ECONOMIC CONSEQUENCES FOR DENMARK OF EU ENLARGEMENT

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Abstract

This paper presents a quantification of the economic impacts to Denmark of the European Unions' upcoming East enlargement. Specifically the effects of customs liberalization, market integration and immigration are quantified with due regard to estimated repercussions to transfers to and from the European Union and enhanced growth in the new member states. In the basecase projection, which excludes additional immigration, a steady state increase of aggregate GDP at factor costs of 0.08 percent is found along with a welfare gain of 1.27 percent of 1998 GDP. The welfare gains are demonstrated to be highly dependent on the catching up of the CEE region and the route taken by the EU for funding the enlargement.

INTRODUCTION

The process of completing the East enlargement of the European Union is closing to its final stages. The assertion of the European commission is that 10 applicant countries in Central-and Eastern Europe (CEE) will be ready to participate in the 2004 elections for the European parliament and that two more countries will qualify for accession in 2007. This paper presents a simulation study of the economic consequences for Denmark of an enlargement of the European Union including all 12 countries in 2004[1]. Using an applied general equilibrium model, we quantify the effects of the custom liberalization, integration of the CEE countries in the European single market, additional growth in the CEE region and increased immigration with due regard to estimated repercussions to net transfers from the European Union. The inclusion of the CEE countries in the European free trade area, lowered real frictions to trade from integration of markets, and the expected catching-up of the CEE region implies expansionary effects from increased export demands and cheapened imports. On the other hand, the budgetary implications for structural and regional development and the relatively large rural areas in the new member states implies that own-resource payments may be expected to increase while transfers from common agriculture policies (CAP) and the European Structural Funds (ESF) will decline for incumbent states. Per se, the benefits to the Danish economy of customs liberalization and market integration should be expected to be relatively small since the CEE region is not all that important to Danish international trade volumes. The burden carried from lowered net transfers strains the government budget and domestic activity to a comparably large extent. We find as a basecase excluding increased immigration that the enlargement leads to an aggregate welfare gain amounting to 1.27 percent of 1998 GDP. The welfare gain depends on the part of the financing burden to be carried by Denmark and also the extent of growth bonuses to the CEE from entering the EU.

Danish trade with the CEE countries is moderate compared to the volumes of trade with EU and the rest of the world as witnessed by Figure 1. In 1998 a moderate 4.3 percent of total exports were destined to CEE countries while imports from CEE countries accounted for 4.07 percent of total imports. Of total imports 62.2 percent are used for material inputs in production, while imports of investment and consumption goods account for 12.3 percent and 25.5 percent respectively. Although the CEE region only accounts for moderate shares of the total trade volumes for Denmark, some impact to exported quantities to the CEE region and to the costs of domestic production and consumption can be expected. Additionally, sustained additional growth in the CEE following from the enlargement will imply additional demand for Danish products in these markets. For the demand structure facing individual industries, the industries share of total trade volumes is not as important as the degree of competition faced by imported alternatives and the relative position of CEE markets in the industries total exports.

The paper is organized as follow. We start with a brief and informal presentation of the model framework and a discussion of central mechanisms. Following this section we present our basecase simulation and illustrate contributions from individual policy elements to the projected economic impacts. Given the large relative uncertainty with respect to EU budget policies for financing the enlargement we proceed by analysing the merits of alternative policy scenarios. These may be thought of as simplified representations of policy alternatives available to the European Union for the funding of the enlargement and provide indications of which of the viable alternatives that will affect the Danish economy the most. We conclude the paper by providing the results of a simulation

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[1] The countries included are Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, and Slovenia. Bulgaria and Romania are the two countries that are planning to access in 2007.
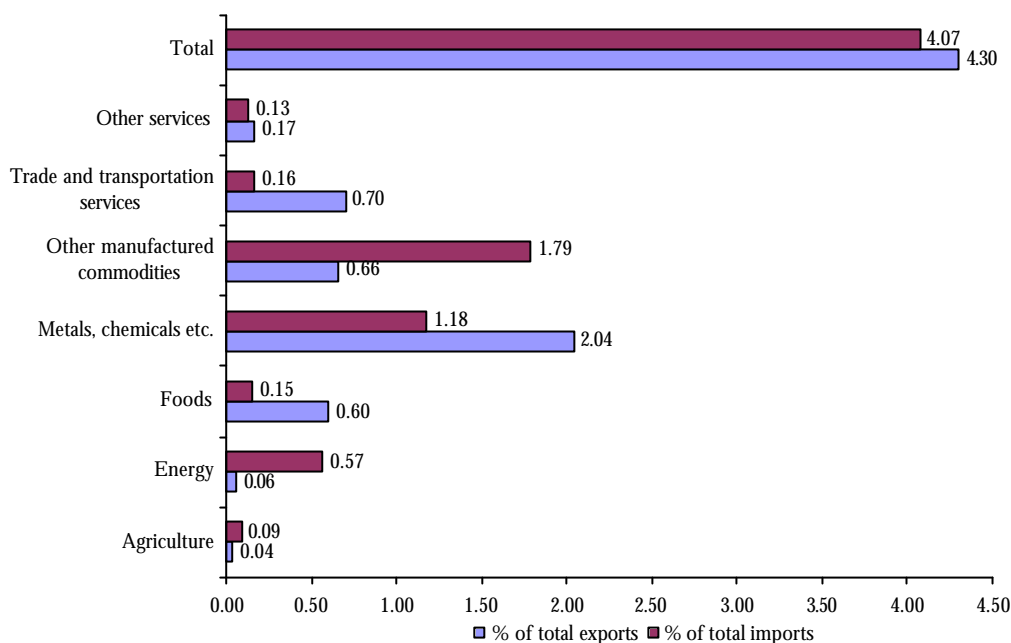
Figure 1 Trade with CEE in pct. of total volumes in 1998. The bars for individual industries present the contribution to total trade volumes.

representing increased immigration arising from the extension of the rules enforcing free mobility of labour to include CEE citizens.

THE SIMULATION MODEL

In order to quantify the effects of the East enlargement on Danish macro economy, production structure and welfare we take an approach similar to that of multiple papers by Keuschnigg and Kohler (see the list of references). We apply a dynamic general equilibrium model, which extends the overlapping generations model DREAM (see Pedersen et. al 1998) by incorporation of multiple private industries and consumption goods. International trade is specified according to the Armington assumption that goods produced in various locations bear characteristics that causes them to be considered imperfect substitutes. The model is for a small open economy and assume perfect international mobility of financial capital, residence based capital income taxation and fixed exchange rates such that the nominal interest rates on bonds is given by world markets. Custom barriers are represented by ad valorem tariff equivalents while the integration of the CEE economies in the European single market is captured by removal of a rate of real decay of internationally traded goods. The growth differential reflecting the catching up of the CEE region is implemented in the Armington export relations by an additional Harrod-neutral rate of technological progress.

All private industries are characterized by large group imperfect competition a la Dixit and Stiglitz (1977) with a fixed number of firms and hence product varieties. Firms are assumed to employ a generally available production technology with distinct parameterisations for each industry. The functional form of the production function is specified by a nested constant elasticity of substitution (CES) function that combines inputs of capital, labour, energy and materials. Capital is represented by yet a CES function that combines a composite of buildings and land with machinery. Installation of capital is assumed to be subject to convex real costs that imply gradual capital accumulation. Land is available in fixed quantities and is assumed to have distinct uses such that

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arable land cannot be used for residential purposes and vice versa. Material inputs, investments of a given type and consumption goods are all represented by Leontief composition of industry specific products.

Given the importance of the various transfers between the EU and Denmark some care is taken in the specification of these elements. Production subsidies from the CAP are introduced as rates of subsidisation of arable land and ad valorem subsidisation of material inputs. Export subsidies to agriculture towards the rest of the world (ROW) are represented by ad valorem rates. As we reduce transfers from the CAP in our simulations we hence obtain a simplified representation of the effects to agriculture of cuts to individual elements of the CAP. Own resource payments are implemented by contribution rates based on VAT revenues and gross national income (GNI) and lie on the government, which is also, for simplicity, assumed to mediate transfers related to ESF programmes. For a full documentation of the extensions to DREAM made in this study please see Madsen and Sørensen (2002).

ENLARGEMENT

In our simulations, enlargement is implemented in the year 2004 for 12 CEE countries. At this point in time the Europe agreements are in effect such that custom barriers are lifted for all products but food and agriculture. The custom barriers include export subsidies granted by the CEE countries to their exports as well as export subsidies granted by the EU. Following Keuschnigg and Kohler (2000) we specify the integration of markets by removal of a 5 percent rate of real costs of trade with the CEE countries. The direct impact to import and export price indices from the abolition of import tariffs, export subsidies and removal of real costs of trade are presented in Table 1.

Table 1 Direct impact to prices of internationally traded goods

	Custom union		Market integration		Total	
% change	Import	Export	Import	Export	Import	Export
Agriculture	-0.05	2.68	-5.26	-5.26	-5.05	-2.43
Foods	-4.91	-3.27	-5.26	-5.26	-9.44	-8.71
Other traded goods	-	-	-5.26	-5.26	-5.26	-5.26

For the growth bonuses experienced by the CEE countries as they enter the EU we assume an additional annual growth rate of 1.4 percent in 50 years[2]. This specification of catching up implies that GDP per capita in the CEE region amounts to 80 percent of the EU average in 50 years. With respect to the implications of the enlargement to EU budgets and the assessment of the part of these costs that must be carried by Denmark we rely on estimates reported by Keuschnigg and Kohler (1999). As a basecase for the cost estimates we introduce cuts to CAP transfers of 0.114 percent of GDP while ESF transfers are cut by 0.031 percent of GDP. In addition the Danish level of own resource payments is specified to increase by 0.138 percent of GDP. The basecase cost scenario hence amounts to a total reduction of the net transfer to Denmark from the EU of 0.283 percent of 1998 GDP. The increased own-resource payment and lowered transfers from ESF programmes are modelled to lie on the Danish government who must collect additional tax revenues in order to satisfy its long run budget constraint. The reductions of CAP transfers are carried by agriculture in the form of reduced levels of export- and product subsidisation. In addition to the direct impact from reduced transfers and increased own resource payments, changes to the domestic level of activity will affect the domestic governments intertemporal budget constraint. We specify a domestic

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[2] The annual rate of growth in Denmark and the EU is assumed to amount to 1.5 percent annually.

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fiscal policy response amounting to determination of a sustainable income tax system. The sustainable income tax system is defined as the smallest constant set of tax rates applying to non-interest income that for given commitments to budget expenditures ensure long run solvency of the government.

MACROECONOMIC EFFECTS OF THE BASECASE ENLARGEMENT SCENARIO

The projected impact of the enlargement is stated in Table 2 by multiplier indices to macroeconomic indicators. The multipliers compare projected levels in the enlargement scenario to a baseline scenario that includes enforcement of Europe agreements but otherwise constitutes a status quo of policies. The abolition of custom barriers and the integration of markets cause the price of imported CEE goods used for investments, material use, and consumption to decline while export demands from the CEE increase as result of market integration and in the longer term due to the growth bonus in the CEE. The demand-side effects of increasing exports towards the CEE tend to dominate the supply-side effects of lowered costs of production following from cheapened imported materials and investment goods. The projected increase of the level of domestic activity lead to an increasing aggregate domestic price level and this implies an improvement of the terms of trade. The impact effect of the enlargement to domestic activity is a small contraction. Capital formation occurs only gradually due to real installation costs of capital and the financing rule issued by the domestic government implies a small increase of the base income tax rate of 0.2 points. The increase of the income tax reduces labour supply[3] and the required restructuring of production causes an initial depreciation of the aggregate stock value. Eventually the adoption of the production structure to the new market conditions is complete and the growth in the CEE region leads to increases in export demands. As the increasing demands are met by export-oriented industries and as home-industries adapt to the new market terms an increased aggregate domestic activity level arise. In the longer term the increased level of activity causes wage incomes and thereby employment to increase.

Table 2 Macroeconomic effects of the basecase enlargement scenario

Baseline = 100	2003	2008	2018	2028	2038	¥
Real GDP at factor costs	100	99.99	100.01	100.03	100.06	100.08
Real private consumption	100	100.08	100.14	100.20	100.27	100.73
Employment	100	99.99	100.00	100.02	100.03	100.07
Machinery	100	100.12	100.24	100.37	100.52	100.77
Buildings (excl. dwelling)	100	99.99	99.98	99.99	100.00	99.89
Value of firm	99.29	100.07	100.31	100.53	100.72	100.80
Total household assets	100.11	99.95	99.38	98.68	98.20	102.79
Government debt	100	100.63	102.36	103.64	104.37	116.47
Foreign assets*	0	-0.73	-2.14	-3.42	-4.44	3.80

* Change from baseline in pct. of real GDP

Real private consumption is projected to increase by 0.73 percent in steady state and this increase is seen to be larger than the increase for aggregate GDP. The gradual improvement of the terms of trade implies that the household sector is able to realize a higher level of consumption for a given income. Initially and in the medium term household assets are seen to decline reflecting that the households rationally expect increasing future incomes. This leads the households to reduce free savings in order to smooth consumption. In steady state the growth bonuses experienced in the CEE region are fully realized. This causes steady state savings to increase and paired with improved wealth,

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[3] Income effects of increased income taxation may modify the lowered labour supply that follows from the reduction of the real rewards of supplying labour. In DREAM however, instantaneous utility is assumed to be additively separable in disutility of work effort and utility of consumption, such that income effects are absent.

steady state household assets are projected to exceed the baseline stock. The observed development of the claims on foreign assets reflects the development of household asset holdings. Finally, since domestic output prices are observed to increase, the use of widely imported input factors become more intensive. Given that imported goods come cheaper, firms will substitute building capital for machinery since buildings are only supplied domestically.

Table 3 Effects of basecase enlargement to international trade volumes

Baseline = 100	2003	2008	2018	2028	2038	¥
Total value of imports	100	101.23	101.75	102.32	102.98	104.71
European Union	100	100.07	100.57	101.14	101.78	103.48
CEE Countries	100	123.71	124.33	125.02	125.80	127.91
Rest of World	100	100.01	100.56	101.13	101.78	103.51
Total value of exports	100	101.58	102.22	102.95	103.77	105.53
European Union	100	98.90	98.23	97.49	96.66	94.48
CEE Countries	100	139.82	159.12	180.85	205.33	263.27
Rest of World	100	98.94	98.30	97.56	96.74	94.58

The cuts to the prices of goods imported from the CEE countries lead to substitution towards these products and the observed increase of imports from this region is therefore larger than that from other regions. The increase of the aggregate level of activity is, however, projected to imply that imports from EU and the rest of the world increase as well. Table 3 presents the changes to the value of traded volumes. On the export side, the abolition of custom barriers and real costs of trade imply increasing exports to CEE countries while rising domestic price levels causes export demands from other regions to diminish. The relative change to the volumes of trade with the CEE countries are indeed substantial but since the CEE countries only account for moderate shares of the total trade volume, the effect on total exports and specifically imports are found to be moderate. The projected changes to trade with the EU and the rest of the world are subject to some uncertainty. Given our single country model we are not able to address changes to the terms of trade vis-à-vis these regions properly. The presented changes to traded volumes are therefore the result of domestic terms of trade effects and precludes any changes that may arise due to changes in the remaining incumbent states and in the rest of the world. Specifically this problem is important for agricultural products since changes to the conditions of European agriculture should be expected to have impact on world markets. The observed dynamic transition again simply reflects the introduction of additional growth of export demands from the CEE region that by assumption last for 50 years.

SHIFT TO PRODUCTION STRUCTURE

Although the economy on the aggregate is expected to exhibit an expansion of production this is, as reported by Table 4, not the case for all industries. Although the projected adjustments of the production structure are small, industries that are oriented towards CEE markets in the initial situation are, in general, better positioned to gain from the enlargement. The industries metals and chemicals and other manufacturing are those standing to achieve the largest expansion on this account. The expansion of these two industries has economy wide implications since these industries are large suppliers of materials and machinery investments. The inherent price increase following from increased export demands therefore affects the unit costs of production in practically all industries. For the foods industry, the enlargement is found to imply a contraction of demands. The cuts to subsidies of agriculture under the CAP programmes increase the unit costs of production in agriculture. Since agriculture is the largest supplier of material inputs to the foods industry the resulting increase of the price of agricultural products imply increasing costs of production in the foods industry as well. The higher price level of domestically produced foods implies substitution towards imported alternatives in domestic demand and recessive impacts to exports directed at markets in the EU and the rest of the world. For home market industries such as construction, other

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services and to some extent trade and transportation we observe different impacts of the enlargement. For construction the aforementioned shift towards machinery in capital inputs imply decreasing demand. For trade and transportation increasing demands for private consumption drives the expansion since only domestic firms supply trade services used by private consumers. In addition, the fact that this industry includes water transportation implies that increasing export demands do account for some of the expansion of the total demand faced[4]. Finally, the industry other services is projected to exhibit a minor reduction of its level of production due to declining domestic demand, specifically for consumption, following from increased costs of production.

Table 4 Production in private industries in basecase enlargement scenario

Baseline = 100	**2003**	**2008**	**2018**	**2028**	**2038**	**¥**
Agriculture	100	96.91	95.88	95.50	95.18	94.25
Energy provision	100	99.76	99.47	99.23	98.97	98.05
Construction	100	99.96	100.01	100.04	100.05	99.96
Foods	100	99.17	98.67	98.60	98.58	98.35
Metal and chemicals	100	100.97	101.48	101.86	102.26	102.94
Other manufacturing	100	100.53	100.91	101.24	101.60	102.27
Trade and transportation	100	100.11	100.13	100.13	100.12	100.15
Other services	100	99.93	99.92	99.91	99.88	99.90

WELFARE IMPLICATIONS

To assess the welfare implications of the basecase enlargement scenario we rely on Hicksian equivalent variation. The aggregate welfare gain is defined as the sum of the equivalent variations of currently living households and the discounted sum of equivalent variations of future households. We discount by the world market interest rate of bonds. The aggregate equivalent variation amounts to 1.27 percent of 1998 GDP. Figure 2 displays the equivalent variation per adult by year of birth and the vertical line marks the generation that becomes economically active in 1998. Most generations stand to gain from the enlargement though some currently living households will experience a moderate loss of welfare. The welfare losses of elderly generations born prior to 1981 should be understood from the required restructuring of production and the adverse effects of increased income taxation. For future generations the steady increase of export demands in the CEE region following from the assumed additional growth in this region implies that income improve steadily until the catching up of the CEE countries is fully realized. This explains why the welfare gain is increasing in the year of birth and why the gains tend to level out for generations born in the more distant future.

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[4] Since trade and transportation is specified to include water transportation the industry do account for a considerable export and thus cannot be considered a home industry in the true sense.
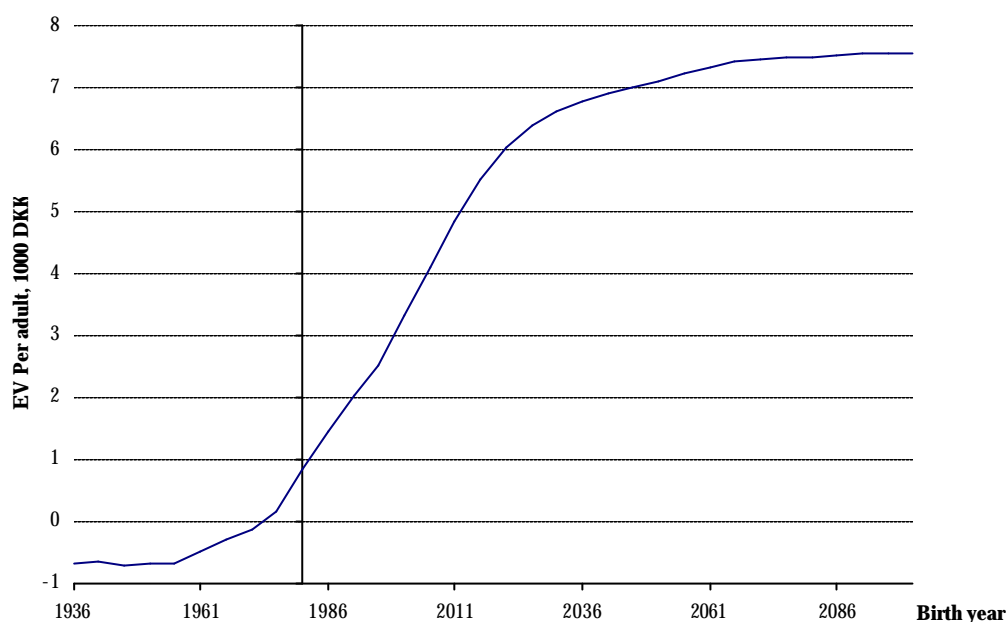
Figure 2 Equivalent variations per adult of the basecase enlargement scenario

THE IMPORTANCE OF CATCHING-UP IN THE CEE REGION

Although the East-enlargement is considered to induce growth in the CEE region that exceeds the growth rates of the current member states, the magnitude of such growth bonuses is indeed uncertain. Therefore this section examines the situation that would arise if the growth bonuses to the CEE region were absent. Given that the catching up of the CEE region is excluded, the increase of the demand for exports from the CEE region only arise as a consequence of market integration and custom liberalization. Table 6 presents the projected impact on macroeconomic indicators if growth bonuses are excluded. In the absence of CEE growth bonuses the enlargement is seen to have a minor and more immediate recessive impact on the Danish economy. This indicates that if the CEE region fails to realize additional growth the positive effects of custom liberalization and market integration will fail to dominate the adverse effects of lowered net transfers from the EU. The smaller demand-side shock to the economy implies that the sustainable income base tax is to increase by 0.4 points and the negative impact of the enlargement to the incentives of supplying labour is consequently more expressed. The lowered activity level reduces incomes and the smaller terms of trade effect of the enlargement implies that real private consumption exhibits a decline rather than an increase. We still observe a tendency to shifts in capital employment towards machinery but not as expressed since the increase of domestic price levels become less strong. With respect to welfare, the absence of growth bonuses to the CEE implies that the welfare gain is reversed to a loss. The aggregate equivalent variation of the scenario omitting the growth assumption accounts for a loss of 1.88 percent of 1998 GDP. The losses of welfare are most expressed for future generations, but all generations stand to loose if no additional growth is realized in the CEE region.

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Table 5 Macroeconomic impact of enlargement in absence of CEE catching up

Baseline = 100	2003	2008	2018	2028	2038	¥
Real GDP at factor costs	100	99.97	99.92	99.91	99.91	99.91
Real private consumption	100	99.67	99.59	99.59	99.59	99.59
Employment	100	99.96	99.95	99.95	99.95	99.95
Machinery	100	100.08	100.07	100.07	100.07	100.07
Buildings (excl. dwelling)	100	99.74	99.62	99.61	99.61	99.62
Value of firm	98.18	99.15	99.13	99.15	99.17	99.19
Total household assets	99.49	99.58	99.59	99.61	99.61	99.58
Government debt	100	101.15	102.38	102.22	101.81	103.08
Foreign assets*	0	0.33	0.54	0.55	0.61	1.56

* Change from baseline in pct. of real GDP

THE ISOLATED EFFECTS OF TRADE LIBERALIZATION AND MARKET INTEGRATION

In the current debate the issue of the costs of enlargement to incumbent member states seem to have great weight. Therefore it seems only natural to stress the point that the liberalization of customs and the extension of the single market initiative to include the CEE region will have positive effects to incumbent states as well. To highlight the importance for the Danish economy of custom liberalization and market integration we will present a scenario that excludes growth and any repercussions to net transfers received from the EU. The scenario may hence be thought of as the cleanest specification available for illustration of the potential of the trade liberalization and market integration efforts inherent in the enlargement.

In Table 6 the effects on leading macroeconomic indicators of the pure trade experiment is given. The two columns to the far right of the table present the isolated steady state effects of the custom union and the additional effect from market integration. Evidently, the abolition of custom barriers and the integration of markets serve to stimulate the activity of the Danish economy. The custom union is seen to have only very moderate isolated implications to the Danish economy. This is hardly surprising given the moderate direct price impact that in addition only affects two industries (see Table 1). For the food industry, the custom liberalization implies increasing exports in CEE markets and a resulting expansion that drives up the demand for domestic agricultural products for use as intermediaries. Though the custom liberalization also implies increased competition from imported CEE food products, this import is limited and hence substitution away from domestic food products does not have notable impact to the food industry. For agriculture the custom liberalization actually implies an immediate increase of the price in CEE markets due to the abolition of EU export subsidisation (see table 1). However, the export from agriculture to CEE markets is very moderate and the loss of export demands from these regions is therefore of minor importance to the position of agriculture. For remaining industries small general equilibrium effects arise due to the moderate expansion of domestic activity that drives up the wage rate.

The integration of markets is of larger importance since it has larger impact on prices and affects all goods traded with the CEE countries. The cuts to the prices paid by CEE purchasers of Danish products imply increasing aggregate demand for domestic products. This increase of aggregate demand tends to drive up the output price level and production. On the other hand the cuts to the price paid for imports from the CEE countries tend to drive down unit costs of production. This amounts to a positive supply side effect. In addition to the supply side effect of cheapened imports, demand side effects arise. Domestic agents will tend to substitute currently used goods for goods imported from the CEE countries but as overall purchasing power increases it is not entirely certain a priori whether such substitution necessarily implies lowered demand for domestic products. The net outcome of these opposite effects is an expansion of aggregate production and a higher domestic

output price level. Since the Danish economy is a net exporter to CEE countries the demand side effects exceed those arising from lowered costs of production.

Table 6 Macroeconomic impact of enlargement excluding CEE growth and funding burden

Baseline = 100	2003	2008	2018	2028	2038	¥	Custom Union ¥	Market Integration ¥ *
Real GDP at factor costs	100	100.04	100.07	100.08	100.08	100.08	100.01	100.06
Real private consumption	100	100.38	100.43	100.47	100.49	100.51	100.02	100.45
Employment	100	100.05	100.05	100.05	100.05	100.05	100.00	100.05
Machinery	100	100.25	100.30	100.30	100.30	100.29	100.02	100.24
Buildings (excl. dwelling)	100	100.07	100.11	100.13	100.13	100.13	100.01	100.10
Value of firm	100.82	100.38	100.39	100.39	100.39	100.39	100.03	100.33
Total household assets	100.45	100.49	100.68	100.83	100.91	100.96	100.05	100.84
Government assets	100	99.77	100.10	100.43	100.58	100.76	100.02	100.70
Foreign assets**	0	0.08	0.33	0.33	0.52	0.95	0.03	0.88
EV (% of 1998 GDP)						2.16	0.10	1.93

* Custom union = 100, ** Change from baseline in pct. of real GDP

For the complete trade scenario small effects are found. The dynamic transition to steady state levels is for aggregate real GDP completed sooner than for private consumption. This is due to the overlapping generations structure of our model. Generations alive at the implementation of the customs liberalization and market integration experience immediate capital gains from the instantaneous appreciation of the stock value of firms. In addition to this capital gain, incomes increase gradually as private production adjusts to the higher level of activity. The steady state effect to private consumption exceeds that of GDP even though the accumulation of foreign assets is small by comparison. This is the result of the improved terms of trade that allow for more consumption for a given level of national income. The aggregate equivalent variation of the trade scenario is found to amount to 2.16 pct. of 1998 GDP. Comparing this gain to the welfare loss of 1.88 pct. of 1998 GDP found as catching up is excluded from the funded basecase scenario we get a strong indication that the funding costs to be carried by Denmark are indeed of significance to the bottom line.

ALTERNATIVE EU POLICIES FOR FUNDING THE ENLARGEMENT

Given the demonstrated importance of the assumed costs of enlargement lying on the Danish economy it seems obvious to analyse alternative scenarios in this respect. In Keuschnigg and Kohler (1999) cost estimates for alternative balanced budget policies in the EU are reported. The alternative scenarios represent policies of cuts to either CAP or ESF spending or increased own-resource payments. For a given method the required total reduction of spending or revenues is calculated and cuts to transfers (or increases of own-resource payments) for individual member countries is then calculated using the same percentage. Given this method, the exclusive use of cuts to ESF spending is preferable to Denmark, while exclusive use of cuts to CAP spending constitutes the most expensive policy. This simply reflects that Denmark only receive relatively small transfers from ESF programmes while the CAP programme is of larger importance. Since cuts to ESF spending is an integral part of the basecase cost scenario, this scenario is the second cheapest alternative for Denmark. By cutting the expenditures for structural and regional development the EU budget may be financed by more moderate cuts to CAP spending and lower increases of own-resource payments. The reductions to the various transfers in the scenarios representing the alternative EU budget policies are presented in Table 7.

Table 7 Cost scenarios for Denmark of alternative EU budget policies

Change to transfer in % of GDP in 2004	Own ressource payments	CAP transfer	ESF transfer	Total reduction
Basecase	0.138	-0.114	-0.031	0.283
Increased own ressource payments	0.326			0.326
Reduced CAP spendings		-0.416		0.416
Reduced ESF spendings			-0.107	0.107

Source: Keuschnigg and Kohler 1999 and own calculations

The steady state macroeconomic impacts of the alternative methods of funding the costs of the enlargement are reported in Table 8. The column labelled GNI represents the scenario in which the enlargement is funded exclusively by increased own-resource payments. First we are able to identify that the welfare implications of the alternative funding policies are tightly correlated to the total reduction of net transfers from the EU. For the ESF and GNI scenarios the reduced transfer lie entirely on the government so the burden of the costs of the enlargement enter the economy via the same mechanisms. In the ESF scenario the reduction of the net transfer is smaller such that the government is not required to collect as much revenue from income taxation as in the GNI scenario.

Table 8 Steady state effects of alternative EU budget policies

Baseline = 100	Unfunded	ESF	Basecase	GNI	CAP
Real GDP at factor costs	100.24	100.18	100.08	100.07	99.99
Real private consumption	101.64	101.27	100.73	100.48	100.53
Employment	100.16	100.12	100.07	100.04	100.05
Machinery	100.99	100.98	100.77	100.97	100.27
Buildings (excl. dwelling)	100.40	100.23	99.89	99.86	99.61
Value of firm	102.00	101.85	100.80	101.54	98.53
Total household assets	104.19	103.62	102.79	102.45	102.46
Government assets	114.08	115.57	116.47	115.19	119.53
Foreign assets*	3.19	3.19	3.80	3.49	4.99
Base income tax rate, point change	-0.18	0.04	0.24	0.50	0.06
Reduction in transfer net from EU**	0.00	0.11	0.28	0.33	0.42
EV (% of 1998 GDP)	5.30	3.70	1.27	0.37	0.09

* Change from baseline in pct. of real GDP, **Measured in 2004 in percent of GDP

For the CAP scenario the entire loss of transfers from the EU lie directly on agriculture and therefore the government is only required to collect additional tax revenues due to second order effects on the government budget from lowered income levels. This can be seen by the fact that the CAP scenario only require a permanent increase of the base income tax rate by 0.06 points as oppose to the 0.50 point of the GNI scenario. The lower level of income taxation means that the long run level of aggregate private consumption is actually higher in the CAP scenario than that observed for the GNI scenario. The largest reduction of the reported welfare gain in the CAP scenario lie on currently living households while future households stand to experience larger welfare gains than in the GNI scenario. The reason that currently living households stand to carry a larger burden in the CAP scenario should be understood from the required restructuring of private production. Agriculture and thereby the food industry are faced with a relatively large increase in costs of production as the subsidisation is reduced. Since investors hold rational expectations this imply a smaller immediate appreciation of the value of stocks and thereby financial wealth of households than in the GNI scenario. Since the relative loss of financial wealth is temporary and only applies to currently living generations future households are relatively better off in the CAP scenario. However, the welfare of future households is discounted in the aggregation of equivalent variation. This implies that the aggregate welfare gain turns out smaller in the CAP scenario.

An important aspect of the enlargement is the prospect of increased immigration from the CEE countries. The single market programme includes legal acts to promote the free mobility of labour and taking the relative poverty of the CEE countries in consideration CEE citizens arguably have incentives to seek employment in Western Europe. The free mobility of labour are ensured by a set of rights of European citizens to seek employment, to be granted residence and work permits and be entitled to the same social rights as national citizens (see The EU Commission 2001). Concerns have been expressed that extending the current rights of European citizens to CEE citizens immediately will imply levels of immigration that will strain social security systems and blue collar labour market segments to an unacceptable extent. Transitory agreements and restrictions are therefore likely to be introduced as explained in The EU Commission (2001). The likely extent of immigration from the CEE countries to individual incumbent member countries are analysed in Boeri and Brücker (2000), which presents an analysis of the labour market effects of immigration in an econometric framework focused on explaining immigration towards Germany. Using a set of historic macroeconomic indicators and cultural variables for the home countries their econometric model forecasts the number of immigrants in Germany. The estimates for other incumbent member countries are based on extrapolation under the assumption that the ratio of CEE immigrants in a specific country to the number of CEE immigrants in Germany remains constant. The projected number of CEE immigrants in Denmark is reported to end at some 40000 individuals in 2030.

Table 9 Additional macroeconomic impact of increased immigration from CEE countries

Basecase = 100	2003	2008	2018	2028	2038	¥
Real GDP at factor costs	100	100.17	100.53	100.79	101.03	103.22
Real private consumption	100	100.21	100.47	100.63	100.82	102.88
Employment	100	100.22	100.59	100.85	101.09	103.37
Machinery	100	100.18	100.51	100.77	100.98	103.03
Buildings (excl. dwelling)	100	100.16	100.45	100.68	100.90	102.87
Value of firm	101.62	101.13	101.32	101.48	101.59	103.54
Total household assets	100.60	100.61	100.71	100.79	100.81	102.09
Government debt	100	99.69	99.60	99.58	99.68	99.41
Foreign assets*	0	-0.32	-0.77	-0.79	-0.95	-1.61

* Change from basecase in pct. of real GDP

Our models representation of the household sector incorporates a fairly rich description of demographics and incorporates age and gender specific labour market participation rates used in the construction of the representative households[5]. We assume that the average CEE immigrant have the same age and gender as other immigrants as he enters Denmark such that he on average is in his early twenties. Moreover, we assume that the CEE immigrants stay permanently and that positive net immigration ensures that the stock of CEE immigrants remain constant at some 40000 individuals from 2030 onwards. With respect to labour market participation and entitlement to income compensating transfers we assume that the new citizens from CEE are similar to nationals. The labour market participation rate of the CEE immigrants is thus assumed to be significantly higher than that observed for other immigrants and the extent to which immigrants from the CEE are assumed to receive social transfers is assumed lower. Given the projections by Boeri and Brücker (2000) and our assumptions with respect to labour market participation, the total population increase

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[5] In many applications of overlapping generation models, demographics are represented using the specification of Blanchard (1985), which allow for analytical aggregation. In DREAM a full forecast is used and the intricacies of calibration are resolved by use of *dynamic calibration*, see Pedersen et. al. (1998).

by 1.68 percent in 100 years and 3.28 percent in steady state while the labour force increase by 1.80 percent in 100 years and 3.42 percent in steady state. The fact that the labour force increases more than total population is due to the assumption that CEE immigrants feature labour market participation rates above the average of the total population. Table 9 presents the additional effect of increased immigration to the basecase enlargement scenario. Given the fixed availability of land, aggregate production will exhibit decreasing returns to other input factors including labour. Therefore, the effect on employment is seen to exceed the effect on aggregate GDP. Given the lowered capital-labour ratio, the increased labour supply implies a drop in the wage rate and thereby the wage income of households is observed to increase more moderately than real GDP. Total real private consumption therefore also exhibits a smaller steady state multiplier than does real GDP.

At first sight the projected increase of total private consumption suggests that the increased level of immigration leaves households better off, particularly in the long run. However, we cannot conclude that welfare is actually improved since the population size has increased as well. The notion of equivalent variation cannot be applied to scenarios in which the population is subject to change given the construction of our representative households[6]. As a proxy the notion of consumption per capita may provide some insights to the position of households. In Figure 3 the development and steady state effects to real GDP, employment and consumption is depicted per capita. The observed oscillations are caused by feedback effects to fertility as the stock of CEE immigrants converge to its steady state level. Consumption smoothing drives the more moderate oscillations in private consumption. Production per capita is seen to exhibit a decrease given the mentioned decreasing returns to scale of labour in aggregate production. Real private consumption per capita is in steady state observed to decrease by 0.38 points while employment per capita increase by 0.09. All these observations add up to indicate a welfare loss.
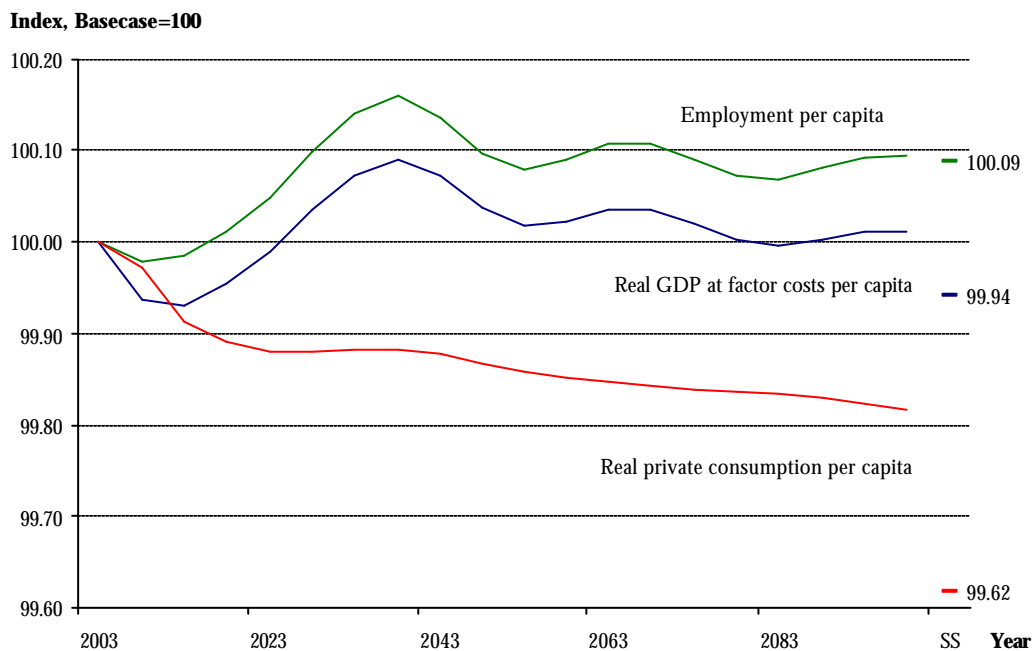
Index, Basecase=100

Figure 3 Additional macroeconomic effects in per capita terms of increased

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[6] Since the households' size change the intertemporal utility would be measured for different people in the reference and counterfactual scenario and this clearly renders the notion of equivalent variation senseless.

Our simulation study suggests that the East enlargement will benefit the Danish economy although the projected welfare gains are moderate. The projected welfare gains fall in the range from 0.09 to 3.7 percent of 1998 GDP reflecting the alternative scenarios for the route taken for funding the enlargement. The basecase scenario accounts for an aggregate welfare gain of 1.27 percent of GDP. This gain is not large and a few currently living generations face very small losses due to the required restructuring of domestic production. These losses should be considered insignificant, especially compared to the gains of future generations and, in a less national perspective, the citizens of the CEE region. Given our simplistic modelling of international financial markets we are not able to address the potential gains to the Danish economy of free movement of capital. To the extent that foreign direct investments in the CEE region are able to yield higher returns than current capital placements, enhanced capital income of domestic citizens will imply welfare gains as well.

As demonstrated, it is imperative to the bottom line for Denmark that the enlargement actually brings about enhanced growth in the CEE countries. If this is not the case, the projected welfare gain reverses to a loss of 1.88 percent of 1998 GDP. The importance of the loss should not be overstated as the generation worse off only stand to loose approximately € 580 per head measured at 1998 prices. Arguably, previous enlargements have induced growth in entrant states, but the large number of countries included in the East enlargement implies that the challenges facing the EU are indeed more substantial. However, we do consider the assumed growth bonuses of 1.4 percent to be conservative if not realistic.

The study presented here suggests that the East enlargement will have moderate positive effects to the Danish macro economy but the gains are not necessarily evenly distributed. The cuts to CAP expenditures will likely imply that some farmers are required to seek other occupations just as the required restructuring of domestic production will imply layoffs. To some labour market segments this may lead to at least temporary losses of income. We are not able to address these issues of intra-generational redistribution in our model framework. Seen from a narrow national economic perspective our projections indicate that the enlargement should be considered desirable. In the event that our specification of the basecase misses the mark with respect to the catching up of the CEE countries the welfare loss cannot be considered a prohibitive price for the realization of the political benefits of an enlarged European Union.

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