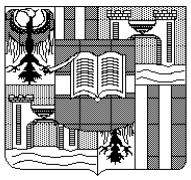

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An Incumbent Country View on Eastern Enlargement of the EU Part II: The Austrian Case

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Abstract

In part I of this paper, we have presented a general treatment of the welfare effect of an eastern EU enlargement on incumbent countries. Part II now takes a closer look at the Austrian case. We first present a few descriptive statistics on the role that east-west trade, as well as the pertinent trade barriers, play for the Austrian economy. We then argue that a numerical simulation, based on a suitably specified general equilibrium model, is an appropriate way towards a full evaluation of the welfare and distributional consequences of enlargement. Focussing on the Austrian case, we therefore implement an enriched and parameterized version of the general model used in part I of the paper. The model features savings and investment, based on intertemporal optimization, as well as sectoral allocation of capital and labor (skilled/unskilled), based on product differentiation and imperfect competition. In addition, the model incorporates a detailed representation of the government budget, featuring distortive taxes and subsidies, as well as transfers to domestic households, and financial transactions with the EU. The model allows us to take a quantitative view on both the costs and integrations gains of en eastern enlargement. Relying on a Hicksian welfare measure which incorporates both long-run effects and short-run adjustment, our numerical simulations indicate that, in the Austrian case, the integration gains outweigh the fiscal burden.

JEL Code: F02, F13, F15

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1 Introduction[1]

With an expansion into central and eastern Europe (CEE), the European Union (EU) is about to undertake the most fundamental change in its history. As the negotiations with a total number of 12 applicant countries (10 CEECs plus Cyprus and Malta) proceed to the more difficult parts of the agenda, the controversial nature of the endeavor increasingly comes to the fore. On the eastern part, we observe a certain disillusionment about some parts of the "acquis". But controversy is arguably more severe on the western part where incumbent countries are wary about damages that might be inflicted on their economies. To some extent, such damages appear avoidable by a suitable timing, including grace periods for some parts of the single market. But they are also seen as more fundamental in nature, as incumbent countries face a permanent change in their environment, both in the Brussels institutions and on more highly integrated markets for goods and factors. According to the Maastricht treaty, enlargement requires a unanimous approval of all present member states through their votes in the European Council. Hence, incumbents' wariness will prove the ultimate hurdle to be jumped for an eastern enlargement to become reality.

As always, the public controversy is highly focused, and susceptible to an unbalanced and sometimes even misguided view. It concentrates on consequences which are highly visible and easy to comprehend, while effects that are less obvious, and more difficult to comprehend and to pin down in terms of a few numbers, tend to be neglected. In part I of this article, we have argued that for this reason the fiscal burden of enlargement receives a disproportionate degree of attention, relative to the potential advantage of belonging to a larger, and therefore more valuable, union.

In order to be convincing and to achieve appropriate weight in the controversy, the idea of a larger union also being more valuable to incumbent countries needs to be given more substance and precision. To that end, part I of the paper has presented a general model which allows us to identify the principal channels through which the economies of present member states are affected by an enlargement of the union. In doing so, we have concentrated on overall welfare which should be an important, if not the ultimate, criterion for economic policy evaluation. The channels identified were trade creation and trade diversion, product variety and production efficiency through scale effects, accumulation and growth, foreign direct investment and, finally, migration. The upshot was a strong presumption that extending the existing Union vehicles of regional integration to eastern Europe should, in the long run at least, increase aggregate welfare of present member states. Indeed, it might do so to such an extent that, despite the fiscal burden, individual member countries stand to reap a net welfare gain from enlargement.

However, stating the mere possibility will not be enough to convince the sceptics. They will, understandably, want to see numbers. Moreover, one would want to have a somewhat richer picture of how enlargement affects present member states than a mere long-run aggregate welfare figure. It is often argued that economic integration increases aggregate welfare only at the expense of potentially severe temporary adjustment costs, as well as redistribution effects which may even be permanent in nature. To contribute towards a well balanced view on enlargement,

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therefore, economic analysis of enlargement must also cover short run adjustment, addressing in particular the costly reallocation of factors, and the factor price changes and distributional implications that present member states face from enlargement. All of this was left open in part I of the paper, and we now take it up in this second part.

By its very nature, the problem requires a case-by-case approach which duly recognizes the idiosyncratic characteristics of an incumbent country. In the first part, we have presented an overall picture of how present member states differ, both in terms of their trade exposure to applicant countries from CEE and their expected fiscal burden from enlargement. Here, we take a more detailed look at the Austrian case. Austria is a particularly interesting case to look at, because of its geographic proximity to the east and its close historic ties to some of the CEECs. Indeed, common sense holds that Austria should be the one instance of an incumbent country most likely to gain from enlargement, despite the fiscal burden. But while the stake seems particularly large for Austria, the adjustment costs implied are also more severe than for other countries. A detailed investigation is thus called for.

Even though Austria's exposure to CEE on goods and factor markets is much higher than that of other EU countries, the share of trade with CEECs is still rather modest. As evidenced by table 1, the bulk of Austria's trade in both goods and services is with existing EU partner countries, and trade with the applicant countries is also far lower than trade with the remaining non-EU countries. This holds true despite the significant shift that has taken place in the 1990s as a result of a general reorientation of CEECs' trade towards western (European) countries. It is interesting to note that the share of CEECs in trade has not changed a great deal between 1996 and 1999. This suggests that the effect on trade of systemic transformation in neighboring eastern countries has largely materialized by the mid 1990s. Thus, looking at EU enlargement as a "policy shock" which disturbs an equilibrium regional pattern of Austrian foreign trade, as we do in the simulation study below, appears a reasonable approach to take.

Based on these aggregate figures, existing trade with CEECs does not seem to provide a big leverage for efficiency effects from abolishing the formal and technical barriers. However, one should not jump to quick conclusions. First, trade may be low because of the remaining barriers. And secondly, the barriers should be expected to cut quite differently across sectors, and the impact of liberalization on a sectoral level may be much larger than aggregate figures would suggest. The extent to which an incumbent country is affected by the EU common external tariff (CET) and CEECs' tariffs, depends on whether or not its idiosyncratic structure of imports and exports, for whatever reason happens to be biased towards individual goods with higher or lower barriers.

In part I, we have presented aggregate information in this vein for each of the EU15 countries. Table 2 now gives a more detailed picture for Austria. The first two columns juxtapose Austrian imports from all 10 applicant CEECs in percent of domestic use with the corresponding import-weighted EU common external tariff. The final two columns depict Austrian exports to these countries in percent of domestic output, and the corresponding export-weighted tariff rates. In both cases, Austrian trade with CEECs was used when computing trade-weighted averages from highly disaggregated tariff information on more than 5.000 commodities of the 6-digit Harmonized System (HS), which was then converted to the 29 sector NACE classification. Table 2 is restricted to the manufacturing sectors.[2] We observe from table 2 that, their small share in Austrian overall foreign trade notwithstanding, CEECs are non-negligible sources for domestic

[2]More details on computation and further results are presented in the appendix to Keuschnigg & Kohler (1999).

commodity use, in some cases commanding a share in excess of 5 percent. The associated barriers for such imports are quite substantial too. Dependence on the CEECs is even more pronounced on the export side, with the share of output sold to these countries well above 5 percent in the majority of cases. Notice also that on average the level of formal trade barriers is higher for exports than for imports.

2 An Appropriate Method

If one interprets an extension of the single market to the CEECs as an economic "shock" to incumbent countries, tables 1 and 2 give a first impression of the size of this "shock" for the case of Austria. A satisfactory ex ante evaluation of its likely effects, however, requires an explicit model. In response to the renewed impetus that European integration has received since the Single European Act in the mid 1980s, economists have increasingly turned to simulation studies relying on calibrated general equilibrium models.[3] This approach is particularly appropriate if a rigorous quantification of welfare (or efficiency) effects is at issue, and even more so if questions of sectoral adjustment and distributional consequences are at stake; see part I.

In the early 90s, partial equilibrium modeling by Rollo & Smith (1993) has revealed that the adjustment problems arising in EU countries from increased east-west trade would probably be within the "normal experience of economic change". At the time, this finding was turned against the idea that contingent protection would be needed to cushion the trade effects of opening borders to the emerging market economies in the east. Drawing on gravity projections for east-west trade, Gasiorek et al. (1994) were the first to take an explicit general equilibrium perspective, in order to identify welfare and factor price changes from increased east-west trade. They obtain results which, by and large, support the Rollo–Smith findings. Brown et al. (1997) have used the well known Michigan Model of World Production and Trade, also a general equilibrium model, in an attempt to delineate possible effects from an eastern Enlargement of the EU to the Czech Republic, Hungary and Poland. Largely focussing on the trade liberalization measures of the so-called Europe Agreements, they conclude that the welfare increase from trade liberalization is sizable for eastern European countries, ranging from 3.8 percent to 7.3 percent, while the gains to EU countries are very small, between 0.1 and 0.2 percent. These figures, if juxtaposed with the likely fiscal burdens from EU enlargement that we have identified in part I of the paper, cast doubt on whether incumbent countries are likely to benefit from an eastern enlargement of the Union. This view is reinforced by Baldwin et al. (1997) who present a detailed treatment of the full enlargement scenario, both from an incoming and incumbent countries' perspective. Their estimated long-run real income gain for incumbent EU countries is a mere 0.2 percent, while even in a conservative scenario eastern new members gain a sizable 1.5. In a more optimistic scenario, featuring a cut in risk premia for foreign direct investment in CEECs, the gain for the CEECs is as much as 18.8 percent.[4] Again a simple subtraction would suggest that, on an EU-wide level at least, the real income gain from enlargement for incumbent countries is largely offset by the estimated fiscal costs. However, common sense suggests that this EU-wide estimate masks considerable differences between individual countries. Important additional insights should therefore be revealed by relying on country-specific models. Moreover,

[3] A brief literature survey can be found in Keuschnigg & Kohler (1999).

[4] See the first part of out article for a principal treatment of the welfare effect of a cut in such risk premia.

it is important to distinguish real income gains from economic welfare. A long-run increase in real income might require significant short-run adjustment cost, such as foregone consumption.[5] Therefore, a comprehensive welfare measure must duly take account of both the short and the long run. And finally, a consistent welfare evaluation requires that the fiscal costs of enlargement be treated as an integral part of the model used to identify the market integration effects. We now turn to a simulation study which satisfies these needs, in order to see if Austria is indeed a beneficiary of eastern enlargement.

2.1 The Simulation Model

Our simulation model must be thought of as an enriched and parameterized version of the general equilibrium model that we have used in part I to identify the principal channels through which welfare effects of EU enlargement come about. The model is *enriched* by important real-world-features, such as overlapping generations of households with uncertain life-time, installation cost for accumulated physical capital, as well as (exogenous) labor-saving technical progress and population growth. Moreover, employing a full-fledged dynamic specification of both savings and investment allows us to trace out the entire *adjustment path* in addition to the steady state effects highlighted before. Perhaps most importantly, it features a detailed account of public expenditure and revenues. *Parameterization*, in turn, implies choosing functional forms for all relationships, and assigning numerical values to all parameters, based on real world data featuring a specific classification of goods and factors. With a numerical representation at hand, the model can then be solved for alternative "policy variables" that are relevant for an EU enlargement (such as trading costs, tariffs, EU-payments), in order to obtain a *quantitative picture* of enlargement effects. The purpose, thus, is to go beyond theoretical reasoning and attach numbers to the impacts that Austria may expect from an enlarged Union.

Starting with the *public sector*, we first note that the government is affected by enlargement not only via the financial framework of the Union, but also by changes in trade barriers and commodity prices for its procurement, and by a change in the tax base. Hence, the enriched model features a whole array of distortive taxes, such as an income tax, a wage tax, social security contributions, as well as a value added tax and various specific excise taxes. On the expenditure side, we have public procurement which is modeled in full commodity detail, public employment, subsidies to domestic industry and agriculture, and transfers to domestic households, as well as payments to and from the European Union. We consistently close the government budget by an endogenous adjustment of transfers to domestic households, in order to guarantee that the ratio of public debt to GDP remains at 0.6, as required by the Maastricht treaty and the stability pact. As GDP rises, this implies that the government issues new debt on the capital market. Writing S_t^G for the primary government deficit in period t, and denoting government debt inherited from the previous period by D_{t-1}^G, we have[6]

$$D_t^G = (1 + i^*)D_{t-1}^G + S_t^G. \tag{1}$$

Firms stretch out investment across time as dictated by excepted returns to, and installation costs for new capital. We use χ_t^j do denote "dividend payments" by firms in industry j, defined

[5] Alternatively, if investment is financed by foreign borrowing, part of the long-run income gain is needed for servicing and repayment of debt.

[6] There is no need here to address steady state stationarity, hence we do not de-trend variables from technical progress and population growth.

as output minus labor cost and investment outlays. Abstracting from risk premia, χ_t^j, together with capital gains on firm values F^j, must yield a rate of return for capital owners which meets the ongoing market interest rate i^*. Hence,

$$F_t^j = (1+i^*)F_{t-1}^j - \chi_t^j. \tag{2}$$

Notice that dividends are defined net of investment outlays. Ruling out asset bubbles, this implies that firm values in each industry j are equal to expected future dividends. In turn, firm values determine a certain shadow value q_t^j of a unit of industry-j-capital *existing* at t. Under the so-called Hayashi-condition, q_t^j also represents the shadow value of a unit of *new* capital.[7] Now, if firms maximize equity values, subject to an equation of motion for capital stocks, their investment may be described by

$$I_t^j = I^j\left(P_t^I, q_t^j\right). \tag{3}$$

In this equation, P^I is an exact price index for investment which reflects the commodity composition of the capital stock. Firms thus compare the acquisition price of new capital with its shadow value. A lower acquisition price and/or a higher shadow value of capital initiate net investment and expansion.[8] Note that q_t^j reflects *expected* future dividends generated by additional capital, and thus of future prices relevant for industry j, as well as installation costs and investments subsidies. We thus acknowledge the industry-specific nature of the capital stock, whence capital reallocation across industries can take place only in the process of industry-specific accumulation.

Each of the overlapping generation of *households* relies on the capital market, in order to smooth consumption across time, depending on expected life-time earnings and present and future commodity prices. Drawing on Blanchard (1985), we obtain a convenient aggregate representation of the household side where aggregate consumption of skill-type i individuals during period t, C_t^i, depends on $\mathcal{W}_t^i$, the entire wealth of such individuals, as of the beginning of period t:

$$P_t^C C_t^i = \Omega_t \times \mathcal{W}_t^i. \tag{4}$$

Note that P_t^C is an exact price index which represents consumer preferences identically for both skilled ($i = s$) and unskilled households ($i = u$). Wealth includes all *expected* future labor income (i.e., human capital) plus transfers, as well as all financial wealth held at t. The marginal propensity to consume, Ω_t, is a complex function of present as well as *expected* future commodity prices, the interest rate, the rate of time preference, and the intertemporal elasticity of substitution which we assume to be constant (and the same for both skill-groups).[9] If W_t^i is current disposable wage income (including transfers), holdings of financial wealth A_t^i evolve according to

$$A_t^i = (1+i^*)A_{t-1}^i + W_t^i - P_t^C C_t^i. \tag{5}$$

Households may hold financial wealth in domestic equity (firm values) F^j, government debt D^G, and net foreign assets D^F which may, of course, also be negative. In the following, we write

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[7] If $\Phi(I_t, K_{t-1})$ denotes the amount of investment required in period t in order to add I_t units of capital to the inherited capital stock K_{t-1}, then installation costs imply $\Phi(I_t, K_{t-1}) > I_t$. The Hayashi-condition requires that $\Phi(I_t, K_{t-1})$ be homogeneous of degree 1 in I_t and K_{t-1}; see Hayashi (1982). In our model, we specify $\Phi(I_t, K_{t-1}) = I_t\left[1 + (\psi/2)(I_t/K_{t-1})\right]$.

[8] Further details on this mechanism in the context of our simulation model is presented in Keuschnigg & Kohler (2000).

[9] More details on consumption in this model may be found in Keuschnigg & Kohler (1997).

$A_t = A_t^s + A_t^u$, $W_t = W_t^s + W_t^u$ and $C_t = C_t^s + C_t^u$. *Capital market equilibrium* in terms of stocks thus implies $A_t = \sum_j F_t^j + D_t^G + D_t^F$. From equations 1, 2 and 5, we then have:

$$D_t^F = (1 + i^*) D_{t-1}^F + S_t^F , \tag{6}$$

where S_t^F is the trade surplus. Thus, the simulation deviates from our earlier theoretical treatment also in allowing *unbalanced trade*. Capital market equilibrium may alternatively be expressed in flow terms by consolidating equations 6, 2, 1, and the aggregate version of 5:

$$\sum\nolimits_j \chi_t^j + S_t^H = S_t^G + S_t^F . \tag{7}$$

Hence, dividend payments plus $S_t^H = W_t - P_t^C C_t$, primary household savings out of labor income, are absorbed by the primary government budget or else reflect a trade surplus. The complete symmetry of equations 6, 2, 1 reflects the underlying assumption of *perfect substitutability* of all assets. In terms of international finance, therefore, our model features the assumption of perfect international capital mobility at a given world interest rate i^*.

Parameterization of the model implies choosing specific functional forms for preferences, as well as production functions. As regards *households*, we employ a constant rate of time preference, and a constant intertemporal elasticity of substitution. Intra-temporal preferences allow for a choice between overall consumption and leisure, so that labor supply is endogenous. In addition, P^C relies on the familiar multi-level nesting, distinguishing goods from 29 categories, each of which features imperfect substitution of the Armington-type between goods supplied by domestic firms, and goods from other Union countries, from potential CEE member countries, as well as imports from the rest of the world. Finally, on the lowest level of aggregation, preferences feature love of variety with a constant elasticity of substitution, as suggested by Dixit & Stiglitz (1977).

Within each of our 29 industries, *domestic producers* use three types of primary inputs. Skilled and unskilled labor form a composite labor input with a constant elasticity of substitution (CES), which, in turn, generates value added using capital. While capital stocks are industry-specific, we assume both skilled and unskilled labor to be perfectly mobile between industries. Final output additionally requires intermediate inputs from other industries which may be of domestic origin, or imported goods. In perfect analogy to households, firms always choose a cost minimizing composition of such inputs from different sources. Technology features economies of scale in that each firm has to incur a fixed amount of value added each period, independently of the amount produced. Producers act in an environment of monopolistic competition, where each firm charges a monopolistic markup over marginal cost, but where free entry and exit of firms drives profits to zero in each period. This determines the size and number of domestic firms, both of which, however, will change in the process of accumulation and capital reallocation.[10]

A corresponding regional and commodity disaggregation is employed for *export demand*. We may reasonably invoke the small-country assumption in assuming that, from an Austrian perspective, the overall level of foreign demand as well as the different upper level price indices in foreign countries are given. Each domestic industry then faces downward sloping demand schedules for exports to other countries within the EU15, exports to new members from CEE, as well as to the rest of the world. Using the above mentioned functional forms (Armington, CES), we arrive at constant elasticities of export demand for each of these destinations.[11]

[10] See also Part I of the paper, as well as Keuschnigg & Kohler (2000).

[11] Details may be found in Keuschnigg & Kohler (1999, Appendix).

2.2 Equilibrium in the Short and Long Run

General equilibrium involves market clearing for all goods and factors, plus fulfillment of an appropriate condition for the government budget *at each point in time*. This involves condition (10) in part I of the paper, where the supply and demand functions must now be seen as arising from the above mentioned parameterizations of domestic preferences and technology, as well as exports. Our notion of equilibrium is now augmented by market clearing for both types of labor and industry-specific capital, plus the Maastricht restriction on public debt. These conditions determine domestic commodity prices, wage rates for both skill-groups, a competitive capital rental, and government transfer to domestic households; see above. From the above *dynamic specification*, it follows that successive temporal equilibria are interconnected in two ways. First, sectoral capital stocks, as well as the government debt and net foreign assets, are inherited from the *past*. By the same token, accumulation decisions of the present equilibrium determine the initial conditions of the subsequent temporal equilibrium. And secondly, any temporal equilibrium is connected to the *future* through *expectational* variables. In our case, these are future labor income, determining the value of human capital, as well as future commodity prices which determine the marginal propensity to consume, Ω_t, as well as the shadow value of capital, q_t^j. When solving for an *adjustment path*, we employ the assumption of *perfect foresight*. More specifically, the calculated sequence of temporal equilibria is characterized by two conditions. a) The backward connection of successive equilibria turns out to corroborate ex post the expectations that underlie their forward connection, and b) the sequence leads to a *steady state* where the relevant variables are stationary.[12]

It is worth pointing out that this method allows us to employ a *welfare measure* which, though still very much in the spirit of the first part of our paper, is much more elaborate and comprehensive than the two terms $\mathrm{d}C^s$ and $\mathrm{d}C^u$ that we have focussed on before. Specifically, having solved for the full equilibrium adjustment path of all prices and wages, we can now use intertemporal preferences to calculate by how much life-time wealth $\mathcal{W}_t^i$ of a certain generation of skilled or unskilled households would need to change for it to achieve the same level of expected life-time utility in a case where enlargement does not take place, as in a case where it does. Obviously, this is a measure of wealth compensation in the spirit of a *Hicksian equivalent variation*. We calculate such measures separately for *each generation* of households, which is important because different generations are affected quite differently, depending on the amount of financial wealth that they own from pre-enlargement time, and on how much of the potentially painful adjustment coincides with their expected life-time. We then construct an *aggregate* welfare measure by appropriately discounting and then summing up these wealth compensation figures across generations.[13] It is important to bear in mind that this aggregate measure, while masking all distributional concerns, does fully incorporate all *adjustment cost* for the economy at large. Such adjustment cost not only comes in the form of installation cost for accumulated capital, but more generally in terms of forgone consumption necessary to facilitate investment and growth.

[12] Given that we have an exogenous increase in the population size as well as an exogenous labor-saving technological progress, the relevant variables to look at are per efficiency unit.

[13] See Keuschnigg & Kohler (1997) for more details.

2.3 Empirical Implementation

The next step draws on real world data, in order to obtain an empirical implementation of this model which then facilitates a numerical simulation, generating the desired quantitative picture of enlargement effects for the Austrian economy. Relying on a vast array of different data sources, we first construct a data set which represents the Austrian economy in such a way, that it may be generated as an equilibrium solution to the model. This requires a high level of detail, as well as theoretical consistency. And, above all, it requires a suitable choice of numerical values for the parameters involved. Adding econometric estimates where available, parameter values are therefore determined in such a way that the equilibrium conditions are met. Calibration of this kind is a standard way of implementing large scale economic models towards policy simulation.[14] In our case, the procedure is complicated by a host of dynamic relationships involved. Calibration employs each of these conditions in steady state form. The initial, or *benchmark equilibrium* must thus be interpreted as a *steady state* equilibrium. In our case, it relates to 1996. However, given the underlying assumption of an exogenous trend in productivity and population growth, the benchmark for policy evaluation is an underlying *balanced growth path* with an exogenous growth rate.

This benchmark equilibrium growth path incorporates certain values of several policy variables which will be subject to change, once enlargement takes place; see table 3. Solving the model for alternative values of these variables, as expected in a post-enlargement scenario, generates an new growth path. A full solution involves both, a new long-run path of steady state growth, and a unique transition path from the initial benchmark equilibrium to the new steady state. Comparing these with the benchmark path of balanced growth gives a rich picture of enlargement effects.

3 A Qantitative View on Eastern Enlargement

3.1 The Enlargement Scenario

From an economic point of view, an eastern enlargement of the EU may be seen as a policy induced change in the economic environment for consumers, producers and investors, as well as the government. Our quantitative view rests on a specific decomposition of this policy which reflects the historic sequence of events, as well as the crucial channels through which enlargement effects are likely to arise. Table 3 lists the individual components of the enlargement scenario. It starts with the Europe Agreements which are already in effect, but which must nonetheless be seen as an integral part of the enlargement process; see part I of the paper. While table 3 focusses on average magnitudes, the computational model, of course, incorporates the full pattern of sector specific trade barriers.[15] It is worth noting that, on average, the tariffs to be removed are higher for CEECs than for present members. Scenario B features enlargement

[14] A detailed account of all data used, including all data sources, as well as each and every step of calibration may be found in the appendix to Keuschnigg & Kohler (1999).

[15] The trade barriers reported in table 3 are calculated as trade-weighted averages from a very detailed data base, covering over 5.000 commodities of the 6-digit Harmonized system; see OECD (1997, 1998). Austrian tariffs use Austrian bilateral imports from CEECs as weights, while CEECs tariffs use bilateral Austrian exports to CEECs. NTB frequency ratios were used to calculate a pattern of sector specific incidence of real trading costs. See the appendix to Keuschnigg & Kohler (1999).

to a first group of five countries with whom negotiations have begun in 1998, following the Luxembourg summit of 1997, while scenario C extends enlargement to those countries who have entered negotiations in 2000, in accordance with the Helsinki summit of 1999. This summit divide is a convenient way to capture the fact that some countries are likely to join earlier than others, although the Helsinki summit has stressed the "open race nature" of the negotiations. Enlargement incorporates a mutual removal of all formal barriers remaining after the Europe agreements plus adoption of the common external tariff (CET), as well as an extension of full internal market status which we model by means of a 5 percent reduction in real trade costs.[16] In addition, an incumbent country will face a certain fiscal burden from enlargement. Part I of the paper presents a detailed treatment of possible budgetary implications. The subsequent simulation study assumes that enlargement will be financed by means of a reduction in European Structural Funds (ESF) payments to incumbent countries. In the Austrian case, the resulting burden amounts to a modest 0.071 percent of GDP.[17]

Extending the Common Agricultural Policy (CAP) to accession countries implies certain sectoral repercussions for present member countries. The CAP implications of enlargement have, at times, caused much public concern. Notice, however, that the fiscal implications of the CAP, i.e., the net transfer of funds from old to new eastern members, is fully covered by the burden mentioned before (item e of table 3). Therefore, component B.III of the scenario addresses the incentives for consumers and producers arising from changes in agricultural prices and subsidies. In this regard, a much more dramatic change will be observed in CEECs than in incumbent countries of the EU15. Under the present price support scheme, farm imports from CEECs are available to EU consumers at threshold prices, while subsequent to enlargement they will be available at intervention prices. The difference between threshold and intervention prices thus determines the scope for effective price reductions that might be felt by EU15 consumers. By design of the CAP, this difference is very small. In terms of model mechanics, the abolition of agricultural tariffs on eastern farm produce is paralleled by an increase in prices to intervention levels. We take the difference between the EU and CEEC1 countries to measure this expected price change (line f in table 3).[18] As farm prices in CEECs will be raised to higher EU levels, EU15 exports to the new members will no longer need to be subsidized to the same extent. (line g).[19] A final effect may arise from an increase world supply of farm products from more heavily subsidized farmers in new eastern members. Anderson & Tyers (1995) estimate a resulting 2

[16] Part I contains a more detailed treatment of the single market implications, including a rationale for the 5 percent figure assumed. We use detailed information on NTBs for over 5.000 commodities of the 6-digit Harmonized System (HS), in order to implement inter-sectoral variation of technical barriers which are removed through the single market; see again the appendix to Keuschnigg & Kohler (1999).

[17] It is important to point out here that this burden covers the full cost of enlargement, including transfers through the CAP. ESF in table 3 refers to the modeling assumption that this cost is fully financed by a cut only in ESF payments, keeping the other two main pillars of the financial framework, viz. contribution payments and CAP expenditures, unchanged; see table 2 of part I, and Keuschnigg & Kohler (1999).

[18] If t_E and t_U are the external tariff rates of the CEEC1 countries and the European Union, respectively, then the assumed percentage change for eastern farm prices from the point of view of the Austrian consumer is equal to $(t_U - t_E)/(1 + t_E)$.

[19] If s_U is the ad–valorem export subsidy of the EU prior to enlargement, the demand price for EU exports to the east is $p(1+t_E)/(1+s_E)$. The farm price for competing eastern products changes as indicated in the previous footnote, while the eastern demand price for Austrian farm exports will be reduced as a consequence of abolishing t_E. We assume that in the process of enlargement this subsidy s_E is changed in such a way that this demand price relative to that of competing eastern farm products will, on impact, remain the same.

percent fall in world prices. Line h in table 3 assumes that the EU will abstain from raising its variable import levies and export subsidies to protect its farmers from this world price reduction.

As a separate further element, we consider migration. Due to Austria's geographic position, immigration is a particularly touchy issue. Although the gap will narrow as new members catch up to western income levels, migration incentives are likely to remain for some time even under EU membership. If the freedom of movement, as normally guaranteed by the single market program, is fully extended to new CEE members, the Austrian economy might face sizable *inward migration* from the east. However, reliable estimates of likely orders of magnitude are extremely hard to come by. Also, these flows will shrink over time, eventually disappearing altogether once a new equilibrium geographical distribution of the European labor force is attained. One of the issues that have yet to be settled in the accession negotiations concerns a possible *grace period* before new members are extended an unlimited right to move to western member countries. Drawing on migration research and historical parallel, Walterskirchen (1998) estimates an inflow of 41,800 (31,600) people from neighboring CEECs in 2005 (2015) if by that time all political migration barriers are removed, with declining migration rates thereafter. Relying on the more conservative of these two estimates, we assume in our scenario that migration will start with an initial inflow of 30,000 people in year 8 post enlargement, falling to zero in linear manner until period 18 after enlargement. Moreover, we assume that two thirds of the migrants are unskilled. Table 3 shows that the resulting cumulative migration flows are 2.1 percent and 10.5 percent of benchmark supply for skilled and unskilled labor, respectively. All migrants are assumed to enter as bare labor, without any claims on domestic or foreign assets. These are massive movements, albeit spread over a 10 period time span. In view of recent research on intra-European migration, the appropriate interpretation is probably one of an upper bound scenario; see in particular Faini (1999).

3.2 Macroeconomic Effects[20]

Starting from the pre-enlargement *benchmark equilibrium* outlined in the previous section, we now solve the model under alternative policy variables as described in table 3. This gives us a *counterfactual equilibrium* which, compared with the benchmark equilibrium, identifies the effects of enlargement on the Austrian economy. Although the model does allow us to fully trace out *adjustment paths* for all variables, for the sake of a concise presentation we largely restrict the presentation to *steady state effects.* Thus, unless stated otherwise, the figures presented below are percentage changes from the benchmark equilibrium to the post-enlargement, counterfactual steady state. It should be remembered, however, that the two equilibria must be viewed as balanced growth paths with an exogenous growth rate. Hence, if we report an x percent change of some variable below, this must be interpreted as saying that in post-enlargement balanced growth this variable follows a path which differs from the contemporaneous value of the benchmark growth path by x percent.[21]

[20] Simulation results obtained with an earlier and more highly aggregated version of this model are presented in Keuschnigg & Kohler (2000). The model implementation underlying this paper features a whole new parameterization based on more recent, as well as more disaggregated data. Moreover, it includes the more ambitious enlargement scenario which includes the "Helsinki-group" of countries; see above.

[21] Specifically, an x percent increase in GDP must *not* be interpreted as an increase in the GDP growth *rate* by x percent, but instead that the post-enlargement GDP growth path is on a *level* which is x percent higher than would otherwise be the case, but which features the same exogenous growth rate.

A comprehensive overview of macroeconomic effects is given in table 4. The presentation mirrors the above scenario decomposition, whereby the columns must be read in a cumulative fashion. For instance, the CEEC1 column refers to the *cumulative* effect of the Europe Agreements plus an extension of the Single Market to the CEEC1 countries, and analogously for columns further to the right. This allows us to highlight the fact that different elements of the scenario may work in opposite directions, while at the same time keeping an eye on the overall effect of enlargement.

Although the underlying model is rather complex, the results can largely be understood by drawing on the fundamental economic logic of supply and demand. Extending the preferential EU trading bloc entails the familiar trade creation and trade diversion effects for incumbent countries. Specifically, domestic demand turns away from domestic and intra-Union suppliers (trade creation), as well as from the rest of the word (trade diversion) to new member countries. On the other hand, domestic suppliers face increased export demand from these countries. But there is also a shift in domestic supply schedules, caused by capital stock adjustments which are, in turn, determined by cost savings on both imported intermediate and capital goods due to lower trade barriers. Sectoral details of these demand and supply effects will be dealt with below. Table 4 presents the picture emerging from a macroeconomic perspective. Thus the combined effect of the export boom and cheaper intermediates and capital goods initiates an expansion of the capital stock amounting to 1.783 percent in the long run for an enlargement to all 10 applicant countries (CEEC2). This mirrors a lower average price index for intermediate goods ($\bar{P}^Q$), driving up the marginal value product of capital, and a lower acquisition price of capital (P^I).[22] As capital is not the only input in production, the associated increase in GDP (Y) is lower, but there is still a notable growth-bonus of enlargement also in terms of GDP and aggregate consumption (C) . Notice that expansion takes place both in terms of an increase in firm output ($\bar{y}$) and an increase in the degree of product differentiation, i.e., the number of varieties produced ($\bar{n}$). We thus observe both, a beneficial efficiency and variety effect. A larger capital stock is reflected also in higher overall firm values (F^j), but since this long-run effect is somewhat lower than the increase in the value of financial wealth and overall consumption, there is a matching increase in the level of net foreign assets (D^F).[23]

A larger capital stock implies higher labor demand, and thus an equilibrating wage increase. The interesting thing to note here is that there is no increase in the wage gap between skilled and unskilled labor. In the CEEC1 scenario, for instance, the wage rate for skilled labor increases by 1.104 percent while for unskilled labor it rises by 1.225 percent. This pattern holds up for the CEEC2 scenario, and it runs counter to widespread fear that integrating less developed areas into an existing trade bloc might aggravate income inequality. The reason why this is not borne out in our case is quite straightforward. As in many less-developed countries, the CEECs feature a relatively high level of import protection for low-skill-intensive sectors of their economies, compared to the level of protection that these sectors enjoy in incumbent countries from trade barriers of the EU. As a result, while enlargement does imply that Austrian low-skill labor loses some of its import protection, it also implies that it receives significant relief from less heavily protected export markets for low-skill products in new member countries of CEE.[24]

[22] See the characterization of capital accumulation above, as well as in part I of the paper.

[23] See the above characterization of capital market equilibrium. In this model, the steady state change in overall financial wealth (A) is always equal to the change in the value of consumption (PC).

[24] Keuschnigg & Kohler (1999) give more detailed information on these relationships.

Given these simultaneous shifts in supply and demand, the effects on domestic producer prices is unclear a priori. Table 4 reveals that for the economy at large there is an average price increase ($\bar{p}$) which is pretty much the same, quantitatively, for both enlargement scenarios (CEEC1 and CEEC2). However, this does not feed into a higher consumer price index (P), since consumers benefit from lower trade barriers. Notice, moreover, that the CAP repercussions mentioned above do have a slightly mitigating influence on the producer price increase, due to lower world farm prices and vanishing subsidies for exports to CEECs. However, the CAP effect as such is very modest.

Given that part of domestic output is sold on export markets, higher producer prices also constitute a terms of trade improvement for the Austrian economy. For the enlargement scenarios, the terms of trade effect ($\bar{p}_{E1}$ and $\bar{p}_{E2}$) is heavily reinforced, indeed dominated, by the real trade cost reduction; see part I of the paper.[25] It is very important to realize that these terms of trade improvements do not mirror a terms of trade deterioration for the trading partner, in this case the CEECs. The reason is that the driving force here is a reduction in real resource use, made possible by extending the single market, rather than a reduction of a pure distortion (a tariff, say).

The terms of trade improvement is an important ingredient for the overall welfare effect of enlargement. As explained above, our welfare measure duly recognizes lost consumption and installation cost required for investment and growth. Specifically, it is based on a Hicksian equivalent variation of life-time wealth for all generations, including those suffering from the pressure of adjustment. The figures reported in table 4 (EV) rely on aggregate wealth compensation, as described above, which is then converted into a permanent annuity and expressed in percent of initial benchmark GDP. Thus, based on table 4, the Austrian economy would need a permanent transfer from abroad in the amount of 0.581 percent of its present GDP, in order to compensate internally all of its generations of households for a forgone enlargement. Two things are worth emphasizing. First, note that this figure is about half the long-run GDP effect (Y) which highlights the above mentioned problem of interpreting a long-run real income gain as a on-to-one welfare increase. The same holds true for welfare as compared to the long-run effect on consumption (C). And secondly, the percentage changes pertaining to EV and Y must not be interpreted as a change in the growth rate. It is a mere level effect, with an underlying exogenous growth rate which, by assumption, is not affected by enlargement.

The migration scenario differs from other scenarios in at least two important ways which merit additional attention. First, there is a pronounced effect on the wage spread, with unskilled labor suffering a 4.6 percent wage decline, and skilled labor receiving a 2.383 percent gain. This reflects the above assumption that the inflow of labor is heavily biased towards unskilled labor; see table 3. On the other hand, non-migrant domestic residents *as a whole* experience a much larger welfare increase than in the non-migration scenarios (CEEC2, for instance); this reflects the well-known "immigration-surplus". The coexistence of a positive "immigration-surplus" and a potentially pronounced redistribution effect is exactly what theory leads one to expect in such a scenario, whereby the size and direction of the redistribution effects depends on the precise way in which the composition of migration flows differs from the composition of the

[25] For scenarios without a real trade cost reduction, the difference between the terms of trade effect ($\bar{p}_R$, for instance) and the domestic producer price effect ($\bar{p}$) reported in table 4 is due to the use of different weights when forming aggregates across sectors: while $\bar{p}$ uses sectoral outputs, the terms of trade variables use trade figures as weights.

pre-existing domestic labor force.[26] The migration scenario in table 4 conveys a message which goes well beyond the confines of the underlying model, and which probably highlights the most controversial issue in the whole enlargement debate. The message is that if there will be a significant enlargement-induced labor inflow into an incumbent EU15 country, then there will likely be a benefit for domestic inhabitants as a whole, but this will typically entail a troublesome redistributive effect which poses a political problem. Identifying these effects in quantitative terms is an important prerequisite for a workable solution.

Let us finally turn to the fiscal implications. Line T repeats the *level* of Austrian *net* transfer payments to the EU, in percent of GDP, according to the various scenarios. Thus, since EUR-AGR does not yet involve enlargement, table 4 indicates that the pre-enlargement net contribution rate is 0.456 percent which is increased to 0.527 and 0.575 percent in event of enlargement to CEEC1 and CEEC2, respectively, if the cost is absorbed by a cut in ESF funds on the EU-level. Despite this fiscal burden, and strictly observing the Maastricht debt criterion (see above), line z of table 4 indicates that enlargement affords the government room for an increase in transfer payments to domestic households. The explanation lies in a larger tax base, caused by aggregate expansion (see above). In a sense, then, one can say that from a fiscal perspective, EU enlargement is a "self-financing" policy. This is not to say that the Austrian government will, in fact, increase these transfer payments by 1.496 percent as a result of enlargement to CEEC2. Instead, the calculated increase in possible transfer payments is but a vehicle to capture the net effect of enlargement on the government budget.

3.3 Sectoral Effects

For the Austrian economy at large, an eastern enlargement thus holds a growth bonus. However, the forces at work are unlikely to be the same for all sectors of the economy. Hence, we should expect a certain degree of inter-sectoral variation for output and price effects, as well as trade. Some of this is evidenced in tables 5 through 7 for the CEEC2-enlargement scenario. In terms of table 3, the underlying scenario for all of these tables is A through B.III. For a better understanding, the tables include two sets of *elasticity values* which are crucial for demand reactions behind the sectoral effects. First, the *Armington elasticities* (ARMING) capture the degree of substitutability in demand between different countries of origin. In our model, goods can be of domestic origin (H), goods from other suppliers within the Union (U), goods from the CEEC1-countries ($E1$), goods from the CEEC2-countries ($E2$), and goods from the rest of the world (R). The elasticity values are taken from the GTAP model.[27] The larger this elasticity the higher the substitution effect directing foreign demand towards home goods as a result of removing the foreign tariff (t_{E1}), and domestic demand from domestic suppliers to those from CEECs as a result of removing the Union tariff (t_U). The other set of elasticity values relate to substitution between between individual varieties of a given product. These may be called the *Dixit-Stiglitz elasticities*, determining the degree of imperfect competition and thus the markup of monopolistic prices over marginal cost. The higher this elasticity value, the lower the markups, and the higher, therefore, the degree of competition. To facilitate a more direct

[26] See Borjas (1999). For a detailed discussion on conditions under which an immigration surplus arises, see Kohler (2000b).

[27] See Hertel (1997), and the appendix to Keuschnigg & Kohler (1999).

interpretation we report the markups (η) instead of the elasticity values themselves.[28]

Many people expect *agriculture* to be among the hardest hit sectors. However, for reasons outlined above, it seems rather unlikely that farming will be all that much affected. How European farmers fare depends, first and foremost, on the level and design of the CAP, and not so much on how big the Union is. Of course, given the level and design of the CAP, the size of the Union and the specific characteristics of its constituent countries well determine how expensive the CAP turns out to be. And here one may, indeed, argue that an eastern enlargement will have an important indirect effect on the CAP, since extending it in its present form to incoming CEEC members will no doubt be rather expensive. However, our detailed examination of the Union's financial framework for the upcoming period from 2000 to 2006 in part I of the paper has not revealed any major adjustment that farmers would face in the way of reduced CAP payments.

Hence, we have only incorporated *indirect repercussions* that follow from extending the CAP to new members; see the policy table 3. These are also of a depressing nature, since demand is diverted away from home farm products, largely as a result of reduced world farm prices. But the effect is very modest in quantitative terms, with output contracting by 1.3 percent (table 5). Also, since there is a supply reaction in terms of a shrinking agricultural capital stock (–1.53 percent), the output decline is not coupled with a fall in domestic farm prices, but an increase by 0.36 percent. In simple terms, the supply schedule shifts even more than does the demand schedule. An important aspect worth repeating is that these are general equilibrium results, with an underlying assumption of full employment. Assuming that all resources freed by agricultural contraction are re-employed elsewhere may be regarded as overly optimistic, but, for a long-run view at least, it seems less disturbing than assuming all displaced agricultural labor is of zero value for the economy at large. Given the policy induced agricultural contraction, the assumed labor mobility thus to some extent explains the expansion observed for other sectors.

The rather large expansion of *transport equipment* (17.42 percent) may nonetheless come as a surprise. It is, however, explicable as a result of a large initial eastern tariff, the removal of which initiates a correspondingly large expansion of eastern demand. Also, as with agriculture, we need to bear in mind that there is a supply reaction, based on a 17.82 percent increase in the capital stock. Cheaper imported intermediate and capital goods as a force behind supply reactions are apparently of equal importance in this sector. The story, thus, is not only one of rising demand, as is evidenced by the fact that producer prices hardly rise in this sector. To put it once more into simple terms, the supply and demand schedules shift by roughly equal amounts. A similar explanation holds for *textiles and leather* which are shown to expand, despite the relatively large loss of initial tariff protection. Moreover, in these sectors the supply reaction seems to dominate, with a final effect of output expansion coupled with falling prices.

Looking at the trade effects in tables 6 and 7, we observe significant *trade diversion* (fall in D_R) in precisely those sectors where we have identified the largest expansionary effects: textiles and leather, as well transport equipment. But these are also the ones where the *trade creation effect* is largest (rise in D_{E1}, D_{E2}, E_{E1},and E_{E2}). This is the result of the *bilateral* nature of the policy in question, i.e., by the fact that liberalization takes place simultaneously for both imports and exports.

[28] The markups are given by $\eta = \sigma/(\sigma - 1) > 1$ where σ is the Dixit-Stiglitz elasticity. We employ an elaborate procedure to calibrate these elasticity values, using Austrian data on industry characteristics. See the appendix to Keuschnigg & Kohler (1999) for more details.

4 Summary and Conclusion

There is a certain presumption from a priori theoretical reasoning, as well as earlier studies of European integration, that an enlargement to eastern European countries should make the European Union more valuable for present member states. To see whether this is enough to compensate for the cost of enlargement, we need a precise welfare measure which is amenable to empirical quantification. This paper takes a quantitative view on enlargement, using an empirical general equilibrium model for the Austrian economy. Due to geographic proximity and its historical ties to the central and east European countries, Austria seems particularly well positioned to reap benefits from a closer integration of commodity markets that would materialize from an eastern enlargement of the European Union. At the same time, however, one must expect that it is quite severely hit by adjustment pressure that stems from increased import competition. In addition, like all other incumbent countries, it would face the need to contribute a larger amount to finance a more expensive Union. We have juxtaposed this fiscal cost with a vast array of macroeconomic and structural effects by means of numerical simulations, based on a calibrated model which incorporates both short-run adjustment and long-run equilibrium.

We find that enlargement exerts expansionary forces on the Austrian economy. The aggregate capital stock is revealed to increase by an amount of 1.5 percent in the long-run. This is mirrored by a 1 percent rise in GDP, and an increase in overall welfare in the amount of 0.5 percent, measured in terms of a Hicksian equivalent variation of aggregate income. This measure takes account of the increase in net contribution payments that Austria will have to live with in an enlarged Union, as well as the adjustment cost in the form of foregone consumption which is implied by investment and installation cost, if the economy is to achieve higher growth. These effects are not overly impressive, but one should not expect too much from an integration effort covering a mere 2 percent of domestic absorption, and exports which are slightly less than 4 percent of GDP.

The aggregate welfare effect masks significant variation across individual sectors, with agriculture to some extent hit by the repercussions from extending the CAP to new members. However, given the present EU farm policy, the effect of enlargement on farmers appears quite modest, a mere 1.3 percent of output loss for instance in the case of the first round of enlargement. At the other end of the scale, transport equipment benefits the most from an export boom set free by market integration. As regards the much feared effect of integration on the wage gap, our results indicate that the idiosyncratic features of the "policy shock" in question are likely to lower the wage gap between skilled and unskilled labor, rather than aggravating such distributional concerns.

We have also ventured to address the long-run welfare effects of inward migration. While, admittedly, such migration is likely to cause some short-term friction in western labor markets, the long-run welfare effects for the initial western population as a whole should be positive. It does, however, cause a long-run change in income distribution, to the disadvantage of all individuals who own factors that are substitutable to incoming labor. In all probability this is the case for low-skilled labor, since migration most likely is concentrated in the low-skill segment of the labor market. This element of the enlargement policy, therefore, does give rise to concern about the wage gap. In our scenario, the long-run increase in this gap is shown to be quite pronounced, with the wage rate for skilled labor rising by 2.383 percent, while unskilled labor would suffer a 4.6 percent wage cut. However, these numbers are based on a scenario with a large

margin of error. In view of recent migration research, the assumed size and skill-composition of the migration flow seems pretty much like an upper bound. Hence, the numbers should be taken with due caution.

It is quite clear that these results are not representative for the EU as a whole. In view of the differences between EU countries highlighted in part I of the paper, one would expect lower welfare gains for countries at the western and southern periphery who trade less with the CEECs, and who might at the same time face a higher fiscal burden from enlargement, if the cost is financed by cutting structural funds. Indeed, one is tempted to combine the welfare result that our numerical simulation yields for the Austrian case with the kind of descriptive statistics on other EU15 countries that we have presented in part I of the paper, to venture an informed guess on the aggregate welfare effect on other incumbents. Quite clearly, the upshot is that, based on our above welfare criterion, for a number of members the bottom line of enlargement is negative, including some bigger countries commanding relatively large numbers of European Council votes.[29] This might seem like a rather pessimistic conclusion, given that any admission of new members requires a unanimous approval by the European Council. Doubtlessly, however, votes on an eastern enlargement will not be cast with an overriding concern for economic benefits for ones own country. Indeed, the EU seems pretty firmly committed to proceed with enlargement, for reasons that go well beyond pure economic concerns. However, a solid evaluation of its economic impacts is an important prerequisite for a successful pursuit of enlargement. In this sense, the economic benefits that our numerical simulations reveal for Austria and Germany should constitute an important message.

[29] See Kohler (2000a,2000c) for a formal procedure and empirical results for all EU15 countries. Keuschnigg et al. (2000) present numerical results based on an a detailed model for Germany, comparable to the one used here. The outcome is a net welfare gain from enlargement also for Germany, albeit on a somewhat smaller scale than for Austria.

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Table 1 : **Austrian trade in goods and services**
broken down by partner countries

	Exports				Imports			
	goods		services		goods		services	
	1996	1999	1996	1999	1996	1999	1996	1999
Total, Mio. ATS	613,910	822,964	358,937	399,558	690,945	868,525	310,769	368,089
breakdown in %:								
EU15	64.32	62.13	65.68	66.32	71.14	68.41	63.43	65.84
CEECs 1	9.97	11.17	7.03	6.89	6.19	7.62	6.92	6.12
CEECs 2	2.11	2.24	1.26	1.67	1.28	1.77	1.04	1.10
Rest	23.60	24.46	26.03	25.12	21.39	22.20	29.17	26.94
Reference item GDP:	**2,452,240**		**2,688,725**					

Source: Oesterreichische Nationalbank

Table 2: **Austrian trade with CEECs1+2 and relevant trade distortions**

1996 breakdown by sectors according to NACE

Sektors	imports in % of dom. use	imp. weighted average CET	exports in % of output	exp. weighted CEECs tariffs
Farming	2.45	5.64	1.01	11.84
Fishing	2.63	7.89	0.97	11.83
Fuel Extraction	7.12	2.14	3.46	2.47
Mining	2.15	0.10	3.32	2.51
Food, beverages and tobacco	1.86	20.69	2.40	16.70
Textiles	6.31	10.57	7.40	10.26
Leather and foodwear	5.53	8.40	7.08	6.78
Wood	5.78	1.91	2.66	3.74
Paper	2.86	3.64	5.60	3.73
Refinery	5.27	4.44	5.28	3.29
Chemicals	3.35	6.58	9.37	6.23
Rubber and plastic	3.43	7.05	8.54	6.11
Non-metallic mineral products	3.01	3.71	3.16	2.51
Basic metals	4.62	4.06	5.97	3.33
Machinery and equipment	4.01	4.12	8.58	6.69
Electrical and optical equipment	5.07	4.06	9.10	10.26
Transport equipment	3.61	6.55	7.50	12.26
Manufacturing	6.05	3.73	4.96	3.44
Unweighted average	**4.17**	**5.85**	**5.35**	**6.89**

Sources: OECD (1997) for common external tariff of the EU (CET), Finger et al. (1996) for CEECs tariffs, and OECD (1998) for Austrian trade. See text for method of calculation. For more details, see the appendix of Keuschnigg & Kohler (1999).

Table 3: Eastern enlargement: A scenario decomposition

A: Europe Agreements with CEEC1 and CEEC2 countries		
a)	Austrian (EU) non-agricultural tariffs removed vis à vis CEECs	5% - 6 % on average
b)	CEECs' non-agricultural tariffs removed vis à vis Austria EU	6.5% – 9.3% on average
B: First round of enlargement: CEEC1 countries		
B.I. Trade liberalization:		
c)	removal of all remaining tariffs	5.4 %, - 8.1 % on average
d)	internal market: reduction. of real trade costs	5 % on average
B.II. Budgetary implications of EU expenditure policy:		
e)	reduction of ESF return flows	from 0.25% to 0.179% of GDP
B.III. Repercussions from extending the reformed CAP:		
f)	higher prices for agricultural imports from CEEC1 countries	see text
g)	lower subsidies for agricultural export to CEEC1 countries	see text
h)	lower world prices for farm products	2 percent reduction
C: Second round of enlargement: CEEC2 countries		
C.I. — C.II. by analogy to B.I. — B.II. above		
D: Inward migration from new CEE member countries (years 8–17 post enl.)		
i)	cumul. increase for skilled labor	2.1 percent
j)	cumul. increase for unskilled labor	10.5 percent

CEEC1: Czech Republic, Estonia, Poland, Hungary, Slovenia (Luxembourg countries). *CEEC2:* Bulgaria, Latvia, Lithuania, Romania, Slovak Republic (Helsinki-countries). Detailed information on Austrian and CEECs' tariff and non-tariff barriers, as well as the budgetary costs of enlargement and the country-specific implications of alternative ways to finance this cost may be found in the appendix to Keuschnigg & Kohler (1999). See also Part I of this paper.

Table 4: Long-run macroeconomic effects of enlargement on the Austrian economy

steady state effects in percent

Variables, changes in %		EUR-AGR	CEEC1	CAP	CEEC2	MIGR
$\sum_j K^j$	aggregate capital stock	0.890	1.526	1.503	1.783	6.194
Y	gross dom.prod.	0.628	1.080	1.055	1.251	4.503
C	overall consumption	0.686	1.119	1.150	1.316	7.700
$\bar{n}$	degree of prod. diff.	0.416	0.676	0.682	0.808	4.897
$\bar{y}$	production scale	0.290	0.453	0.457	0.529	0.576
$\sum_j F^j$	firm values (**)	0.565	0.906	0.880	1.026	3.183
D^F	net foreign assets (**)	0.085	0.139	0.150	0.144	2.934
w^s	skilled wage rate	0.708	1.104	1.081	1.246	2.383
w^u	unskilled wage rate	0.778	1.225	1.174	1.365	-4.600
P	overall cons. price index	-0.018	-0.045	-0.092	-0.113	-1.317
P^I	investment price index	0.042	-0.032	-0.053	-0.089	-0.892
$\bar{P}^Q$	intermediate price index	-0.027	-0.070	-0.104	-0.131	-1.125
$\bar{p}$	dom. prod. prices	0.209	0.294	0.263	0.293	-0.601
$\bar{p}_U$	terms of trade with EU	0.165	0.196	0.175	0.181	-0.694
$\bar{p}_{E1}$	terms of trade with CEEC1	0.145	4.924	4.929	4.930	4.013
$\bar{p}_{E2}$	terms of trade with CEEC2	0.130	0.144	0.120	10.160	9.202
$\bar{p}_R$	terms of trade with R-O-W	0.186	0.240	0.214	0.230	-0.637
EV	welfare, % of GDP	0.304	0.493	0.510	0.581	(#) 1.888
T	net contribution to EU (*)	0.456	0.527	0.527	0.575	0.575
z	gov. transfers	0.796	1.345	1.354	1.496	11.813

(*) Expressed in percent of GDP. (**) Changes in percent of initial financial wealth. (EUR-AGR) Europe agreements (scenario A of table 2). (CEEC1) Enlargement to CEEC1 (scenario A through B.II of table 2). (CAP) Enlargement to CEEC1 plus CAP repercussions (scenario A through B.III of table 2. (CEEC2) Enlargement to CEEC1 plus CEEC2 (scenario A through C.II of table 2. A bar (e.g. $\bar{p}$) denotes weighted averages of sectoral values. EV: Aggregate welfare measured by an equivalent variation. T: *Level* of net contribution payments in percent of GDP. (#) For non-migrant domestic residents ("immigration surplus"). All other variables reported for the MIGR scenario relate to the whole economy, including migrant households.

Table 5: Long run output effects of enlargement to CEEC2 on the Austrian economy

percentage changes

Sectors		η	ny	y	p	$\tilde{p}$	K	L^s	L^u
AA	Farming	1.04	-1.30	0.42	0.36	0.78	-1.53	-1.78	-1.89
BA	Fishing	1.04	0.41	0.45	0.04	0.50	0.08	-0.14	-0.26
CA	FuelExtr	1.06	0.24	0.41	0.11	0.52	-0.05	-0.28	-0.40
CB	Mining	1.06	1.37	0.52	0.06	0.58	0.98	0.75	0.64
DA	Food	1.13	0.54	0.73	0.15	0.87	0.89	-0.60	-0.71
DB	Textiles	1.12	5.82	1.17	-0.13	0.98	6.07	4.29	4.17
DC	Leather	1.17	5.75	1.17	-0.16	0.96	5.97	4.19	4.08
DD	Wood	1.11	0.28	0.65	0.27	0.93	0.91	-0.78	-0.89
DE	Paper	1.10	1.28	0.79	0.11	0.90	1.74	0.04	-0.07
DF	Refinery	1.04	3.36	2.58	-1.70	0.82	1.94	0.24	0.13
DG	Chemical	1.13	2.32	0.90	0.00	0.88	2.67	0.96	0.84
DH	Plastic	1.08	1.90	0.90	0.10	1.00	2.39	0.67	0.56
DI	NonMetMi	1.10	0.57	0.59	0.29	0.88	1.21	-0.48	-0.59
DJ	BasicMet	1.10	1.82	0.75	0.16	0.90	2.34	0.63	0.52
DK	Machines	1.06	2.27	0.77	0.23	0.99	2.88	1.17	1.05
DL	Electric	1.10	3.65	0.82	0.20	1.01	4.25	2.51	2.40
DM	TransEqu	1.11	17.42	0.97	0.01	0.84	17.82	15.85	15.72
DN	Manufact	1.10	2.06	1.26	-0.30	0.95	2.12	0.42	0.31
EA	PubSuppl	1.06	1.22	0.37	0.16	0.53	1.64	-0.06	-0.17
FA	Building	1.04	0.62	0.59	0.47	1.06	1.64	-0.25	-0.36
GA	Trade	1.12	0.91	0.39	0.50	0.89	2.18	-0.10	-0.21
HA	Tourism	1.06	1.10	0.67	0.11	0.78	1.53	-0.16	-0.27
IA	Transpor	1.15	0.90	0.54	0.21	0.75	1.78	-0.49	-0.61
JA	Finance	1.10	1.06	0.32	0.41	0.72	1.78	0.08	-0.03
KA	RealEst	1.09	1.14	0.06	0.19	0.25	1.51	-0.18	-0.30
LA	Public	1.18	0.03	0.44	0.54	0.98	0.94	-0.74	-0.86
MA	Educ	1.08	-0.24	0.23	0.98	1.22	1.17	-0.51	-0.63
NA	Health	1.26	0.13	0.57	0.58	1.16	1.13	-0.56	-0.67
OA	Commun	1.20	0.61	0.54	0.36	0.90	1.33	-0.36	-0.48

Scenarios A through C.II of table 2. η: markup, n: product range, y: production scale, p: price of home goods, $\tilde{p}$: price of value added, V: firm values, K: capital stocks, L^s: skilled labor, L^u: unskilled labor.

Table 6: Long run trade effects of enlargement to CEEC2 on the Austrian economy: imports and trade diversion

percentage changes

Sectors		ARMING	t_U	D_H	D_U	D_{E1}	D_{E2}	D_R
AA	Farming	2.80	5.12	-1.99	4.49	70.42	68.65	4.49
BA	Fishing	2.80	6.27	-0.43	-0.39	60.63	80.83	-0.39
CA	FuelExtr	2.80	0.36	0.61	0.91	30.45	49.06	0.91
CB	Mining	2.80	0.02	1.16	1.23	13.98	32.47	1.23
DA	Food	2.65	17.70	-0.37	0.06	162.62	134.82	0.06
DB	Textiles	3.30	10.12	-2.43	-4.24	100.50	200.77	-4.24
DC	Leather	4.40	8.07	-0.42	-3.87	91.71	156.97	-3.87
DD	Wood	2.80	2.73	0.18	0.95	20.54	39.77	0.96
DE	Paper	1.80	2.87	0.84	0.93	16.32	33.79	0.93
DF	Refinery	1.90	4.20	2.96	-0.30	16.75	25.54	-0.30
DG	Chemical	1.90	2.89	0.99	0.79	30.07	43.93	0.80
DH	Plastic	1.90	5.88	0.85	0.94	27.91	52.59	0.94
DI	NonMetMi	1.90	5.91	0.80	1.21	19.38	24.58	1.21
DJ	BasicMet	2.80	3.42	0.26	0.56	24.49	52.46	0.57
DK	Machines	2.80	3.96	0.45	1.00	21.68	38.08	1.01
DL	Electric	2.80	3.82	0.47	0.57	26.70	37.14	0.57
DM	TransEqu	5.20	6.34	6.05	-1.44	69.11	111.29	-1.43
DN	Manufact	2.80	3.60	0.95	0.03	24.46	43.98	0.03
EA	PubSuppl	2.80	2.04	1.02	1.44	13.99	40.75	1.44
FA	Building	1.90	0.00	0.74	1.78	11.68	22.02	1.78
GA	Trade	1.90	0.00	0.76	1.70	11.59	21.92	1.70
HA	Tourism	1.90	0.00	1.09	1.33	11.18	21.47	1.33
IA	Transpor	1.90	0.00	1.00	1.42	11.28	21.57	1.42
JA	Finance	1.90	0.00	0.78	1.50	11.38	21.68	1.51
KA	RealEst	2.08	0.00	1.01	1.41	12.25	23.67	1.41
LA	Public	1.90	0.00	0.08	1.78	11.67	22.00	1.78
MA	Educ	1.90	0.00	-0.26	2.12	12.05	22.41	2.12
NA	Health	1.90	0.00	0.38	1.86	11.75	22.09	1.86
OA	Commun	1.90	0.91	0.68	1.53	15.52	30.46	1.54

Scenarios A through C.II of table 2. ARMING: Armington elasticity. t_U: EU external tariff rates, Austrian trade weighted averages. D_j: Final demand for home goods (H), imported goods from the Union (U), CEEC1 ($E1$), CEEC2 ($E2$),and rest of world (R).

Table 7: Long run trade effects of enlargement to CEEC2 on the Austrian economy: exports

percentage changes

Sectors		t_{E1}	E_U	E_{E1}	E_{E2}	E_R	TOT1
AA	Farming	10.40	-6.55	6.67	65.73	-6.55	12.08
BA	Fishing	8.71	-0.13	44.31	92.00	-0.13	5.04
CA	FuelExtr	2.12	-0.32	35.33	34.69	-0.32	9.35
CB	Mining	2.22	-0.08	19.04	40.88	-0.08	4.23
DA	Food	12.23	-0.43	50.37	101.13	-0.43	5.55
DB	Textiles	8.14	1.68	76.70	169.50	1.68	9.29
DC	Leather	5.73	3.32	62.50	133.71	3.32	4.74
DD	Wood	4.24	-0.84	24.76	41.54	-0.84	4.42
DE	Paper	4.27	-0.16	15.71	25.31	-0.16	4.28
DF	Refinery	0.54	3.33	12.53	29.45	3.33	2.66
DG	Chemical	4.72	0.16	19.40	37.79	0.16	4.79
DH	Plastic	4.75	-0.13	19.45	42.11	-0.13	5.04
DI	NonMetMi	2.19	-0.56	12.82	21.13	-0.56	4.86
DJ	BasicMet	3.34	-0.26	23.51	48.43	-0.26	4.62
DK	Machines	5.85	-0.47	30.73	50.76	-0.47	4.39
DL	Electric	7.92	-0.08	38.53	72.16	-0.08	4.37
DM	TransEqu	13.14	7.42	151.92	178.85	7.42	4.21
DN	Manufact	4.21	0.98	26.84	37.75	0.98	4.21
EA	PubSuppl	0.00	-0.36	11.69	30.12	-0.36	4.32
FA	Building	0.00	-0.88	8.75	18.80	-0.88	5.43
GA	Trade	0.00	-0.89	8.74	18.79	-0.89	5.46
HA	Tourism	0.00	-0.19	9.51	19.63	-0.19	5.08
IA	Transpor	0.00	-0.35	9.33	19.44	-0.35	5.19
JA	Finance	0.00	-0.70	8.94	19.01	-0.70	5.39
KA	RealEst	0.00	-0.29	10.36	21.58	-0.29	5.19
LA	Public	0.00	-1.08	8.53	18.55	-1.08	5.50
MA	Educ	0.00	-1.87	7.67	17.62	-1.87	5.89
NA	Health	0.00	-1.20	8.40	18.42	-1.20	5.53
OA	Commun	0.00	-0.66	8.98	19.06	-0.66	5.32

Scenarios A through C.II of table 2. t_{E1}: CEEC1 tariff rates. E_j: Exports to Union (U), CEEC1 countries ($E1$), CEEC2 countries ($E2$),and rest of world (R).. TOT1: Terms of trade vis à vis CEEC1.