adjustment of labor productivity to its long-run level relative to non-candidate countries. Therefore we conclude that EU conditionality in the enlargement process has helped to remedy SBCs in the candidate countries.

The remainder of the paper is structured as follows. Section 2 introduces the model and examines the impact of different firm, government and EU parameters on SBC hardening. Section 3 presents the empirical evidence that candidate status and the associated EU conditionality has had a positive impact on SBC hardening. Section 4 concludes with some policy implications.

## 2.	A Model of Outside Conditionality

Consider a non-EU country with a SBC problem. Even though the government, denoted *g*, prefers a HBC, it is unable to enforce this policy due to a dynamic commitment problem. *Ex ante* the government does not pursue a policy of rescuing firms that get into financial difficulties, because it hopes to induce effort and reduce the risk of failure. However, *ex post* the government prefers to bail out troubled firms. From the perspective of firms, denoted *f*, the SBC is free insurance against unfavorable financial states (Hillman *et al.*, 1987), an *ex post* subsidy, or a favorable tax break.[5] Modeling the SBC in reduced form allows us to introduce outside conditionality. A crucial assumption is that any change in regime from SBC to HBC can be obtained only by consensus between the two players. Thus, the firms can hold the government hostage and impose the SBC regime as *status quo*.[6]

The power of firms to maintain this *status quo* is counterbalanced by the prospect of EU membership, because the EU imposes entry conditions that harden SBCs. Although both players, *g* and *f*, benefit from membership, only the government can negotiate with the EU. Hence, the government has the power to pursue or to postpone the membership application in the current enlargement round. Thus, a war of attrition unfolds between *g* and *f*. By delaying the EU membership process, the government can attempt to force firms into accepting a regime shift to HBC. Alternatively, firms can block the regime shift by refusing to cooperate and exerting pressure on the government to pursue EU membership despite persisting SBCs. The membership conditions that the EU imposes may be enforced to varying degrees and the actual toughness of this outside institution is unknown to both agents. The perceived probability of the EU being soft, i.e. allowing the country to enter despite continuing SBCs, is denoted by *p*.

In the *status quo*, SBCs continue and the country does not become a member of the EU. We normalize payoffs for *g* and *f* in this situation to zero. Any change from the *status quo* results in the following present value payoffs. The gains for the government from EU membership are α, and the government's total benefit from achieving HBCs is σ.[7] The gains for the firms from EU membership are θ, which capture the value of market access to the EU and any infrastructure investments following membership. The present value of the costs faced by firms from the removal of SBCs is τ.[8] All parameters α, σ, θ, $\tau > 0$.

The initial phase of the game involved the EU announcing an enlargement round and imposing HBCs as a membership condition. In step one the firms choose HBC or the *status quo*, i.e. SBCs. In step two the government chooses to submit or not to submit a membership application. At this stage if the country displays HBCs and a membership application is submitted, the EU accepts the new member with certainty. Alternatively, if the country displays SBCs and a membership application is submitted, the firms and government expect the EU to accept the application with probability *p*, i.e. the EU is soft, and reject it with probability (1-*p*), i.e. the EU is tough. In step three, if no application as been submitted or the applicant country is rejected by the EU, the game begins again.

If step one results in a HBC, the government's dominant strategy is to submit an application and pursue EU membership, which yields a certain government payoff of ($\alpha + \sigma$). In step two, if a country submits an application but is rejected on grounds of having a SBC, the actual EU type is revealed as tough and payoffs in the next round are altered. However, only the government can take an action to reveal this information. Once the EU is established to be tough, the game becomes trivial because payoffs to the firms and the government are either zero forever or ($\theta - \tau$) and ($\alpha + \sigma$), respectively. However, if the government forces the EU to disclose its type, the government incurs the risk that the EU may actually be soft. In

this case, the country would enter with continuing SBCs with the resulting payoffs θ and α for the firms and the government, respectively. If the costs of hardening budgets are sufficiently high, or if firms do not value EU membership enough, $(\theta - \tau) < 0$, then the government cannot enforce budget discipline even with outside conditionality. Hence, we assume $\tau < \theta$, to make the game relevant.

Payoffs realized in subsequent periods are discounted by the players at different rates of time preference, denoted ρ_f and ρ_g. Players may be willing to wait and incur the cost to obtain a preferred outcome if the other player surrenders. For the government, surrendering means submitting an application and pursuing EU membership even though SBCs persist. For firms, surrendering means accepting the regime change from SBC to HBC. The preferred outcomes of the two players are the following. The government prefers a HBC EU membership resulting in a payoff of $(\alpha + \sigma)$. For firms, the preferred outcome depends on p. For a large enough p, the firm prefers the government to apply for EU membership even though SBCs persists. Whether or not the application is accepted depends on the actual EU type. Alternatively, for a sufficiently low p, the firms and the government agree on the preferred outcome, as the following proposition asserts.

Proposition 1. The firms and the government agree on the preferred outcome, namely to switch to a HBC regime and to submit an application, if and only if

$$p < (\theta - \tau)\frac{\rho_f}{\rho_f\theta+\tau} \quad . \tag{1}$$

If inequality (1) is satisfied the game ends immediately with HBC and EU membership.[9] Proposition (1) indicates that, if the EU is perceived to be strict so that p is low, the firms and

the government will agree on a preferred strategy, i.e. no player will benefit from waiting. In this sense, outside conditionality can resolve the SBC problem. However, condition (1) is less likely to be satisfied if the costs of hardening budgets, i.e., τ, is high. Thus, the power of outside conditionality is increased if the EU compensates directly the firms in the applicant country for the costs of budget discipline. In what follows we assume that inequality (1) does not hold, so that the interests of firms and the government are opposed and a war of attrition prevails.

The war of attrition is won by the player willing to wait the longest for his preferred outcome. If the game is played under complete information, except for the EU type, and only pure strategies are used, the losing player surrenders immediately rather than enduring any delay as Hendricks *et al.* (1988) demonstrate. In settings of incomplete information Alesina and Drazen (1991) show that delay may be advantageous for the players. In either case, the winner is determined by the maximum waiting time each player is willing to accept, which depends on the parameters of the model. The maximum willingness of firms to wait is determined by equating the discounted value of winning at time $\bar{t}_f$ to the value of surrendering immediately, i.e.,

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

The right-hand side of (2) is the present value of surrendering immediately and accepting HBCs with the resulting EU membership. The left-hand side of (2) is the present value to the firms of the government applying for EU membership at time $\bar{t}_f$ even though SBCs persist. The first term is the probability that the country faces a soft EU and actually enters at time $\bar{t}_f$

times the value from entering with SBCs. The second term is the probability of facing a hard EU, which is revealed only after an unsuccessful application at time $\bar{t}_f$, and entering only in the next enlargement round with a HBC times the value of entering minus the cost of hardening budgets.

From (2), we solve for the maximum waiting time of the firms as:

$$\bar{t}_f = \ln\left(\frac{(\theta-\tau)(1+\rho_f)}{(\theta-\tau)(1-p)+\theta(1+\rho_f)p}\right)\ln\left(\frac{1}{1+\rho_f}\right)^{-1} \quad . \tag{3}$$

The government's maximum waiting time is derived in a similar manner to be:

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

The maximum waiting times given by (3) and (4) capture the intuition behind the war of attrition in that the player who establishes his willingness to wait longer, either by demonstrating it in an incomplete information situation or because it is known with complete information, wins the game because the other player maximizes his payoff by surrendering immediately, as Bliss and Nalebuff (1984), Alesina and Drazen (1991), Hendricks *et al.* (1988) demonstrate. By differentiating the maximum waiting times with respect to the parameters we obtain the following results, expressed in terms of the government's chances of winning the war of attrition and the country joining the EU with HBC.

Proposition 2. The government's maximum waiting time increases relative to the firm's maximum waiting time, as the government's payoff from EU membership, α, decreases, the

government's payoff from HBC, σ, increases, the government becomes more patient, i.e. ρ_g decreases, the firm's payoff from EU membership, θ, increases, the firm's cost from implementing HBC, τ, decreases, and the firm become less patient, i.e. ρ_f increases.

As Proposition (2) indicates, a government too eager to enter the EU may forgo the beneficial effect of outside conditionality and pursue EU membership, even though SBCs prevail. Similarly, if the benefits of HBCs for the government become more substantial, its ability to wait for its prefered outcome increases. Alternatively, if firms obtain substantial benefits from EU membership, their cost of waiting is high so that they surrender earlier. Conversely, if the costs of hardening budgets are higher, firms will be willing to wait longer to attempt to achieve their preferred outcome, namely EU membership despite SBCs. Finally, as in all wars of attrition patience improves the chances of winning.

Regarding policy prescriptions the proposition provides a novel perspective on the opposition of several candidate governments to the Commission's proposals for reduced financial support to new members in the future Common Agricultural Policy. Perhaps, these governments were revealing to their own firms a willingness to wait and not to seek EU membership at any price. In addition the package that includes participation in the EMU as part of the long-term enlargement project implies that HBCs are more important for national governments, which strengthens their position relative to the firms. Moreover, the EU can support candidate governments in implementing HBCs by increasing the benefits that firms obtain from membership, e.g. by reserving full market access to members only, and by partially compensating the firms for the costs of budget hardening and restructuring, e.g. through the EU financial assistance programs under the Europe Agreements. Finally, the probability that the EU is soft affects the willingness to wait of both the government and the

firms. However, the government's maximum waiting time may decrease or increase with an increase in p, as the following proposition states.

Proposition 3. An increase in the probability that the EU is soft makes the government less willing to wait if $\alpha > \sigma/\rho_g$, but more willing to wait if $\alpha < \sigma/\rho_g$.

If $\alpha > \sigma/\rho_g$, losing the game today is worth more to the government than waiting to win and gain the benefit from HBCs in perpetuity. However, if $\alpha < \sigma/\rho_g$, the government is willing to wait as the probability that the EU is soft increases, because, if the government pursues membership and reveals the EU type, it incurs a higher risk of being accepted with continuing SBCs. From the firms perspective we find that $\partial \bar{t}_f / \partial p > 0$. As the probability that the EU is soft increases, firms' maximum waiting time increases because of the increased chance of being admitted with SBCs. In summary, our model predicts that conditionality for EU membership can increase the probability that a country will implement a HBC regime, but it does not state that accession candidates will always be able to enforce HBCs.

Finally, we can state what these results imply for empirically observable budget hardening in EU candidate countries. Consider a risk-neutral firm operating in an environment with price (demand) uncertainty and a HBC. The product market is characterized either by a favorable state having a high price level $\bar{P}$, with probability p in each period, or by an unfavorable state having a low price $\underline{P}$, with probability $(1 - p)$. Hence, the expected price P^e is given by $p\,\bar{P} + (1 - p)\,\underline{P}$. For such a firm, expected profits are equal to $P^e Y^h - wL^h - rK^h$, where Y^h is output, L^h, and K^h denote labor and capital, respectively, and w and r denote the wage and interest rate. Assume that the firm is a price-taker and must determine its labor input and production before the actual price on the product market is revealed. Given a well-

behaved production function with diminishing marginal product and a short-run fixed capital stock, expected profit maximization is characterized by:

$$\frac{dY^h}{dL^h} = \frac{w}{P^e}.$$

(5)

Consider now the same firm operating under a SBC. The firm still maximizes profits, but it can expect to receive a subsidy, denoted S, in the unfavorable state. Because the literature indicates that the size of these subsidies is positively correlated with the size of the firms, we assume that this transfer is a function of output and labor, i.e. $S(Y^s, L^s)$, such that $S(0,0) = 0$ and both $\partial S/\partial Y^s$ and $\partial S/\partial L^s$ are positive. Given the SBC, the firm's profit function is written as $P^e Y^s - wL^s - rK^s + (1 - p)\,S(Y^s, L^s)$ and expected profit maximization yields:

$$\frac{dY^s}{dL^s} = \frac{w - (1-p)dS/dL^s}{P^e}.$$

(6)

By comparing (5) and (6), a SBC firm has a lower marginal product of labor, and, therefore, exhibits a lower labour productivity than a HBC firm.

Aggregating the optimal labor and output choices characterized by (5) and (6) over m firms, n of which operate with a HBC, while $(m - n)$ operate with a SBC, results in an economy-wide labor productivity specified as:

$$\frac{Y}{L} = \frac{\sum_{i=1}^{n} Y_i^h + \sum_{i=n+1}^{m} Y_i^s}{\sum_{i=1}^{n} L_i^h + \sum_{i=n+1}^{m} L_i^s}.$$

(7)

Considering this aggregate productivities, two channels are available for budget hardening. First, firms may be switched from SBC to HBC. Second, budgets may be hardened at the firm level, i.e. by reducing $\partial S / \partial Y^s$ and $\partial S / \partial L^s$. From (5), (6) and (7), we derive:

$$\frac{d\,Y/L}{d\,n} > 0, \qquad \frac{d\,Y/L}{d\,\partial S / \partial Y^s} < 0, \ \ and \ \ \frac{d\,Y/L}{d\,\partial S / \partial L^s} < 0 \qquad . \tag{8}$$

Thus, either type of budget hardening leads to increased aggregate labor productivity.

3. Empirical Evidence of SBCs

In this section, we focus on the hypothesis that outside conditionality imposed on accession candidates has hardened SBCs. The SBC syndrome is manifested in several ways: namely, the injection of refinancing or credit from financial institutions or the state, direct budgetory subsidies, a reduction of taxes, a renegotiation of administrative prices, and tax, wage, and inter-enterprise arrears. The SBC involves *ex post* payments rather than subsidies and transfers *per se* so that measurement is an important issue. The existence of arrears is neither necessary nor sufficient evidence of SBCs, as Schaffer (1998), Bonin and Schaffer (2002), and Alfandari and Schaffer (1996) argue. Moreover, account data do not reveal the provision of fresh money to persistent loss-making firms, as Schaffer (1998) explains.

Hence the empirical literature on the SBC syndrome in transition countries yields inconclusive and sometimes contradictory results. For example, although EBRD (2001) ranks Belarus below all accession candidates with respect to enterprise reform and the enforcement

of financial discipline, Carlin *et al.* (2001) find that the enforcement of HBCs is comparable in Belarus to both the Czech Republic and Slovenia.

Because many direct indicators of SBCs are available only for few time-series observations we take an indirect approach by focusing on the consequences of SBCs for the behavior of enterprises. Specifically, we examine whether or not a candidate country displays a lower long-term labor to output ratio and a faster adjustment of labor productivity to its long-run level, which indicates the speed with which firms adjust employment levels to economic shocks. The advantage of this indirect approach is the availability of macroeconomic data on output and employment that allow cross-country and over time comparisons.

As reasoned in the previous ection SBCs lead to an excess demand for labor and less adjustment of employment to economic shocks. Kornai (1979 and 1980) recognizes labor hoarding as one of the key features of the SBC syndrome. Hillman *et al.* (1987) show that the labor demand of firms increases if prices are uncertain and firms expect a bail-out. Goldfeld and Quandt (1988 and 1990) demonstrate analytically that SBCs trigger a rising factor demands. Several models of SBCs emphasize the government's objective to induce firms to maintain higher levels of employment, e.g. Boycko *et al.* (1996). Furthermore, case studies at the enterprise level in transition countries in the 1990s provide evidence that hardening of budget constraints is associated with the shedding of excess labor and increasing labor productivity.[10] Hence, economies with persistent SBCs tend to produce more labor intensively, and tend to adjust their labor force less swiftly to demand shocks than their counterparts with HBCs.

As a caveat, we recognize that factors other than hardening budget constraints affect labor productivity and the adjustment of employment to output shocks. International specialization patterns may trap countries in a state of low labor productivity and rigid labor market institutions may hinder the adjustment of employment to output shocks. Country-specific fixed effects can account for these factors in econometric models, if they are constant over time but not if they change during the sample period. Nevertheless, for transition countries, excess labor demand was widespread in the beginning of the process, so that increasing labor productivity and faster adjustment of employment to economic shocks are the best macroeconomic indicators available for cross-country and over-time comparisons of hardening budget constraints.

For the empirical analysis, we pool aggregate employment and output data for twenty-six transition countries from 1989 to 2002. Ten of the countries are accession candidates to the EU and sixteen non-candidate countries.[11] All twenty-six countries are presumed to have inherited a SBC regime as a legacy of central planning at the beginning of the transition. To date the start of the accession process, three times are possible depending on the signature of the Europe Agreements, the ratification of the Europe Agreements, and the official application for EU membership. Since the signature of Europe Agreements opened explicitly the perspective for EU membership, we assume that this date determines the year in which a country becomes a candidate for EU membership.[12] Since these agreements were signed between 1991 and 1996 for these ten countries[13] we have sufficient variation in economic behavior across candidate in terms of the timing in addition to the variation between candidate and non-candidate countries for the empirical analysis. However, our data base contains only thirteen annual observations per country during the period of adjustment to the new institutional environment. Moreover, since candidate status was granted to the thirteen countries early in the process, we are forced to include the years of the transitional recession

so that we do not lose the pre-candidate performance for these countries. However, the trough of the transition recession for most countries occurs during the period from 1992 to 1994 and economic conditions are more normal for most of the sample period.

For the calculation of aggregate labor productivity, we use real GDP and total employment data from the UN/ECE Common Database (UN/ECE, 2003, Appendix Tables B.1 and B.5). These data are derived from national statistics and statistics of the CIS. To complement the data from this source, we take data from national statistical offices for employment and GDP levels, whenever necessary. In the regressions, we use the Freedom House Political Rights and Civil Rights indexes as well as a dummy for a common border with the EU-15 as instrumented variables. The descriptive statistics for all variables used in the regressions provides Table 1.

Based on our analytical model, we estimate the following reduced form equation

$$\ln\left(Y_i/L_i\right)_t = \beta_0 + \beta_1 \ln\left(Y_i/L_i\right)_{t-1} + \beta_2\, D_{it}\, \ln\left(Y_i/L_i\right)_{t-1} + \beta_3\, D_{it} + \beta_4 TREND_t + u_{it} \qquad (9)$$

where β_0 is a constant, Y_i/L_i is labor productivity, D_{it} is a dummy variable that takes a value of 1 if country i is a candidate for accession in year t, and zero otherwise, $D_{it} \times \ln(Y_i/L_i)_{t-1}$ is an interaction term of candidate status with lagged labor productivity, $TREND_t$ is a time trend, and u_{it} is the disturbance term. Following Hsiao (1996), we specify the disturbance term as an one-way error-component model, i.e., we set u_{it} equal to $\mu_i + v_{it}$, where μ_i denotes a country-specific fixed effect and v_{it} is white noise. Thus, we estimate a partial adjustment model with fixed effects.

Since the costs of employing excess labor are higher for firms that operate under HBCs, we expect countries with harder budget constraints to adjust more rapidly to a higher level of labor productivity. Consequently, denoting γ as the speed of adjustment, we expect $\gamma_{cand} > \gamma_{non}$ where $\gamma_{non} = 1 - \beta_1$ and $\gamma_{cand} = 1 - \beta_1 - \beta_2$. Hence, if β_2 is negative, candidate countries adjust faster than the non-candidate countries. Moreover, we expect candidate countries to have higher labor productivity in the long-run. If the parameter λ denotes the long-run level of labor productivity, we expect $\lambda_{cand} > \lambda_{non}$ where $\lambda_{cand} = (\beta_0 + \beta_3)/(1 - \beta_1 - \beta_2)$ and $\lambda_{non} = \beta_0/(1 - \beta_1)$. Other country-specific characteristics that have a constant impact on labor productivity are captured by the fixed effects. Finally, we include a deterministic time trend to capture other factors that have a persistent impact on aggregate labor productivity, e.g., labor-augmenting technological progress.

Table 2 presents the estimation results. In the first column we estimate a standard fixed effects model using Feasible Generalized Least Squares (*FGLS*) and find that country specific effects are highly significant. Moreover, the Likelihood Ratio test indicates the presence of heteroscedasticity. So the results presented here are based on a specification for the error term which allows for heteroscedasticity. The coefficient on the interactive term has the expected negative sign, indicating that the speed of adjustment is significantly larger in countries having a candidate status. Moreover, the positive and highly significant sign of the candidate dummy suggests that the accession countries achieve a higher labor productivity than non-candidate countries.[14] However, higher labor productivity may have influenced the EU's decision to grant the candidate status to these countries.

To address this potential endogeneity, we estimate equation (9) with instrumental variables, namely the Political Rights- and Civil Rights index as from Freedom House along with a dummy variable indicating a common border with the EU-15. These variables are good

instruments because they are highly correlated with candidate status, due to the influence of political stability and geographical location on accession decisions, but they are not correlated with labor productivity. We take a standard two-stage instrumental variable approach and find that the Wu-Hausman-test rejects the null hypothesis that candidate status is exogenous. Once again, the country-specific effects are highly significant. Since the Pagan-Hall-test does not reject the hypothesis that the disturbances are homoscedastic, we chose a homoscedastic specification for the error term.

As Table 2 indicates, the coefficient of the interaction term has the expected negative sign and is also considerably larger than in the non-instrumented regression. However, the significance of the adjustment parameter is slightly smaller than in the non-instrumented regression. Regarding the comparative sizes of the productivity parameter in these two regressions, it is similar for candidate countries but substantially smaller for non-candidate countries in the instrumented case. Thus, we find an even higher speed of adjustment for the candidate countries and a higher difference in the long-term productivity parameter in the instrumented regression. However, both of these estimates may be subject to a simultaneous equation bias if the lagged dependent variable is correlated with the error term, as Nickell (1981) and Kiviet (1995) discuss. Although the fixed-effect estimator avoids the inconsistency that arises if country-specific effects are correlated with the other explanatory variables, serial correlation of the disturbance terms in equation (9) introduces endogeneity between the estimation errors and the lagged employment variable. Such estimation bias declines with the time dimension of the panel, so that it may be substantial for our relatively small sample (Judson and Owen, 1999).

To control for simultaneity bias, we use a Generalized Methods of Moments (*GMM*) system estimator, proposed in Arellano and Bover (1995) and Blundell and Bond (1998), for

which the pre-determined and endogenous variables in first differences are instrumented with suitable lags of their own levels. Strictly exogenous regressors, as well as any other instruments, may be included as conventional instrumental variables. In this regression, we take the Political and Civil Rights indexes and the common border dummy as standard instruments. A robust estimator of the covariance matrix is applied to yield consistent estimates of the standard errors in the presence of any pattern of heteroskedasticity and autocorrelation within panels. We present the results of the first-step estimates because the two-step estimates of the standard errors, although asymptotically more efficient, tend to be severely downward biased in small samples, as Arellano and Bover (1995) and Blundell and Bond (1998) demonstrate. Finally, the Hanson *J*-test does not reject the hypothesis of no over-identifying restrictions, so we can use the full set of moment conditions.[15]

As Table 2 indicates, the speed of adjustment is significantly higher for candidate countries than for non-candidate countries, i.e. the estimated β_2 is negative, and the long-term productivity parameter is significantly higher in the candidate countries, i.e. the estimate of β_3 is positive. The scale of these estimates is similar to that in the *FGLS* regression without instrumental variables. Thus, we conclude that our results are robust to model specifications. Moreover, although candidate status is clearly not exogenous, both the conventional instrumental variable estimates and the *GMM* estimates indicate that the results remain if possible endogeneity bias is addressed. Therefore, our empirical evidence demonstrates that granting candidate status is both associated with both a higher speed of adjustment and a higher labor productivity in the long run.

4.   Conclusion and Policy-implications

Our paper investigates the impact of outside conditionality imposed by the EU on applicant countries in the process of eastern enlargement both theoretically and empirically. We conclude that the Copenhagen criteria and the monitoring of the progress towards compliance with the *acquis communautaire* did help the candidate countries to resolve the persistent domestic SBC problem. Our theoretical analysis has several policy implications.

First, a necessary condition for resolving the SBC syndrome is that firms benefit more from EU membership than they lose from an enforcement of HBCs. Hence, the EU can change the domestic balance of power by raising the benefits from economic integration to the firms through full market access or complete dismantling of technical barriers for future members.[16] Second, the perceived toughness of the EU conditions can resolve the domestic SBC problem immediately, because of the ultimate punishment of excluding non-performing candidates. Third, a direct compensation from the EU to the firms in the applicant countries for the costs stemming from structural adjustment will strengthen the applicant government's position and, thus, enhance the effectiveness of conditionality, as the financial assistance programs in the pre-accession strategy of the EU were designed to accomplish.

Our empirical work examines the impact of outside conditionality using data from twenty-six transition countries, ten of which are candidates for accession, over a thirteen year period. We take the aggregate relationship between output and employment, i.e. the labor-to-output ratio, and the adjustment speed of labor demand to output shocks as indicators of the softness of budget constraints. We find that those transition countries having candidate status and, therefore, are subject to EU conditionality, display a faster adjustment of labor productivity and approach a higher level of labor productivity in the long run. Thus, our

empirical findings confirm the theoretical results that the conditionality imposed on future members of the EU leads to a hardening of budget constraints. However, our approach serves only as a first step towards understanding the role of external conditionalities on internal economic problems. As ever more supranational organizations place conditions on national economic behavior and because the SBC, despite its ubiquitousness in socialist and transition economies, is also found in many market economies, future research should investigate the impact of outside conditionality for more countries and in different economic environments.

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Table 1

Descriptive Statistics

Variable	observations	mean	standard deviation	minimum	maximum
$\mathrm{Ln}(Y_i/L_i)_t$	338	8.136	1.109	4.961	10.078
$\mathrm{Ln}(Y_i/L_i)_{t-1}$	338	8.139	1.092	4.961	10.055
$D_{it} \times \mathrm{ln}(Y_i/L_i)_{t-1}$	338	2.549	4.091	0	10.055
D_{it}	338	0.281	0.450	0	1
$POLITICAL_{it}$	338	3.618	1.956	1	7
$CIVIL_{it}$	338	3.757	1.494	1	7
$BORDER_i$	338	0.269	0.444	0	1

Notes:

(i) D_{it} is a dummy variable to indicate candidate status.

(ii) $POLITICAL_{it}$ and $CIVIL_{it}$ denote the Freedom House index for political and civil rights, respectively.

(iii) $BORDER_i$ is a dummy variable which takes a value of 1, if the country has a border to the EU-15, and of 0, otherwise.

Table 2

Estimation Results

	FGLS(FE)			IV(2SLS)			GMM(SYS)		
	coeff.		t-stat.	coeff.		t-stat.	coeff.		t-stat.
Constant	1.085	***	6.71	0.173		0.35	0.701	*	1.89
$\ln(Y_i/L_i)_{t-1}$	0.856	***	42.84	0.963	***	17.02	0.900	***	19.84
$D_{it} \times \ln(Y_i/L_i)_{t-1}$	-0.057	**	-3.60	-0.522	***	-2.59	-0.164	**	-2.61
D_{it}	0.553	***	3.76	4.647	***	2.58	1.511	**	2.69
$TREND_t$	0.009	***	11.49	0.018	***	4.54	0.013	***	7.16
			structural parameters						
γ_{cand}	0.201	***	10.11	0.558	***	3.50	0.264	***	6.15
γ_{non}	0.144	***	7.22	0.037		0.65	0.100	**	2.20
λ_{can}	8.137	***	10.89	8.626	**	2.43	8.381	***	26.63
λ_{non}	7.521	***	80.39	4.697		0.81	7.029	***	11.43
Observations	338			338			338		
per group	13			13			13		
R^2	-			0.99			-		
Log Likelihood	483.2			-			-		
F-statistic	-			-			$F(29,25) = 160.37$***		

Notes:

(i) The symbols *,**,*** indicate levels of significance of 10%, 5%, and 1%, respectively.

(ii) In the FGLS(FE) regression, the country dummies are significant at the 1% level with an observed $\chi^2(25)$ statistic of 77.02.

(iii) In the IV(2SLS) regression, the instruments are the Freedom House Political Rights index and Civil Rights index, in addition a dummy for a common border with the EU-15. The $F(26,308)$-test statistic for the joint significance of the country dummies is 1.96, which is significant at the 1% level. The $F(2,306)$-test statistic of the Wu-Hausman test is 5.20, which rejects the null hypothesis that D_{it} and $D_{it} \times \ln(Y_i/L_i)_{t-1}$ are exogenous at the 1%-significance level. The $\chi^2(29)$-test statistic of the Pagan-Hall test for heteroscedasticity is 33.37, which does not reject the null hypothesis of homoscedasticity of the disturbances.

(iv) In the GMM(SYS) regression, the Hanson J-test statistic for overidentifying restrictions is $\chi^2(29) =$ 22.10, which does not reject the null hypothesis of no overidentifying restrictions. The test statistic for first-order autocorrelation is -2.18, which is significant at the 5% level, but the test statistic for second-order autocorellation is insignificant at -1.09.

Endnotes

[1] This article represents only the views of the authors, not those of the European Commission or any other institution. Herbert Brücker gratefully acknowledges the financial support from the Otto-Mønstedt-Foundation, Denmark. This paper benefited substantially from the comments and suggestions of Editor John P. Bonin, the comments of two anonymous referees and from discussions with Thomas Apolte, Gérard Duchêne, Paul Gregory, the participants at the R.O.S.E.S. Seminar on Enlargement Economics, Paris 2003, and the participants of the annual meeting of the economic systems research committee of the German Economic Association Kühtai, 2002. The excellent research assistance of Kenan Šehović is gratefully acknowledged. The authors alone are responsible for any remaining errors.

[2] For example, the EBRD (2001: 11) emphasizes that the EU eastward enlargement process has had beneficial impact on domestic reforms and has helped to counter the influence of domestic vested interests in the region. These supposed beneficial impact from outside conditionality applies to many other economic problems, e.g. Perotti (1998) argues that the commitment value created by international institutions with a reputation for tough lending criteria is beneficial for emerging market economies.

[3] The status of accession candidacy to the EU was granted to Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia among the transition countries. In addition, Cyprus, Malta and Turkey were included in the group of accession candidates. Except for Bulgaria and Romania the accession candidate countries joined the EU in 2004. Bulgaria and Romania may enter in another enlargement round in 2007.

[4] For example, the strong political backing provided by Greece to Cyprus and by Germany to Poland made it unlikely that their candidacies would fail, even if these countries did not implement the *acquis communautaire* completely, see e.g. Brücker, Schröder and Weise (2004). However, the only two applicant countries to received explicit comments on persisting SBC problems in the decisive 2002 progress reports were Bulgaria and Romania (European Commission, 2002a: ch 2.3, p.44 and European Commission, 2002b: ch 2.3, p.42) and these two countries were not admitted to the EU in 2004.

[5] We model the SBC problem as a conflict between firms and the government, even though the transmission channel may be the financial sector, either directly, as in Dewatripont and Maskin (1995), or indirectly in that the government bails out banks with accumulated bad loans instead of bailing out firms as in Dewatripont and Roland (2000).

[6] Forcing softness on a government is embedded in several theories of the SBC, as Kornai, Maskin and Roland (2003) discuss. Kornai (1998) asserts that SBC and HBC are more a matter of degree of hardness than of well defined static states. However, under certain conditions economies experience regime shifts from one state to another, so we consider only two seperate states. An example of such a regime shift is the British economy under Margaret Thatcher, in which budget constraints were hardened in most sectors.

[7] Benefits accrue to the government from increased tax revenue and fiscal stabilization following the removal of SBCs.

[8] Costs to the firms include the loss of the insurance, or the subsidy value of SBCs, and the risk of bankruptcy net of the potential efficiency gains from HBCs.

[9] Proposition (1) is established by solving the inequality $(\theta - \tau) > p\,\theta + (1 - p)\,[(\theta - \tau)/(1 + \rho_f)]$ for p. The critical p is determined by comparing the firms' losing payoff $(\theta - \tau)$ with its winning payoff given that its winning payoff has a probability p of obtaining EU membership with a SBC having a payoff of θ and a probability $(1 - p)$ of rejection. Rejection reveals a tough EU, so that membership can be obtained in the next period only with a HBC leading to payoff of $((\theta - \tau)/(1 + \rho_f))$.

[10] These studies include Pinto *et al.* (1993) for Poland, Pinto *et al.* (2000) for Russia, Coricelli and Djankov (1998) for Romania; and Djankov and Hoekman (2000) and Claessens and Peters (1997) for Bulgaria. Carlin *et al.* (2001) and Frydman *et al.* (2000) provide comprehensive surveys.

[11] The sixteen non-candidate countries are Albania, Azerbaijan, Armenia, Belarus, Croatia, Georgia, Kyrgyz Republic, Kazhakstan, FYR Macedonia, Moldavia, Russian Federation, Serbia and Montenegro, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

[12] Our empirical results are robust to using either of the other two dates.

[13] The years during which the Europe Agreements were signed are 1991 for Hungary and Poland, 1993 for the Czech Republic, Bulgaria, Romania and Slowakia, 1995 for Estonia, Latvia and Lithuania, and 1996 for Slovenia.

[14] FGLS estimation may result in an underestimation of standard errors, as Beck and Katz (1995) report. In our regression, the estimated standard error for the parameter of the lagged dependent variable and, consequently, for the structural parameter λ, appears to be unrealistically small.

[15] However, we dropped 177 instruments due to collinearity, so that 212 instruments remain in the final estimation of the model.

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[16] Perhaps outside conditionality imposed by the EU can be more successful than conditionality imposed by international financial institutions, e.g., like the IMF, because such options are not available to the latter institutions.