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An Incumbent Country View on Eastern Enlargement of the EU Part I: A General Treatment

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Abstract

An eastern Enlargement of the EU, from an incumbent country point of view, involves a fiscal burden from extending Union agricultural and cohesion policies to new members, coupled with potential gains as well as adjustment problems deriving from an extended customs union and a larger single market. Enlargement is controversial, because the net effect is unclear, a priori, and will certainly vary across individual countries. Our two–part contribution tries to do shed light on this controversy. In this first part, we present a general treatment of the likely effects on different incumbent countries, while a subsequent companion paper will take a closer look at the specific case of Austria. The general view of part I, in turn, first focuses on various empirical measures highlighting crucial differences between incumbents, pertaining to the fiscal burden on the one hand, and integration gains on the other. We then argue that a proper evaluation must rely on an explicit welfare criterion, and we use a general model of economic integration in order to identify the principal channels through which aggregate welfare of an incumbent country is affected by an enlargement of the EU. We address traditional effects of trade creation and trade diversion, as well as growth effects arising from an abolition of trade barriers. In addition, we ask how enlargement affects foreign direct investment and labor migration, and what this implies in welfare terms for an incumbent western European country. Taken together, these effects generate a certain presumption of integration gains, which need to be set against the fiscal burden. However, a final judgement requires a case-by-case approach, based on empirical implementations of enriched and parameterized models for specific countries. The companion paper, therefore, uses a suitably specified, calibrated dynamic equilibrium model, in order to take a closer look at the Austrian case.

JEL Code: F02, F13, F15

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1 Introduction

Following the principal commitment to an eastern enlargement of the EU, issued at the Copenhagen summit of 1993, ten countries from central and eastern Europe (CEECs) have filed membership applications from 1994 to 1996. In 1998, the European Union has started conducting official accession negotiations with a first group of 5 applicant countries, and in its Helsinki summit of December 1999, the European Council has decided to open such negotiations with the remaining five countries in the year 2000. An eastern enlargement of the Union thus seems firmly on track, albeit with an open time schedule. All political commitment notwithstanding, however, the fifth enlargement of the Union is an endeavor not beyond controversy. On the part of newcomers, although membership as such seems to remain desirable, the prerequisite of an uncompromising implementation of all existing Union legislation ("acquis communautaire") involves troublesome adjustment and is therefore subject to political concern. The European Union, in turn, will have to undergo profound institutional changes to remain reasonably manageable with 27 members (including Cyprus and Malta who are up for membership on an equal footing with the CEECs). An intergovernmental conference is due to come up with a workable reform proposal by the end of 2000 which will, in all probability, impinge on vested interests and therefore be subject to controversy. Within individual Union countries, the idea of an eastern enlargement has been controversial almost from the start. All of them are expecting larger net contribution payments if existing EU agricultural and structural policies are applied to incoming CEECs. This is a highly visible price tag which is relatively easy to compute and comprehend. While it is generally acknowledged that a larger Union will not only be more expensive, but also more valuable, the expected integration gains accruing to incumbent members are much less straightforward, far more difficult to quantify, unequally distributed among different countries, and likely to be associated with painful adjustment pressure within these countries.

With so much controversy dominating the public debate on enlargement, economic analysis should be able to contribute to a sober and balanced view. This holds true particularly for incumbent member states where enlargement first and foremost amounts to an exercise in regional integration, where we have established theory to draw upon. This paper tries to do so in a threefold manner. First, it describes the main elements of the policy scenario that an eastern enlargement holds for incumbent EU countries. Secondly, it presents a model which allows us to identify, in very general terms, the channels through which this policy scenario affects aggregate welfare of an incumbent country. And thirdly, the paper carries out a simulation study, based on a calibrated dynamic general equilibrium model, in order to quantify the effects of enlargement for the case of Austria. The paper is in two parts. Part one deals with the relevant policy changes involved and presents a general treatment of the principal welfare effects, while part two presents the simulation model and results, including welfare effects as well as distributional consequences and sectoral output and employment effects.

Arguably, aggregate welfare should be an important, if not the ultimate, criterion for economic policy evaluation. Quantifying such effects, alongside the distributional implications, is probably the most important contribution of applied general equilibrium analysis towards a well balanced policy debate. But unfortunately, the impact of applied general equilibrium studies is often hampered by a certain amount of "black-box-feeling". To some extent, this is unavoidable. After all, one resorts to simulation precisely because the interrelationships between all elements of the economy escape analytical penetration, if looked at in the desired detail. For this very reason, a detailed descriptive account of the simulation model as such, while admittedly help-

ful to some extent, will hardly suffice to obtain an understanding and full apprehension of the principal channels through which the effects of a given policy scenario come about. In part one of the paper, we therefore turn to a very general, non-parameterized model of economic integration, in order to identify these channels for the case of an eastern enlargement of the EU from an incumbent country perspective. This should facilitate a more thorough understanding of the "bottom-line" welfare results that we shall present later on. The general model features the essential ingredients of the computational model, yet it is sufficiently parsimonious to offer a framework for discussing all relevant welfare effects of enlargement within a single equation. At the same time, it leaves many questions open which can only be answered by turning to numbers. Part two of the paper therefore turns to a simulation study relying on a parameterized and calibrated version of this model, in an attempt to quantify important effects of an eastern EU enlargement.

2 The Relevant Changes

For the CEECs, EU membership amounts to a fundamental change of their economic systems which defies description as a simple "policy change". From an incumbent country's perspective, however, an eastern enlargement of the Union may be described as a relatively simple composite scenario involving three types of changes. An *institutional reform* to keep an enlarged Union manageable, an extension of the Union vehicles of *regional integration* (the customs union and the single market program) to a group of neighboring trading partners, and an increase in net contribution payments to finance the *budgetary cost* of enlargement. Whatever the details of the institutional reform to be worked out in the upcoming intergovernmental conference of 2000, it is likely to reduce the political power of any individual country in Union decision making and governance. Specifically, it involves a change in the size and composition of the European Commission, as well as through the relative number of votes and the decision making rules in the European Council.[1] Given the uncertainty surrounding the details and the difficulty of modeling these aspects, we shall not consider them any further in this paper. The focus lies on the remaining two aspects which are more straightforward to describe in modeling terms as exogenous changes, and to investigate empirically.

2.1 Regional Integration

As regards *regional integration*, a first step has already been taken by the so-called Europe Agreements which were achieved in the nineties on a bilateral basis between the EU and individual CEECs, and which provide for preferential reductions of *formal trade barriers* for non-agricultural and "non-sensitive" goods.[2] As the agreements have all been ratified, this particular aspect of trade liberalization is no longer at issue. However, they must nonetheless be seen as an integral part of EU enlargement. Indeed, they cannot be properly understood without the prospect of eventual membership of the CEECs which is, in fact, explicitly mentioned in the agreements.

[1] This would aggravated if the Union were to create an institutional backing of what is sometimes called a "variable geometry", meaning that any subset of member countries may move forward with deepening their integration, leaving all countries outside that they do not wish, or who themselves are unwilling, to go along.

[2] See Anell et al. (1998) for a review of these agreements.

Full membership pushes the degree of integration much further than what is envisaged in the Europe Agreements. All remaining formal trade barriers will be abolished (including agricultural goods), and the CEECs are to adopt the *common external tariff (CET)* of the Union, including the entire EU system of preferential treatment (particularly towards ACP countries according to the Lomé agreement and the GSP towards less developed countries). Adopting the CET is important in that it avoids all rules of origin which are notoriously susceptible to arbitrariness and manipulation, and very costly to administer.[3] Membership also implies that all trade between the CEECs and the EU15-countries will be exempt from any other form of restrictive trade policy, such as *countervailing duties* and *anti-dumping actions* which are still possible under the Europe Agreements. These measures will be rendered unnecessary, as EU competition policy is extended to cover the CEECs. However, such measures have only been of minor importance for CEECs' imports from the EU, and the EU anti-dumping actions targeted towards the CEECs have mostly caused diversion of imports from other countries, hence enlargement will have little consequence on this account; see Anell et al., 1998.

Arguably, the most important element of integration derives from the fact that the CEECs will be granted single market status by incumbent members, and will likewise have to grant single market status to all Union countries. The single market program (SMP) was designed specifically to reduce *technical barriers* to trade that arise from regulatory requirements and associated inspection and certification activities. This should entail a significant reduction of the real resource use involved in EU imports from, as well as EU exports to the CEECs, including both goods and services. The same holds true for the abolition of *physical barriers* in the form of border controls for commodity trade. In addition, the single market provides for liberalization of *public procurement*, as well as a removal of all barriers to the *establishment of economic activities* in partner countries' territory and a *free movement of capital*.[4] Previous experience clearly indicates that the single market has lead to a significant increase in intra-Union trade and foreign direct investment, because of the cost saving effect of reducing the above mentioned barriers; see European Commission (1996). The expectation thus is that an eastern enlargement of the EU will similarly boost trade and cross border investment with new CEE member countries. An interesting aspect worth pointing out is that extending accession negotiations to all applicant countries minimizes the danger of a wasteful trade and investment deflection, which might otherwise be caused by a *temporary preferential treatment* of a subset of the applicant CEECs; see Anell et al. (1998).

While the single market program does explicitly address the issue of free movement of persons inside the Union, it features relatively few measures specifically geared towards reducing the barriers to *labor migration*. This is most clearly witnessed by a conspicuous absence of migration effects in the Commission's own evaluation presented in European Commission (1996).[5] Yet, according to article 48 of the Maastricht treaty migrant workers are guaranteed *national treatment* in the host country with respect to employment, earnings and all other working conditions. In theory, member countries are allowed to restrict migration only with respect to jobs in public administration, and if public order, safety, or health is at stake. Enlarging the Union to a poorer

[3] See Bhagwati et al. (1998) for a general evaluation, and Anell et al. (1998) for a perspective on trade between the CEECs and the EU.

[4] See Leonard (1998) and Anell et al. (1998) for a convenient review of the single market program.

[5] See also Leonard (1998, pp. 106-110), and Wallace & Young (1996).

area thus raises the prospect of labor migration from new to the richer incumbent member states. This is probably the touchiest issue in the accession negotiations. A likely outcome will feature certain grace periods before old member states are obliged to grant national treatment to an unlimited number of labor migrating from east to west. While it is relatively easy to quantify the present real income gaps acting as the prime migration incentive, it is much more difficult to pin down the migration barriers and to estimate the size of migration flows in the wake of enlargement. An important point to notice here is that these flows are not independent on what integration does to trade and capital flows. Both, the CEECs' trade with the EU and the direct investment that they receive from EU countries are likely to reduce the real income gaps and thus the migration incentive. Moreover, such flows are temporary in nature which is important to keep in mind when constructing simulation scenarios; see below.

These measures of economic integration will obviously mean different things for different countries. Depending on geographic proximity and historical ties, some incumbent countries are much better positioned than others to reap integration gains, but will also be hit more severely by the associated adjustment pressure. To give a rough overview of the *empirical magnitudes involved*, columns 1 and 2 of table 1 list pre-existing *trade exposures* of present member countries vis a vis all ten CEECs, measuring trade flows in percent of GDP. We note the expected asymmetry. Columns 3 and 4 add further information on how restrictive *EU external tariffs and non-tariff barriers* are for different member countries, given their detailed structure of imports from CEECs. Notice that these columns use detailed commodity imports in percent of GDP, rather than the usual share in total imports, as "weights". Since these "weights" obviously do not add to unity, the resulting figures are much smaller than the familiar trade-weighted tariff averages, or import coverage ratios for NTBs, but they are more valid indicators of the potential for integration gains in an international comparison; see Kohler (2000a,2000b). The final column of table 1 takes a similar perspective on how each member country's exports to the CEECs are affected by the *CEECs' import tariffs*. Notice, in addition to the inter-country difference for incumbents, that we consistently observe a larger tariff burden on EU exports to CEECs, than for EU imports from the CEECs.[6]

While the NTBs covered in table 1 give an impression on the prevalence of core non-tariff trade barriers, as implied by the common EU trade policy, in each country's trade with the CEECs,[7] they do not tell us much about the extent to which cost savings may be reaped by extending the single market to new members. There is ample anecdotal evidence that the technical and physical trade barriers outside the single market are substantial, particularly for trade with the CEECs; see Anell et al. (1998) and Brenton (1999). However, an ex ante evaluation of extending the single market needs a numerical estimate of this *real trade cost*. Earlier studies of the single market program have assumed a cost-saving effect in the amount of 2.5 percent of the transactions value for trade between western European countries; see Gasiorek, Smith & Venables (1991), 1992), and Keuschnigg & Kohler (1996). For trade with eastern Europe, Baldwin et al. (1997) stipulate a savings effect of 10 percent. We shall subsequently use a somewhat less optimistic value of 5 percent. This effectively corresponds to evidence that was

[6] This, in turn, does not hold to an equal extent for all CEECs considered. In particular, the Baltics generally feature far less external protection than do Poland, Hungary, and the Czech Republic.

[7] These include price control measures (voluntary export price restraints, variable charges, antidumping and countervailing actions) and quantitative restrictions (non-automatic licensing, export restraints, and other quantitative restrictions); see OECD (1997).

cited in an early report to the European parliament on the cost of physical and technical barriers later to be targeted by the Single European Act.[8] Barring reliable evidence on cross-commodity variation, this rate must be assumed in a uniform manner for all sectors of the economy.

2.2 Budgetary costs

Unlike the previous enlargement of 1995 (Austria, Finland and Sweden), an eastern enlargement adds strain on the overall EU budget, since the CEECs are all significantly poorer and more agricultural than present member countries. Carrying on with the principles of European agricultural and structural policies, even at reduced levels, implies net transfers from incumbent countries to incoming CEECs. There is much concern about how costly enlargement will eventually prove to be, and how this cost will be shared among incumbent countries who will, on average, face increased net contribution payments to the Union. Two approaches may be pursued to estimate the overall cost. The first, and perhaps most natural, is to rely on *Commission estimates* of own resources from new members, and corresponding appropriations for payments and commitments. Such estimates have been formally adopted in the Berlin summit of 1999 as part of the financial framework for 2000-2006. By their very nature, such estimates do not assume a continuation of extant policies, but instead reflect a certain amount of commitment to reform these policies. A second, perhaps less reform-oriented approach relies on *empirical models of existing budgetary policies*, focusing either on power politics as in Baldwin et al. (1997), or on economic country characteristics as in Breuss (1995). Using relevant information on the political power and economic characteristics, respectively, of new members, such models may be utilized to estimate the expenditures of an enlarged Union.

Figure 1 depicts the Commission estimates adopted in Berlin, calculated at 1999 prices under the assumption that enlargement to the group of countries having started negotiations in 1998 (henceforth called CEECs1) takes place in 2002; see European Commission (1999) and European Council (1999). No such estimates are available for the remaining countries (henceforth called CEECs2). The commission expects payments to be lower than commitments and both to be phased in during early periods of membership, with commitments from European Structural Funds (ESF) dominating by a wide margin.[9] A first estimate of the *cost of enlargement* may be obtained by comparing the 2006 forecast of payments to new CEECs1 members with the own resources that the Union expects from these countries. The resulting value is 10,040 Mio Euro, or 0.113 percent of estimated 2006 EU15 GNP. Relying on nominal commitments instead of expected payments, the cost estimate is 13,040 Mio Euro, or 0.141 percent of EU15 GNP.[10] In terms of 1999 GNP the percentage costs are 0,134 and 0,166 percent of GNP on a payments and commitments basis, respectively.

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[8] This report claims that the barriers later to be targeted by the single market program amount to an average weekly wage bill per year; see Leonard (1998, p. 106). In Kohler (2000b), I have shown that this may be roughly translated into an ad-valorem rate of about 5 percent.

[9] It should perhaps be pointed out that the Commission estimates do not include any direct payments to eastern farmers. Such payments have gained importance, due to the so-called McSharry reform of the Common Agricultural Policy (CAP). To the extent that accession negotiations provide for direct payments to eastern farmers on the same footing with EU15-farmers, expenditures of the enlarged Union are greater than those depicted in figure 1.

[10] These percentage figures assume an 18 percent *cumulated* growth of real EU15 GNP from 1999 to 2006.

The second approach, relying on empirical models of EU expenditure policy, gives reassuringly similar, if somewhat less optimistic results. Thus, applying the econometric model estimated by Breuss (1995) to an enlarged union including the CEECs1 countries gives a budget deficit in the amount of 0.184 of EU15 GDP; see Keuschnigg & Kohler (1999) for further details. This can be interpreted as the cost of such an enlargement to the present EU15 members who are running a balanced budget as required by EU law. For a more ambitious enlargement to CEECs1+2, a scenario not covered by the Commission estimates, the corresponding figure is 0.370 percent.

A close look at the financial framework for the EU15 for the period 2000-2006 indicates *how this cost will be financed*,and what this means in terms of burden sharing among present member states. Three principal options are available: increasing contribution payments (own resources), lowering return payments via the common agricultural policy (CAP), or cutting on European structural funds (ESF). While all members are contributing in roughly equal amounts (about 1.1 percent of GDP – with a ceiling of 1.27 percent), they are in vastly different positions regarding funds received through the CAP and the ESF. Hence, depending on which of the above options is chosen, the fiscal burden sharing will be quite different. Figure 2 shows some key features of the agreement reached by the Berlin summit of 1999. All figures are at constant 1999 prices. First, overall commitments for payments to EU15 countries are scheduled to fall from 96.38 billion Euro in 1999 to 89.62 billion in 2006. This is in strong contrast to the initial Agenda 2000 projections ("pre-Berlin" values, marked with an asterisk in figure 2) which have envisaged a steady increase over the same period to 104.56 billion Euro. Adding the estimated payments to new members gives a ceiling on total payments appropriations which approaches 103.84 billion by the year 2006, and which still falls significantly short of the 1.27 percent ceiling on own resources.

Looking at the main headings for appropriations for commitments (the bars in figure 2), we find that the principal burden will fall on ESF operations. Commitments through ESF (including pre-accession aid) are projected to fall by almost a quarter from 39.025 billion Euro in 1999 to 30.21 billion in 2006. Witness again the difference to the initial Agenda 2000 where the cut was much less severe. By way of contrast, CAP commitments are scheduled to remain relatively flat over time, falling by a mere 6.7 percent from 45.205 billion Euro in 1999 to 42.18 billion in 2006. Notice, however, that the Berlin summit did involve a severe cut of CAP operations as envisaged in the initial Agenda 2000.

The strategy becoming apparent in from figure 2 is in marked contrast with the third enlargement to Portugal and Spain in 1986. When putting into force the Single European Act in 1987, it was argued that a true single market should not only be interpreted to mean absence of barriers, but also to a certain extent a harmonization of economic conditions. Pointing out that the Union had just been extended to the poorer countries of Spain and Portugal, the commission successfully argued in favor of a doubling of structural funds, as a complimentary effort towards implementing the single market; see European Commission (1996). The fifth enlargement to even poorer countries will now be coupled with a severe cut-back of structural funds.

Figure 3 highlights both the reform effort agreed upon in the Berlin summit, as evidenced by the difference to pre-Berlin projections for 2006, and the cost saving effect of this effort, measured by the difference between the 2006 values and the "status quo" values of 1999. Judging from projected commitments, the reform effort vis á vis the initial agenda is much more pronounced with respect to the CAP than the ESF. But comparing with 1999, the savings to be expected from cuts in structural funds are much higher than from cuts in agricultural return payments.

Figure 3 also allows a rough judgement on whether the overall savings effect is enough to cover the net cost of enlargement. It is enough if judged on the basis of commitments, while a significant gap remains if judged on the basis of payments. Hence, there is a presumption that the Berlin summit still leaves some need for additional own resources or further cuts in expenditure. This conclusion is reinforced by the fact that the net cost depicted by figure 3 does not yet include any direct payments to farmers in eastern European accession countries.

Given the brunt of adjustment lies with ESF operations, the present recipient countries of ESF payments that are expected to shoulder a fair amount of the fiscal burden of enlargement. Table 2 depicts the *burden sharing among incumbent countries* which would arise in alternative fictitious scenarios where contribution payments and return payments, respectively, are adjusted so as to balance the budget of an enlarged union. Thus, if the enlarged Union were to balance its budget by means of a rise in contribution payments only, with CAP and ESF return payments kept constant in percent of national GDP – and applied also to new members, then the resulting burden for each incumbent country is as depicted in the first four columns labelled CONTR. CEECs1 refers to an enlargement to the first 5 countries who have started negotiations after the Luxembourg summit, while CEECS1+2 refers to an enlargement to all 10 CEECs; for further details see the note to table 1. The figures are the resulting increases in contribution payments expressed in percent of national GDP. The columns labelled CAP and ESF, respectively, give the burden for alternative scenarios where the necessary adjustment takes place in the form of cuts in agricultural and structural funds received from the Union.

Juxtaposing table 2 with table 1, a picture of tension arises between potential gains from integration that an incumbent country may expect from eastern enlargement, and the loss that it is likely to suffer from the attendant fiscal burden. The inter–country differences are quite pronounced. A crucial question from a policy point of view is whether the integration gains are likely to outweigh the financial burden. As indicated in the introduction, one observes a certain asymmetry in policy debates. While an understanding of the cost involved is widespread and pretty clear, at least in principle and regarding the overall order of magnitude, the nature of gains from integration is more elusive and the likely magnitudes involved are much harder to pin down. The following subsection therefore tries to shed light on the *principal channels* through which the integration scenario involved in an eastern enlargement affects aggregate welfare of an incumbent country. This will then be followed in part two of the article by a simulation study which looks at the *Austrian case* in terms of *numbers*.

3 The Principal Channels

As we have seen above, an eastern enlargement of the European Union is an exercise in regional economic integration, coupled with a net fiscal cost. This section draws on modern theory of integration to identify the principal channels through which an incumbent country will be affected. We first develop a general model of economic integration where aggregate welfare of an incumbent country is explained by variables that are relevant for an eastern enlargement of the EU. We then present an account of how an EU enlargement will affect a member country's welfare via channels directly related to trade, and channels that are related to accumulation and growth. Further subsections will deal with additional welfare effects that may arise from foreign direct investment and labor migration.

3.1 An aggregate welfare view of enlargement

In the following, symbols appearing without a regional subscript indicate an incumbent country, while subscripts are used to denote imports from fellow member countries of the Union (U), from eastern European countries (E) which are up for membership, and from the rest of the world (R): $Z \in \{U, E, R\}$. Variables relating to sector j, such as import prices p_{Zj}, are stacked into boldfaced column vectors, such as $\mathbf{p}_Z$. A prime is used to indicate vector transposition. We assume that demand is subject to *"love for variety"*, as in Dixit & Stiglitz (1977), whereby the total number of brands available in sector j is equal to $N_j = n_j + n_{Uj} + n_{Ej} + n_{Rj}$. Relying on a common demand aggregator for all agents which is linearly homogeneous in quantities of existing varieties, we may think of a composite good reflecting the overall level of demand D for different commodities from different sources of origin:

$$D = \tilde{C}^s L^s + \tilde{C}^u L^u + I. \tag{1}$$

In this equation, we distinguish between skilled and unskilled households with mass L^s and L^u. Following Dixit and Norman (1980, 146 ff), one may interpret $\tilde{C}^s$ and $\tilde{C}^u$ as welfare (or overall consumption) per capita of skilled and unskilled households, respectively. Aggregate demand for investment is denoted by I.

An exact price index $P = P(\mathbf{p}, \mathbf{p}_U, \mathbf{p}_E, \mathbf{p}_R, \mathbf{N})$ indicates the cost per unit of the composite good. This may simultaneously be seen as a *unit expenditure* function for households, representing preferences, and the *acquisition price* of a unit of capital for investors, representing the composition of the capital good determined by technology.[11] Real trade costs τ_{Zj} and tariffs t_{Zj} raise domestic demand prices above foreign producer prices p^*_{Zj}:

$$p_{Zj} = p^*_{Zj} + \tau_{Zj} + t_{Zj}. \tag{2}$$

Prior to enlargement, the Union applies common external tariffs to eastern Europe and the rest of the world, $t_{Ej} = t_{Rj}$. Enlargement will do away with t_{Ej} and reduce τ_{Ej}, while leaving t_{Rj} and τ_{Rj} unchanged. If producers receive a subsidy s_j, their unit revenue from selling abroad is $p^e_{Zj} - \tau^e_{Zj} + s_j$, where p^e_{Zj} is the foreign demand price. If p_j is the domestic demand price, they earn $p_j + s_j$ by selling at home. A no-arbitrage condition then requires that

$$p^e_{Zj} - t_{Zj} = p_j + \tau^e_{Zj}, \tag{3}$$

where t_{Zj} is the foreign tariff rate applied in region Z.

Following Dixit & Stiglitz (1977), we assume *symmetry* across all varieties within each sector. Hence, the aggregate value of domestic output at producer prices (inclusive of subsidies s_j) may be written as is

$$(\mathbf{p} + \mathbf{s})' \bar{\mathbf{y}} = \sum_j (p_j + s_j) n_j y_j, \tag{4}$$

where a bar denotes aggregate quantities for all varieties, i.e., $\bar{y}_j = n_j y_j$, and a prime indicates vector transposition. We assume that production of each variety is subject to *fixed costs*. A linearly homogeneous technology governs the relationship between output and *variable inputs*. We shall return to the determination of n_j as well as y_j below. In line with this notation, we

[11] Assuming a common aggregator for both consumption and investment allows for an easier exposition of the principal effects involved. In the empirical analysis of part 2, this assumption will be relaxed.

may write $\bar{d}_{Zj} = n_{Zj} d_{Zj}$, where d_{Zj} is total demand for a typical variety of good j from region Z. In what follows $\bar{\mathbf{d}}_Z$ will be a vector representation of $\bar{d}_{Zj}$. Shepard's lemma implies that

$$\nabla_{P_Z} P \, D = \bar{\mathbf{d}}_Z, \tag{5}$$

where $\nabla_{P_Z} P$ denotes a vector of price derivatives of the expenditure function $P(\cdot)$.

Armed with this notation, we now turn to a *calculus of welfare*. Assuming for simplicity that overall trade is balanced, total expenditure of an incumbent Union country must be equal to the value of domestic output at producer prices, plus redistributed tariff revenue, minus the subsidy cost, less transfer payments to the Union, T. Prior to enlargement, we therefore have

$$P(\mathbf{p}, \mathbf{p}_U, \mathbf{p}_E, \mathbf{p}_R, \mathbf{N})(\tilde{C}^s L^s + \tilde{C}^u L^u + I) = (\mathbf{p} + \mathbf{s})'\bar{\mathbf{y}} + \mathbf{t}'_E \bar{\mathbf{d}}_E + \mathbf{t}'_R \bar{\mathbf{d}}_R - \mathbf{s}'\bar{\mathbf{y}} - T. \tag{6}$$

For given investment I, this equation implicitly determines overall welfare $\tilde{C}^s L^s + \tilde{C}^u L^u$. I must be interpreted as the *steady state* level of investment which is determined by the existing capital stock, henceforth denoted by K, and the rate of depreciation δ. We shall turn the the determination of K when considering growth effects below.

Differentiating 6 and using d as the differential operator, we obtain

$$\begin{aligned} P(\cdot)\left(L^s \, \mathrm{d}\tilde{C}^s + L^u \, \mathrm{d}\tilde{C}^u\right) \;=\; & -\bar{\mathbf{d}}'_U \, \mathrm{d}\mathbf{p}_U - \bar{\mathbf{d}}'_E \, \mathrm{d}\mathbf{p}_E - \bar{\mathbf{d}}'_R \, \mathrm{d}\mathbf{p}_R - D \, (\nabla_{\mathbf{N}} P)' \, \mathrm{d}\mathbf{N} \\ & + \mathbf{t}'_E \, \mathrm{d}\bar{\mathbf{d}}_E + t'_R \, \mathrm{d}\bar{\mathbf{d}}_R + \bar{\mathbf{d}}'_E \, \mathrm{d}\mathbf{t}_E + \bar{\mathbf{d}}'_R \, \mathrm{d}\mathbf{t}_R - \bar{\mathbf{d}}' \, \mathrm{d}\mathbf{p} \\ & + \bar{\mathbf{y}}' \, \mathrm{d}\mathbf{p} + \mathbf{p}' \, \mathrm{d}\bar{\mathbf{y}} - \mathrm{d}T - P(\cdot) \, \mathrm{d}I - P(\cdot)\left(\tilde{C}^s \, \mathrm{d}L^s + \tilde{C}^u \, \mathrm{d}L^u\right). \end{aligned} \tag{7}$$

To identify the welfare effect as desired, we need to know how enlargement determines the various changes appearing on the right hand side of this equation. In a first step, we turn to a fundamental condition governing domestic production. If all endowments were constant, and if there were no production distortions, then cost minimization would imply that $\mathbf{p}'\mathrm{d}\bar{\mathbf{y}} = 0$. In line with stylized facts of modern day economies, however, we want to highlight four deviations from this textbook case.

First, product differentiation gives rise to *market power*, hence prices exceed marginal cost, which we shall henceforth denote by a vector $\mathbf{u}$. Notice that $\mathbf{u}$ is not constant, but will in general depend on factor prices. Secondly, $\mathrm{d}\bar{\mathbf{y}} = \mathbf{n}\cdot\mathrm{d}\mathbf{y} + \mathbf{y}\cdot\mathrm{d}\mathbf{n}$, where a dot indicates element-by-element multiplication. As there are *fixed costs*, it makes a big difference whether output changes come about via firm entry or exit, $\mathrm{d}\mathbf{n}$, or via adjustment of production scale, $\mathrm{d}\mathbf{y}$. "Love of variety" implies that, ceteris paribus, an increase in variety is beneficial to domestic households. This is reflected by $\nabla_{\mathbf{N}} P < \mathbf{0}$, where $\nabla_{\mathbf{N}} P$ is a vector of derivatives with respect to the number of brands. At the same time, however, any increase in variety absorbs factors by duplicating fixed costs. It is worth emphasizing that the "love of variety" effect applies to overall demand D which includes investment. The general interpretation is that if more differentiated goods become available, the cost of a given aggregate unit of capital decreases, since firms will be able to make use of this differentiation in their attempts to find capital goods tailored to their specific needs.[12] Thirdly, any increase in investment from its initial steady state level leaves less income for consumption, but it also implies *accumulation* and, thus, a change in production possibilities.

[12] See Ethier (1982) who was the first to generalize the "love of variety" approach to the production side of the economy.

This must be duly taken into account in a comprehensive welfare calculus. We interpret equation 7 as a change across steady states, so that $\mathrm{d}I$ is related to a change in the steady state capital stock; more on this below. And finally, enlargement is also likely to cause *migration* which similarly changes the resource base of the domestic economy, and which therefore importantly determines the supply reaction of the incumbent country.

Given these features of domestic production, how can we describe the supply side reaction of our economy to an enlargement of the Union? Introducing a vector of fixed costs $\mathbf{u}_f$, the textbook condition $\mathbf{p}'\mathrm{d}\bar{\mathbf{y}} = 0$ is replaced by

$$\mathbf{u}'\,\mathrm{d}\bar{\mathbf{y}} + \mathbf{u}_f'\,\mathrm{d}\mathbf{n} - w_K\,\mathrm{d}K - w^s\,\mathrm{d}L^s - w^u\,\mathrm{d}L^u = 0, \tag{8}$$

where $\mathrm{d}K$ denotes accumulation of physical capital, while $\mathrm{d}L^s$ and $\mathrm{d}L^u$ capture an increase in labor endowment due to immigration of skilled and unskilled workers, respectively. The primary factors have marginal value productivities equal to w_K for capital and w_s (w_u) for skilled (unskilled) labor. Notice that by marginal productivity we here mean the true social productivity. This will become important when we consider growth effects below. Using 8, substituting $\mathrm{d}\mathbf{p}_Z = \mathrm{d}\mathbf{p}_Z^* + \mathrm{d}\boldsymbol{\tau}_Z + \mathrm{d}\mathbf{t}_Z$ for $Z \in \{E, R\}$ (see equation 2), and taking the number of foreign brands as given by setting $\mathrm{d}\mathbf{N} = \mathrm{d}\mathbf{n}$, equation 7 gives rise to

$$\begin{aligned} P\left(L^s\,\mathrm{d}\tilde{C}^s + L^u\,\mathrm{d}\tilde{C}^u\right) \;=\; & -\bar{\mathbf{d}}_U'\,\mathrm{d}\mathbf{p}_U^* - \bar{\mathbf{d}}_E'\,\mathrm{d}\mathbf{p}_E^* - \bar{\mathbf{d}}_R'\,\mathrm{d}\mathbf{p}_R^* + \left(\bar{\mathbf{y}} - \bar{\mathbf{d}}\right)'\,\mathrm{d}\mathbf{p} \\ & -\bar{\mathbf{d}}_E'\,\mathrm{d}\boldsymbol{\tau}_E - \bar{\mathbf{d}}_R'\,\mathrm{d}\boldsymbol{\tau}_R + \mathbf{t}_E'\,\mathrm{d}\bar{\mathbf{d}}_E + \mathbf{t}_R'\,\mathrm{d}\bar{\mathbf{d}}_R \\ & + (\mathbf{p} - \mathbf{u})'\,\mathrm{d}\bar{\mathbf{y}} - \left(D\,\nabla_{\mathbf{N}} P + \mathbf{u}_f\right)'\,\mathrm{d}\mathbf{n} \\ & + w_K\,\mathrm{d}K - P\,\mathrm{d}I \\ & + \left(w_s - P\tilde{C}^s\right)\,\mathrm{d}L^s + \left(w_u - P\tilde{C}^u\right)\,\mathrm{d}L^u - \mathrm{d}T. \end{aligned} \tag{9}$$

This equation can now be used as a comprehensive framework to identify the principal channels through which an incumbent country will be affected by an enlargement of the European Union. We shall in turn consider trade related effects, production and growth effects, and migration. Before doing so we may note the term $\mathrm{d}T$ which refers to the centerpiece of public controversy: welfare declines on account of higher *net contribution payments*. Their welfare significance is straightforward and does not need any further attention.

3.2 Trade related effects

The first four terms in equation 9 capture *terms of trade effects*, setting changes in import prices $\mathrm{d}\mathbf{p}_Z^*$ against changes in domestic (and thus export) prices $\mathrm{d}\mathbf{p}$. Notice that due to product differentiation there is intra-industry trade, implying that $\bar{y}_j - \bar{d}_j$ is always positive. For simplicity, we treat prices and the number of brands in all other regions as exogenous. However, product differentiation implies that our home economy is not small, hence domestic prices are endogenously determined by a market clearing condition which may be expressed in a general form as follows:

$$\bar{\mathbf{y}}(\mathbf{p} + \mathbf{s}, \cdot) = \bar{\mathbf{d}}\left(\mathbf{p}, \mathbf{p}_U, \mathbf{p}_E, \mathbf{p}_R, \cdot\right) + \bar{\mathbf{e}}_U\left(\mathbf{p}, \cdot\right) + \bar{\mathbf{e}}_E\left(\mathbf{p} + \boldsymbol{\tau}_E^e + \mathbf{t}_E, \cdot\right) + \bar{\mathbf{e}}_R\left(\mathbf{p} + \boldsymbol{\tau}_R^e + \mathbf{t}_R, \cdot\right). \tag{10}$$

Domestic demand and supply are summarized by the two vector-valued functions $\bar{\mathbf{y}}(\cdot)$ and $\bar{\mathbf{d}}(\cdot)$, while export demand functions $\bar{\mathbf{e}}_Z(\cdot)$ highlight the role of real trade costs which determine demand prices for foreigners. For our present purpose, these functions serve as a shorthand

representation of a more fully specified general equilibrium model which one needs to pin down the specific effects of enlargement for a given incumbent country. We shall return to such a detailed specification in part two of our paper. The purpose here is to identify principal channels for welfare effects, not to calculate specific effects.

Notice that the equilibrium condition 10 refers to aggregate quantities supplied ($\bar{y}_j = n_j y_j$) and demanded ($\bar{d}_j = n_j d_j$ etc.) of all varieties. The degree of product differentiation n_j will be determined below. An extension of the customs union and the single market to CEECs does away with $\boldsymbol{\tau}_E^e$ and $\mathbf{t}_E$, and should thereby boost export demand $\bar{\mathbf{e}}_E$ from these new members. At the same time, however, there will be substitution effects away from home goods in domestic demand $\bar{\mathbf{d}}$, where for the same reason we observe a fall in prices $\mathbf{p}_E$ for competing goods from CEECs (see equation 2 above). Moreover, given the cost effects of cheaper intermediate inputs and, more importantly, accumulation effects from enlargement (see below), me must also expect domestic supply reactions, in addition to a boost in export demand. With reactions on both sides of the market, prices may move either way. Everything depends on the detailed economic characteristics of the incumbent country in question. On this level of generality, the overall welfare effect of the terms of trade changes to be expected from enlargement appears ambiguous.[13] It is worth emphasizing, however, that the welfare significance of a given increase in domestic prices $\mathbf{p}$ is determined not only by the extent of exports to the new members, but by total exports $\bar{\mathbf{y}} - \bar{\mathbf{d}}$.

It is often argued that EU membership reinforces the transformation process and thus growth prospects in CEECs. This should, in turn, provide an additional boost to imports which western European countries feel as a positive shift in export demand $\bar{\mathbf{e}}_E\,(\mathbf{p} + \boldsymbol{\tau}_E^e + \mathbf{t}_E, \cdot)$. From equation 10 above we see how this affects domestic welfare of an incumbent country, viz. through a favorable terms of trade effect.[14]

With expected changes on both the demand and supply side, one might be tempted to say that the terms of trade effect is probably small, maybe even negligible. This, however, would ignore an important ingredient of enlargement. As pointed out in the previous section, extending the single market first and foremost reduces *real trade* costs. Removing a pure distortion like a tariff entails a loss of tariff revenue, leaving only a "triangle" welfare effect which appears as $\mathbf{t}'_E\,\mathrm{d}\bar{\mathbf{d}}_E$ in equation 9. By way of contrast, if integration allows for a savings in the real resource use required to carry out trade, then there will be a "rectangle" effect which acts just like a terms of trade improvement, as can be seen from the term $\bar{\mathbf{d}}'_E\,\mathrm{d}\boldsymbol{\tau}_E$ in equation 9. Notice that $\mathrm{d}\boldsymbol{\tau}_R = 0$, as real trade costs remain unchanged vis à vis the rest of the world. The clear message here is that the potential for beneficial effects from the single market is closely related to the extent of imports from new members that a Union country has reached prior to enlargement ($\bar{\mathbf{d}}_E$).

The next two terms in equation 9, $\mathbf{t}'_E\,\mathrm{d}\bar{\mathbf{d}}_E + \mathbf{t}'_R\,\mathrm{d}\bar{\mathbf{d}}_R$, highlight *trade creation* and *trade diversion*. As familiar from customs union theory, a reduction of a subset of trade distortions $\mathbf{t}_E$ may not necessarily raise welfare if other distortions $\mathbf{t}_R$ remain in place. Ceteris paribus, domestic welfare increases if changes in import demand are positively correlated across commodities with common EU tariff rates, $\mathbf{t}_E = \mathbf{t}_R$. While we may expect enlargement to boost $\bar{\mathbf{d}}_E$, this increases

[13] In Keuschnigg & Kohler (1996a,b), we have solved analytically for the equilibrium price adjustment in a stylized one sector model of this type, taking account of the long-run savings and investment response.

[14] Note that this effect is not restricted to incumbent EU countries but will instead likewise be felt by all other trading partners of the CEECs.

overall welfare only to the extent that it does not mirror a fall in $\bar{\mathbf{d}}_R$ in which case it would constitute a trade diversion effect.[15]

3.3 Production and accumulation

Of all enlargement effects, those related to trade are the ones most obvious and familiar from traditional theory of integration. However, modern theory emphasizes a host of additional effects which arise from scale economies and imperfect competition. In this model setup they are best understood as pertaining to production and accumulation. Thus, the third line of equation 9 identifies welfare effects resulting from imperfect competition. Ceteris paribus, welfare increases if output is shifted to sectors where the wedge between demand prices and marginal cost is particularly high. This is sometimes called a *pro-competitive effect* of integration. Notice also that if subsidies exceed the markup, $s > p + s - u$, this implies $p - u < 0$, and a reduction of output as such is welfare increasing, notwithstanding other effects that operate through prices (see above) and the number of varieties (see below). This is of obvious relevance for the Union policies pertaining to agriculture, but also to some extent for its structural policies. Apart from pro-competitive output effects, the economy will also incur (save) fixed costs if output changes are brought about by firm entry (exit). Hence the second term emphasizes the trade-off between a positive *variety effect*, captured by $\nabla_N P < \mathbf{0}$, and a negative *efficiency effect* from duplicating fixed costs, highlighted by the term $\mathbf{u}_f$. Equation 8 tells us that these output effects are intimately related to changes in endowments. In isolating the effects of EU enlargement, we therefore have to consider how enlargement may affect the resource base of an incumbent country. We first turn to growth channels

3.3.1 Growth Channels

When talking about *accumulation*, one should be careful to distinguish two separate issues. a) What are the channels through which an enlargement of the EU is likely to exert a growth effect in an incumbent country? b) What is the welfare significance of such a growth effect? The renaissance of growth theory that we have witnessed the past 15 years has caused many people to claim that static effects are easily dwarfed by growth effects; see in particular Baldwin (1989). This may be true if one looks at output or GDP. But growth never comes for free. It comes at the cost of forgone consumption today which needs to be duly observed in a welfare calculus.

In equation 9, the growth-related term is $w_K \,\mathrm{d}K - P \,\mathrm{d}I$, where $w_K \,\mathrm{d}K$ gives the additional value generated by accumulation, and $P \,\mathrm{d}I$ highlights the opportunity cost of investment. To make sense of this term, we need to establish a relationship between $\mathrm{d}K$ and $\mathrm{d}I$, and thus between the value and the cost of accumulation. Remember that equation 9 gives a change across steady states. In order to maintain a higher steady state capital stock, consumption must be reduced to provide for recurring depreciation allowances $\delta \,\mathrm{d}K$, where δ is the rate of capital decay. Moreover, for the economy to arrive at a higher long-run level of capital, it must forego consumption in an accumulated amount equal to $\mathrm{d}K$. A flow measure of the associated welfare cost is obtained by converting this into an equivalent permanent annuity. Given a world interest rate of i^*, this measure is equal to $i^* \mathrm{d}K$. To capture the overall welfare cost of investment, we

[15] See also Baldwin and Venables (1995), and Panagariya (1997).

therefore substitute

$$\mathrm{d}I = (i^* + \delta)\,\mathrm{d}K, \tag{11}$$

hence the growth term in 9 reads as $[w_K - P\,(i^* + \delta)]\,\mathrm{d}K$.

Rational investors trade off the present value of private marginal returns against the private acquisition cost of capital (P). That is, in a steady state perspective accumulation takes place until investors observe

$$\tilde{w}_K\,(K)\,/\,(i^* + \delta) = P\,(\mathbf{p}, \mathbf{p}_U, \mathbf{p}_E, \mathbf{p}_R, \mathbf{N})\,. \tag{12}$$

This condition states that the steady state user cost of a unit of capital, $(i^* + \delta)\,P$, equals its private marginal value productivity $\tilde{w}_K$. Invoking the notion of diminishing marginal returns to capital, we treat $\tilde{w}_K$ as dependent on the capital stock K. Notice that in the long run $\tilde{w}_K$ is equalized across sectors if they face the same acquisition cost and if there is a single rate of depreciation. For simplicity, we assume this to be the case. Under the law of diminishing returns $\tilde{w}_K$ is decreasing in K, hence at a constant interest rate i^* any increase of $\tilde{w}_K(\cdot)/P(\cdot)$ will initiate an expansion of the capital stock. Such an increase may be brought about either through a favorable terms-of-trade effect on output prices $\mathbf{p}$, if this raises the marginal value productivity $\tilde{w}_K$ more than P, or through cheaper capital goods imported from the enlarged Union which lowers P. The larger the share of capital goods that an incumbent country imports from new members, the more we expect this to be the case. Notice, however, that the terms of trade effect itself is not restricted to exports to new members; see above. Moreover, even if the acquisition cost of capital is uniform across sectors, an enlargement of the EU involves *sector-specific* shocks on the marginal value products of capital. Hence, if there is aggregate expansion this need not show up proportionally in all sectors. Indeed, as we shall see in the simulation study below, an aggregate growth effect may coexist with contraction of individual sectors.

3.3.2 Distortions

Suppose, then, that enlargement does initiate expansion of at least some sectors in an incumbent country. Does this imply a positive *welfare effect*, over and above the trade related effects considered above? The answer hinges on whether or not accumulation involves an *externality*. Two aspects need to be considered. The first is whether the private marginal return of capital is equal to the social marginal productivity (w_K), and the second is whether the private cost of a unit of capital (P) equals the true acquisition cost for society as a whole.

To the extent that investment draws on goods which are subject to *import distortions*, this latter condition is clearly violated. But this violation pertains to all components of demand. It is a distortion which is relevant at the margin between imports from a tariff-ridden source ($Z = E, R$) versus domestic goods or tariff-free imports from Union partners ($Z = U$), and not at the margin between using goods for investment versus consumption. In other words, trade barriers do not give rise to any distortion of the accumulation decision as such. Accordingly, the welfare significance of the discrepancy between the private and social acquisition cost of capital is fully captured by the term $\mathbf{t}'_E\,\mathrm{d}\bar{\mathbf{d}}_E + \mathbf{t}'_R\,\mathrm{d}\bar{\mathbf{d}}_R$ in equation 9 (notice that $\bar{\mathbf{d}}_Z$ includes consumption *and* investment; see equation 1 above). If there is no distortion in the marginal value productivity of capital either, i.e., $\tilde{w}_K = w_K$, then the growth-related term of the welfare differential 9 vanishes altogether. In this case, accumulation is devoid of any first order welfare effect; see also Baldwin (1992).

We know from modern growth theory that genuine *growth distortions* may arise in very subtle ways. Our interpretation of the growth term $w_K \, \mathrm{d}K - P \, \mathrm{d}I$ above assumes that the acquisition cost of capital is given and independent of K. From a private investor's point of view, this seems perfectly appropriate. However, if the capital stock is made up of differentiated goods, then P falls with the number of brands available. This is the "love of variety effect". Under almost any conceivable condition, the amount of product differentiation will be determined by the resource base of an economy, and thus by its capital stock. From an economy-wide perspective, therefore, we must view $\mathbf{n}$, and hence P, as being determined by K. An *individual investor* is likely to ignore this, if she is small relative to the aggregate size of the capital stock. However, we must duly take it into account in our *economy-wide* welfare calculus 9.

One might be tempted to stipulate a function $\mathbf{n} = \mathbf{n}(K)$, with $\nabla_K \mathbf{n} > \mathbf{0}$. But in general, there is no well defined relationship of this sort. In a multi-sector economy with endogenous sector-specific capital accumulation, the sectoral composition of the aggregate capital stock is itself an important channel of policy reactions, and thus not constant. On the other hand, the amount of product differentiation within each sector is determined by the *sector-specific* resource base. There is thus no well defined relationship between the degree of product differentiation in any given sector j (and thus the vector $\mathbf{n}$), and the aggregate capital stock. This is not to say that the distortion of the individual investment decision may cut both ways. For each and every *individual decision*, $\mathrm{d}K_j > 0$ implies an increase in n_j, and therefore $\mathrm{d}P < 0$, which the investor ignores and which therefore arises as an externality. But the precise way in which some *increase in the aggregate capital stock*, caused by a policy shock like EU enlargement, translates into a certain pattern of changes in sectoral product differentiation is a different matter. This depends on the sectoral pattern of expansion, hence we must write $n_j = n_j(K_j)$, as opposed to $\mathbf{n} = \mathbf{n}(K)$.

Where in our calculus does this externality play a role? In the growth-related term itself, $w_K \, \mathrm{d}K - P \, \mathrm{d}I$, there is room only for a *second-order* effect which we may safely ignore in a calculus of small policy changes. But they will surely play a role in the simulation below where we consider "large" changes. The *first-order* welfare effect of growth is summarized by the term

$$g \equiv (\mathbf{p} - \mathbf{u})' \, \mathrm{d}\bar{\mathbf{y}} - (D \, \nabla_N P + \mathbf{u}_f)' \, \mathrm{d}\mathbf{n} \tag{13}$$

in equation 9. Using a dot to indicate element-by-element multiplication, we have $\bar{\mathbf{y}} \equiv \mathbf{y} \cdot \mathbf{n}$. It is easy to see that the growth effect in 13 can go either way. Specifically, if enlargement causes growth, it is unclear a priori if this ends up in a mixture of variety and scale effects, $\mathrm{d}\mathbf{n}$ and $\mathrm{d}\mathbf{y}$, which guarantees that g is positive. We need more information on how firm outputs and the number of firms are jointly determined through resource endowments, in order to pin down the welfare significance of growth.

Fortunately, it turns out that for a popular class of models assuming *monopolistic competition* along the lines of Dixit & Stiglitz (1977), it is possible to obtain a relatively sharp result. This can bee shown as follows. Given a linearly homogeneous technology for variable inputs, zero profits imply

$$\mathbf{u} \cdot \mathbf{y} \cdot \mathbf{n} + \mathbf{u}_f \cdot \mathbf{n} = \mathbf{p} \cdot \mathbf{y} \cdot \mathbf{n}, \tag{14}$$

where a dot again indicates element-by-element multiplication. In terms of differentials, we obtain

$$\begin{aligned} (\mathbf{p} - \mathbf{u})' \, \mathrm{d}\bar{\mathbf{y}} - \mathbf{u}_f' \, \mathrm{d}\mathbf{n} &= -\boldsymbol{\Delta}, \\ \text{where } \boldsymbol{\Delta} &\equiv \bar{\mathbf{y}}' \, \mathrm{d}\mathbf{p} - \bar{\mathbf{y}}' \, \mathrm{d}\mathbf{u} - \mathbf{n}' \, \mathrm{d}\mathbf{u}_f. \end{aligned} \tag{15}$$

We may rewrite $\mathbf{\Delta} \equiv (\mathbf{p} \cdot \bar{\mathbf{y}})' \hat{\mathbf{p}} - (\mathbf{u} \cdot \bar{\mathbf{y}})' \hat{\mathbf{u}} - (\mathbf{n} \cdot \mathbf{u}_f)' \hat{\mathbf{u}}_f$, where a hat indicates percentage changes. Suppose now that the activities behind fixed and variable inputs rely on the same technology. I.e., within each sector there is a constant ratio between the minimum unit costs of these two types of activity. This is what Horn (1983) calls a homothetic technology. If in addition there is a constant markup between prices and marginal costs, a key feature of the Dixit-Stiglitz way of modeling "love of variety", then we have $\hat{\mathbf{p}} = \hat{\mathbf{u}} = \hat{\mathbf{u}}_f$. This, together with equation 14, implies that $\mathbf{\Delta} = 0$. Equation 15 then leaves $g = -D\,(\nabla_N P)'\,\mathrm{d}\mathbf{n}$ as the first order external welfare effect of growth, whereby $\mathrm{d}n_j$ must be read as $(\partial n_j/\partial K_j)\,\mathrm{d}K_j$.[16] Loosely speaking, a growth effect of enlargement has a direct positive impact on welfare to the extent that it is concentrated in those sectors where it causes a large increase in product differentiation, measured by $\partial n_j/\partial K_j > 0$, and where such product differentiation is important for consumers or investors, as measured by $-\nabla_{n_j} P > 0$.

Growth in this economy is *exogenous*, as long as the ratio $w_K(K)/P(\cdot, \mathbf{N})$ is falling in K for a given sectoral composition of the capital stock K. It turns into the knife edge case of Romer-type *endogenous growth*, if the above externality is sufficiently strong for $w_K(K)/P(\cdot, \mathbf{N})$ to be a constant (again for a given composition of the capital stock), taking into account that the number of brands available is determined by K; see Romer (1994). From an economy-wide perspective, capital then no longer exhibits diminishing marginal returns, and net investment does not cease if condition 12 is met.[17]

3.4 Foreign Direct Investment

The CEECs still have a low stock of capital relative to labor, at least compared to western European countries of the EU. They should thus boast a relatively high marginal productivity of capital and thus attract foreign investment. Specifically, one expects the marginal productivity of capital invested in CEECs to exceed its risk-free user cost. I.e., from a western investor's perspective we have $\tilde{w}_{KE} > (i^* + \delta)P_E$, where for our purpose P_E is interpreted as including the differential cost that a western investor faces for establishing a foreign plant in a CEEC, as opposed to intra-EU investment, and which according to the theory of foreign direct investment (FDI) is matched by some firm-specific asset relevant for the investment project. Such a situation is consistent with an equilibrium if investors charge a risk-premium for entering a country in transition on the grounds that the host country does not offer the kind of treatment that foreign direct investment (FDI) is granted under the single market within the EU; see equation 12 above.[18] If these countries adopt the single market upon entering the EU, investors are likely to charge a lower risk premium. They will indeed do so as soon as enlargement becomes a reasonably credible policy, which may be the case quite some time before it actually happens.

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[16] Keuschnigg (1998) compares the market equilibrium with the social optimum and derives an optimal subsidy that internalizes the externality. Keuschnigg & Kohler (1996a,b) provide a detailed treatment of trade induced investment under such an externality, including in particular an explicit solution of $n_j(K_j)$.

[17] Baldwin & Forslid (2000) have shown that reasoning similar to condition 12 above may be used to determine growth effects in cases where the marginal returns to the accumulated factor are constant. All one needs to do is to treat investment, instead of the stock of capital, as the relevant state variable.

[18] The risks involved are of a micro-type, such as bank failures, unexpected changes in the legal system (including privatization, regulatory policies, the tax system and state aids policy), and macro-risks, such as monetary policy, incomes policy, and exchange rate swings. For somewhat more detail, see Baldwin et al. (1997).

Enlargement thus has the important additional effect of increasing the stock of western FDI in CEECs; see Baldwin et al. (1997).

How does this effect enter our incumbent country welfare calculus? The answer is surprisingly easy if we assume that investors always earn the marginal product of capital. While it is true that any policy induced risk-premium constitutes a distortion which gives rise to a first-order welfare gain of accumulation, this gain is reaped by the CEECs if western capital always receives a rental equal to its marginal productivity.[19] Only to the extent that western investors exert market power which allows them to extract and repatriate pure profits from their direct investment in CEECs, do we observe a welfare effect over and beyond what has been discussed above. Consider briefly the kinds of externalities that we have identified for domestic growth effects. A *trade distortion* of the acquisition price P_E may be present inasmuch as capital goods imported by a subsidiary located in CEECs are subject to import barriers. The removal of such barriers for purchases from within the Union does provide an impetus for additional FDI, but the key point to note here is that the tariff-inclusive price of the capital stock, P_E, always reflects the true opportunity cost of such investment from a western investor's point of view. Hence, there is no associated first-order welfare effect on the FDI source country. In turn, the *growth distortion* operates on FDI just as we have emphasized above, but it does so for the CEEC host country, rather than the incumbent EU source country. Again, there is no associated first-order welfare effect on an incumbent, except for a change in $\mathbf{n}_E$ affecting P; see the definition of P above.

We conclude this point with a final remark on *investment diversion*. It is sometimes argued that preferential treatment of FDI is likely to generate deflection of investment behavior which may be detrimental to welfare in a way analogous to trade diversion; see Baldwin & Venables (1995). One might be tempted to suspect such preferential treatment if the single market provisions are applied to FDI in CEECs but not in third countries. To be convincing, however, the argument needs to pin down the relevant distortions. It is clear from the above that the trade distortions involved in the acquisition cost of capital do not constitute any case for such investment diversion, over and beyond what is captured by the term $\mathbf{t}'_E\, \mathrm{d}\bar{\mathbf{d}}_E + \mathbf{t}'_R\, \mathrm{d}\bar{\mathbf{d}}_R$ in equation 9. As far as the marginal productivity of capital invested in different locations is concerned, it is difficult to see why the private return received by an incumbent EU country investor on FDI should be different from the return received by the incumbent country as a whole, let alone why such a discrepancy should be systematically different for different locations. If it were, then any reduction of investment with a true marginal return in excess of the true opportunity cost of capital would be detrimental to domestic welfare. If enlargement reduces the policy induced risk-premia for FDI in CEECs, and if as a result western FDI picks up in these countries, this will not necessarily be at the expense of any profitable investment elsewhere, either at home or in third countries. If investors can draw on world-wide capital markets at a given interest rate i^*, they will seize any opportunity to investment up to the point where the criterion 12 is satisfied independently for each project or location. The concern sometimes raised in incumbent countries that an increase of FDI caused by an eastern enlargement of the EU will be at the expense of a profitable domestic investment thus seems unwarranted.

[19] This is nothing but the mirror image of the well established result that migration affords the receiving country an "immigration surplus"; see below.

3.5 Migration

Equation 9 focuses on per capita welfare of the skilled and unskilled population. The last line identifies the *direct* effect of marginal immigration in each of these skill groups. Based on a static model, Dixit and Norman (1980, 147) point out that this direct effect is detrimental to per capita utility in the host country to the extent that residents receive non-labor income. The marginal migrant contributes to income according to the marginal value product of labor which, in turn, is lower than average income. For this reason, average income must fall at home.

Essentially the same argument holds in our case. Skilled immigrants contribute to lower per capita welfare if per capita savings out of labor income among skilled households is negative in 9, i.e., if $s^s \equiv w^s - P\tilde{C}^s < 0$. The effect of unskilled immigration is similarly determined by the sign of s^u. Per capita savings of each skill group i satisfies the constraint

$$\tilde{A}^i_t = (1+i^*)\tilde{A}^i_{t-1} + \omega^i_t - P_t\tilde{C}^i_t, \tag{16}$$

where ω^i is disposable labor income of period t, and $\tilde{A}^i_{t-1}$ are financial assets at the end of period $t-1$. In the aggregate, total assets of households must correspond to the value of the domestic capital stock. Assuming that agents in each skill group accumulate at least some assets, and ignoring wage taxes, $w^i - P\tilde{C}^i = -i^*\tilde{A}^i < 0$ must hold in the initial steady state. While this argument ignores taxes, it nevertheless tends to imply that the direct effect of immigration is negative as in Dixit and Norman. The last line of equation 9 thus captures some of the popular concerns regarding immigration in the wake of an eastern enlargement.

A full evaluation of migration effects, however, needs to bear in mind two additional observations. First, in looking at the marginal migrant, the last line of 9 fails to capture what has become known as the *immigration surplus* accruing to non-immigrant domestic residents. To the extent that immigration depresses domestic wages it must increase total income of domestic residents, excluding immigrants; see Borjas (1995) and Wong (1995, 628 ff). All infra-marginal immigrants contribute more to domestic income than they end up receiving in terms of wages. But since it materializes only if wages are depressed, this immigration surplus comes at the expense of a potentially troublesome distribution effect. This is an aspect of public concern about immigration which is *not* captured by our welfare calculus, but which will be properly addressed in the simulation study below. Finally, it should be noticed that the consequences of immigration are not exhausted by the direct effect noted in the last line of equation 9. Indirect effects appearing in the first three lines of 9, in conjunction with the market clearing condition 10, should likewise be considered. In particular, immigration expands output and creates external gains from specialization in the same way as does capital accumulation; see above.

4 Open Questions

While offering important insights into what may and may not be expected from an eastern enlargement of the EU, the general treatment pursued up until now leaves several questions unanswered. There is a strong presumption that extending the Union vehicles of regional integration to neighboring countries of central and eastern Europe will, as such, increase aggregate welfare of an incumbent country, but the big question is whether this is enough to compensate for the fiscal burden of enlargement. Will enlargement deliver a net gain for some of the incumbents? Moreover, if regional integration boosts economic growth in present member states, will this increase their tax base to such an extent that public revenues rise beyond the fiscal burden,

thus turning enlargement into a "self-financing policy"? The growth and welfare effects are unlikely to emerge proportionally throughout all sectors and individuals of the economy. Indeed, domestic redistributive effects are a typical outcome of almost any policy of international integration (see Rodrik, 1997), and should therefore also be expected from an eastern enlargement of the EU. What are the idiosyncratic distributional consequences that an incumbent country must expect from enlargement? They may arise in the form of windfall profits and losses to holders of sector specific capital stocks, but also in the form of differential effects on wage earnings, as well as between different (present or future) generations.

All of these are important questions that need to be answered for a well balanced view on, and a full evaluation of eastern enlargement. To do so requires a more detailed structural model than was used above, and it requires that such a model be empirically implemented. This allows for a case by case approach, taking full account of the relevant characteristics of an incumbent country. An obvious case to look at is Austria which for obvious reasons is particularly exposed to the above mentioned effects. In part two of the paper, we shall therefore rely on a simulation model for the Austrian economy in order to look at enlargement from an empirical perspective.

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Table 1: **Merchandise trade of EU countries with CEECs and associated trade barriers**

Country	Imports	Exports	Import barriers		Export barriers
	1997 in % of GDP		EU import tariff (CET)	EU NTBs	CEECs' import tariffs
Belgium/Lux.	0,77	1,32	0.0455	0.1058	0.1319
Denmark	0,81	1,09	0.0502	0.2556	0.0831
Germany	1,52	1,83	0.0776	0.2251	0.1363
Finland	0,94	2,71	0.0436	0.2229	0.1917
France	0,32	0,51	0.0231	0.0601	0.0475
Greece	0,63	0,30	0.0718	0.1007	0.0249
Great Britain	0,33	0,42	0.0194	0.0507	0.0350
Ireland	0,16	0,33	0.0152	0.0422	0.0634
Italy	0,66	1,09	0.0595	0.1233	0.0919
Netherlands	0,79	1,03	0.0623	0.1513	0.0852
Austria	2,71	3,98	0.1238	0.3304	0.2772
Portugal	0,17	0,20	0.0103	0.0110	0.0134
Sweden	1,05	1,45	0.0501	0.1250	0.0888
Spain	0,26	0,39	0.0169	0.0115	0.0306
EU15	**0,79**	**1,08**	**0.0499**	**0.1318**	**0.0897**

Trade flows and import barriers relate to all 10 CEECs, export barriers relate to the 5 countries of the first round of negotiations

Import barriers are import-weighted averages of the EU common external tariff (CET), calculated on the basis of over 5000 tariff lines (6-digit level of the Harmonized System), and using country-specific imports from the CEECs (in percent of GDP) as weights. Analogously for non-tariff import barriers (NTBs).

Export barriers are defined as CEECs tariff rates, similarly averaged across commodities using country-specific exports (again in percent of GDP) to the CEECs as weights. In all cases, tariffs are post-Uruguay round applied MFN rates.

Source: OECD International Trade by Commodities Statistics (ITCS) and OECD Indicators of Tariff & Non-tariff Trade Barriers. For more details on data sources and definitions, see Kohler (1999, and 2000).

Table 2: **Burden sharing for eastern enlargement among EU15 countries in % of GDP**

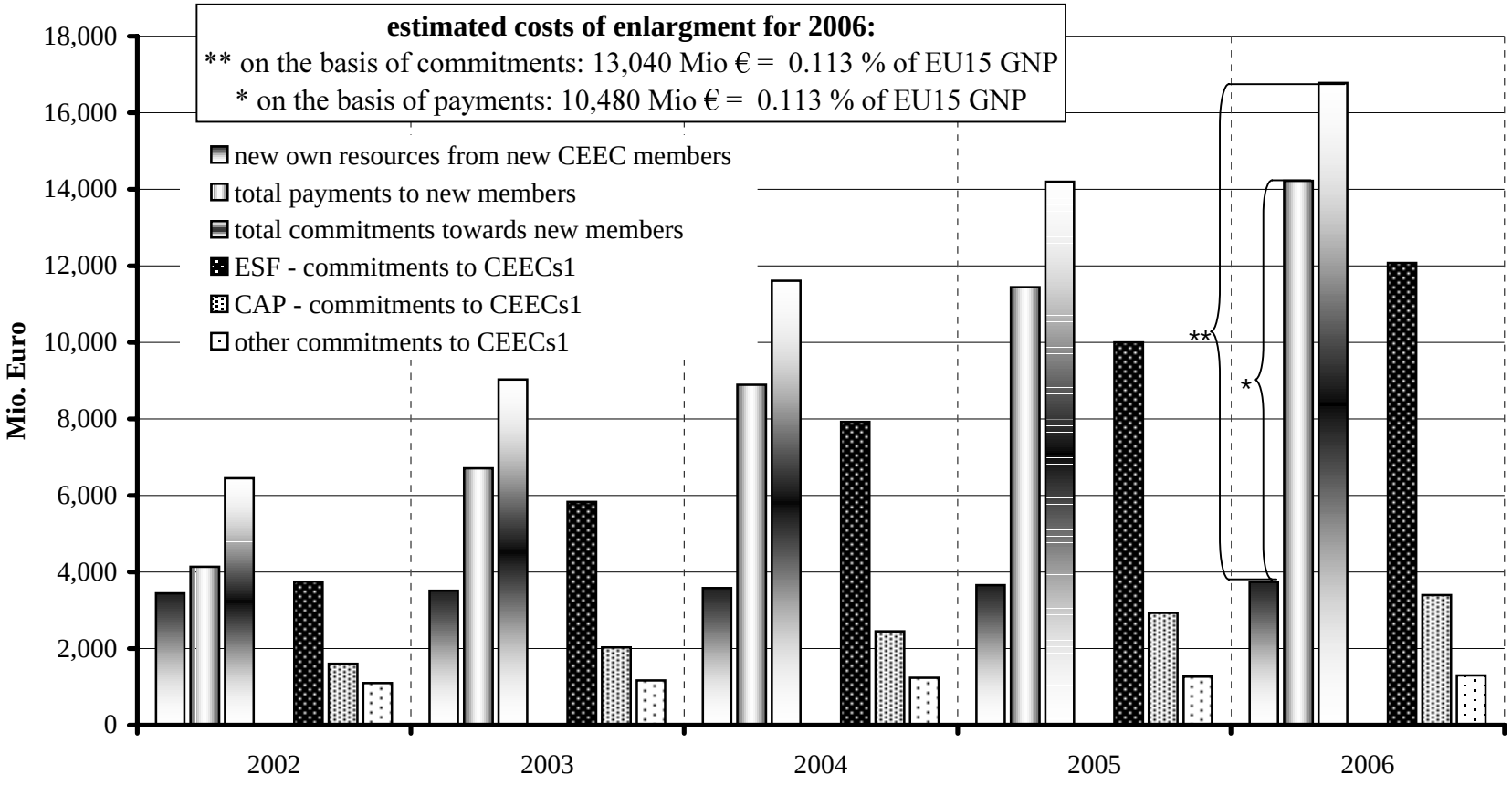
Country	CONTR			CAP			ESF		
	CEECs 1		CEECs1+2	CEECs 1		CEECs1+2	CEECs 1		CEECs1+2
	(#)	*	(#)	(#)	*	(#)	(#)	*	(#)
Belgium	0.225	0.178	0.448	0.127	0.091	0.231	0.401	0.288	0.674
Denmark	0.180	0.143	0.359	0.252	0.181	0.460	0.070	0.050	0.118
Germany	0.190	0.150	0.378	0.088	0.063	0.160	0.070	0.050	0.117
Finland	0.171	0.136	0.341	0.157	0.113	0.286	0.135	0.097	0.226
France	0.178	0.141	0.354	0.210	0.151	0.383	0.077	0.055	0.128
Greece	0.183	0.145	0.364	0.720	0.519	1.312	0.756	0.543	1.269
Great Britain	0.129	0.102	0.257	0.109	0.078	0.198	0.069	0.049	0.115
Ireland	0.204	0.162	0.406	1.029	0.741	1.875	0.684	0.491	1.147
Italy	0.142	0.113	0.283	0.142	0.102	0.259	0.100	0.072	0.167
Luxembourg	0.189	0.150	0.377	0.043	0.031	0.079	1.674	1.202	2.809
Netherlands	0.249	0.198	0.496	0.155	0.111	0.281	0.071	0.052	0.120
Austria	0.191	0.151	0.380	0.133	0.096	0.242	0.071	0.051	0.119
Portugal	0.203	0.161	0.405	0.211	0.152	0.384	1.025	0.736	1.720
Sweden	0.198	0.157	0.395	0.108	0.078	0.198	0.055	0.040	0.092
Spain	0.190	0.150	0.377	0.277	0.199	0.504	0.409	0.294	0.686
Overall cost in % of EU15 GDP	**0.184**	**0.113**	**0.370**	**0.184**	**0.113**	**0.370**	**0.184**	**0.113**	**0.370**

Source: Keuschnigg & Kohler (1999), Appendix.

CONTR: Financing the cost through a proportional increase of contribution payments. **CAP:** Financing the cost through a proportional reeduction in return payments from common agricultural policy. **ESF:** Financing the cost through a proportional reduction in return payments from european structural funds.

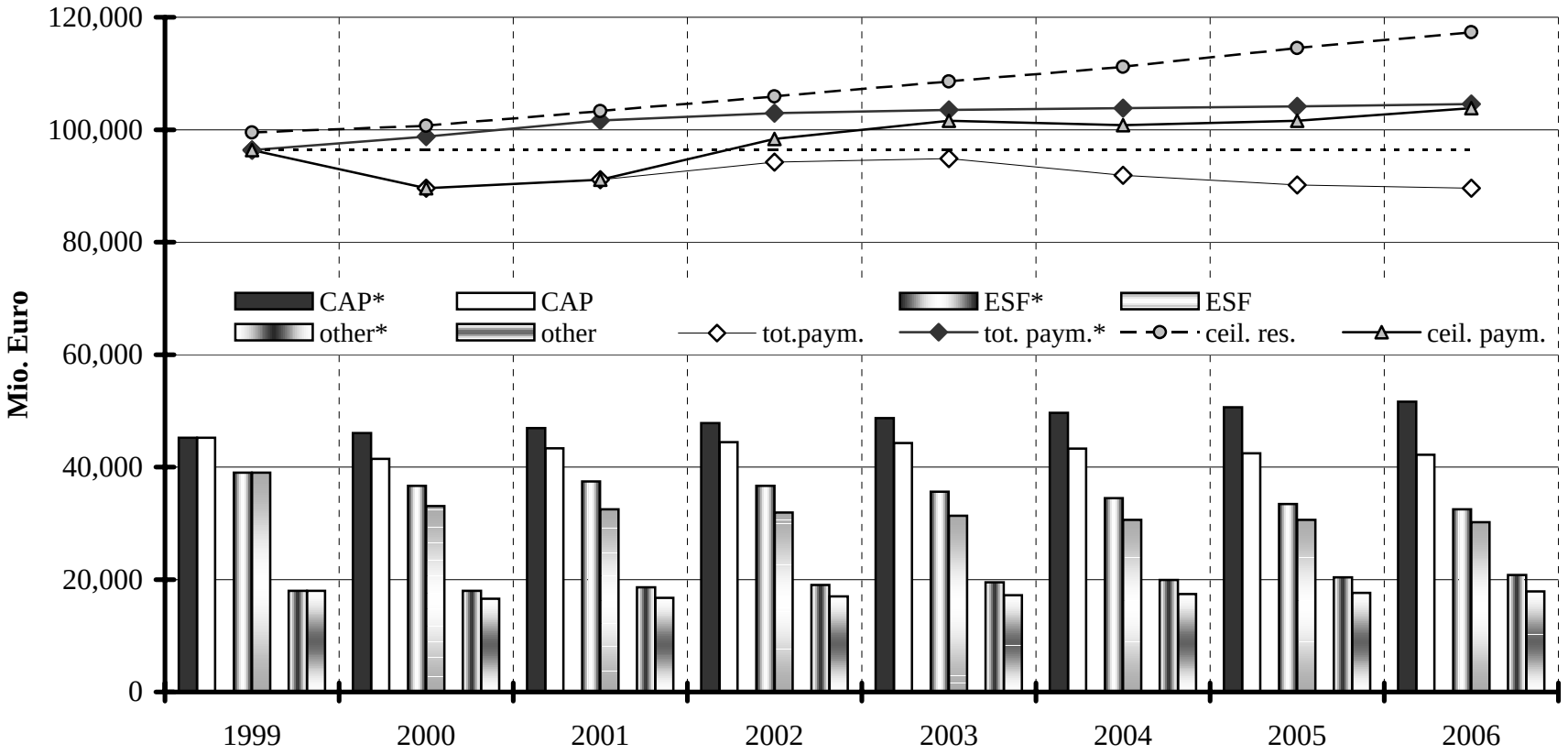
(#): Based on an econetric model of EU expenditure policy estimated by Breuss (1995). **(*):** Like (#), but adjusting values to the more optimistic scenario underlying the commission estimates; see fig. 1.

Fig. 1: **Financial framework for eastern enlargement to CEECs1 according to estimates by the European Commission**



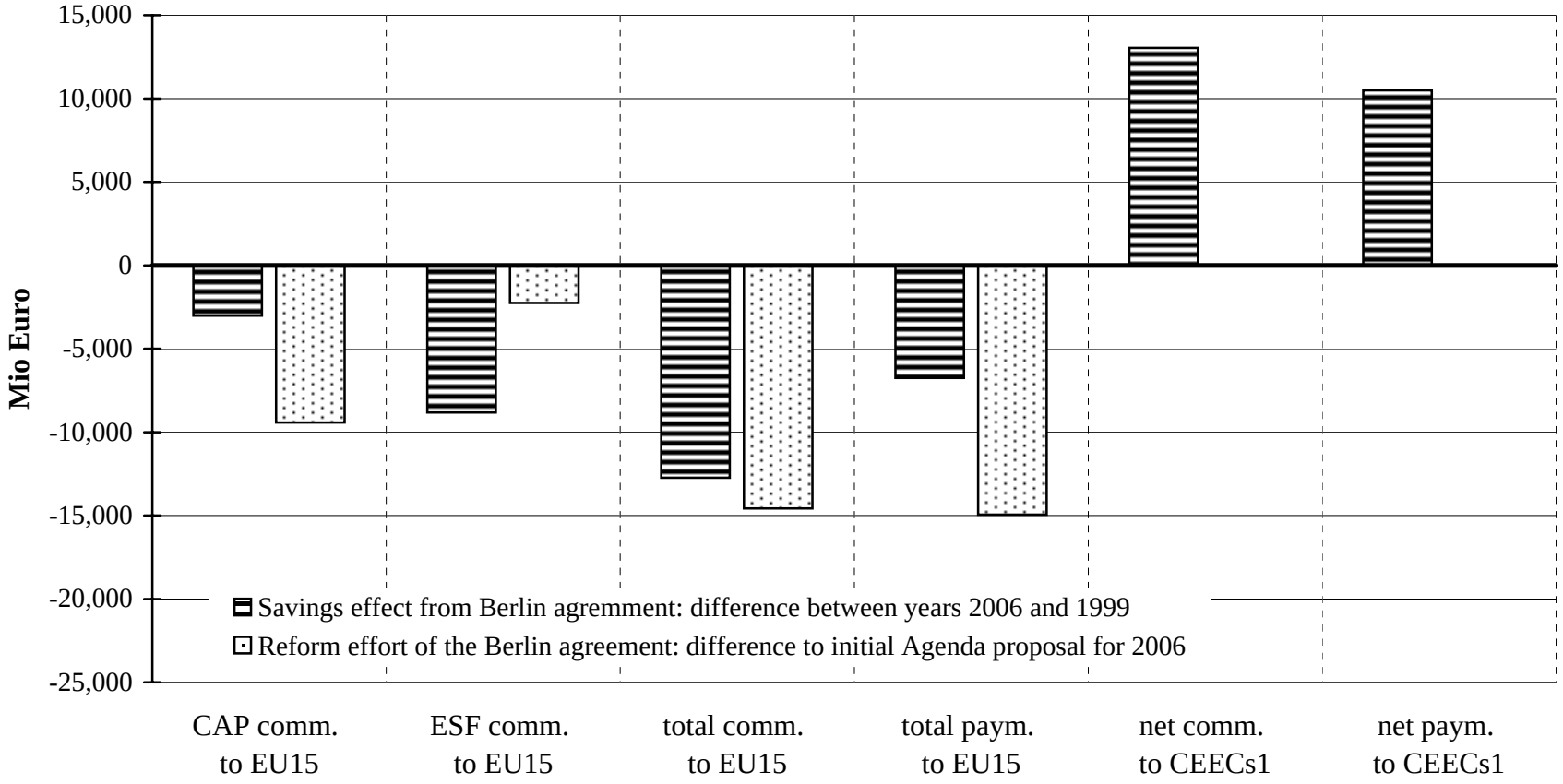
Source: European Commission (1999) and European Council (1999).

Fig. 2: **Financing enlargement - financial framework for EU15 according to the Berlin summit of 1999**



Source: European Commission (1999) and European Council (1999). A * (black shades) indicates values according to the pre-Berlin financial framework presented in European Commission (1998b). All bars are appropriations for commitments. "ceil." indicates ceilings for payments and commitments, respectively.

Fig. 3: **Financing enlargement - estimated payments and commitments to EU15 and CEECs: 2006 projections vis a vis 1999 values**



Source: European Commission (1999), European Council (1999), and European Commission (1998b). "comm." and "paym." indicate appropriations for commitments and payments, respectively.