The Eastern Enlargement of the Eurozone and Labour Market Adjustment

Jaakko Kiander
Risto Vaittinen
Tiiu Paas

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Jean Monnet Centre of Excellence

Freie Universität Berlin
Ihnestr. 22, 14195 Berlin, Germany
Phone: +49 (30) 838 – 54966
Fax: +49 (30) 838 – 52357
Email: info@ezoneplus.org

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Abstract

This paper analyses the economic effects of the eastern enlargement of the EU both on the existing Member States and the candidate countries using simulation results of a dynamic computable general equilibrium model. In addition to conventional trade policy impacts such as custom union formation and common agricultural policy the effects of factor mobility, induced by institutional changes, are analyzed. The analysis is based on six different scenarios. According to the results EU membership will accelerate growth in output, investment and consumption in the candidate countries in all scenarios. However, it turns out that factor mobility effects dominate those of conventional trade policy. Growth in national income will lag behind GDP growth because profits will be paid out to foreign investors. Migration will slow output growth in the candidate countries and accelerate growth in the existing Member States, while the trends in per capita consumption will be reversed; migration increases per capita consumption in the new Member States and reduces it slightly in the existing ones.

JEL–Classification: C68, F10, F15, R23

Keywords: Eastern enlargement of the EU, General equilibrium modeling, Integration, Migration, Trade policy

Corresponding authors:

Jaakko Kiander & Risto Vaittinen
Government Institute for
Economic Research (VATT)
Hämeentie 3
P.O Box 269
FIN - 00531 Helsinki
risto.vaittinen@vatt.fi jaakko.kiander@vatt.fi

Tiiu Paas
Institute of Economics
University of Tartu
Narva mnt 4 - A 315

EST- 51009 Tartu
tpaas@mtk.ut.ee

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The Eastern Enlargement of the Eurozone and Labour Market adjustment[1]

Jaakko Kiander and Risto Vaittinen

Government Institute for Economic Research (VATT), Helsinki

Tiiu Paas

University of Tarto

Abstract: *This paper analyses the economic effects of the eastern enlargement of the EU both on the existing Member States and the candidate countries using simulation results of a dynamic computable general equilibrium model. In addition to conventional trade policy impacts such as custom union formation and common agricultural policy the effects of factor mobility, induced by institutional changes, are analyzed. The analysis is based on six different scenarios. According to the results EU membership will accelerate growth in output, investment and consumption in the candidate countries in all scenarios. However, it turns out that factor mobility effects dominate those of conventional trade policy. Growth in national income will lag behind GDP growth because profits will be paid out to foreign investors. Migration will slow output growth in the candidate countries and accelerate growth in the existing Member States, while the trends in per capita consumption will be reversed; migration increases per capita consumption in the new Member States and reduces it slightly in the existing ones.*

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1. Introduction

The European Union is committed to being ready to accept new members – although it is not sure when. The group of candidate countries consists of ten Central and Eastern European (CEE) countries plus the Mediterranean island states Malta and Cyprus. The eastern enlargement of EU poses a major challenge both for the current member countries and accession countries to integrate a large number of national economies with different structures and income levels. The new members of EU will get full access to the European Single Market with free movements of goods, services, labour and capital between countries.

[1] This paper has been prepared as a part of a broader Ezoneplus project that evaluates European Monetary Union (EMU) and its enlargement to prospective members in central and eastern Europe. The project is Financially supported by European Commission (HPSE-CT-2001-00084).

In the absence of any transition periods the new member countries would be entitled to many income transfers from the EU programs as well as free labor mobility. It is usually expected that the integration will redirect trade, cause factor movements and speed up economic convergence between the less and more advanced economies of the Union. The convergence of the economies should be achieved by increased trade and specialisation, which requires structural changes. Capital movements from old to new member countries through FDI and transfers from the EU cohesion funds can facilitate these.

Another important question related to the enlargement is monetary integration. The new member countries need to somehow arrange their relations with the EMU. There may be some transitory arrangements with exchange rate targeting, but finally all member countries are expected to join the monetary union and become a part of the Eurozone. What kind of consequences that will have?

The likely membership of the new member countries in the eurozone will make these changes faster by increasing the transparency of the costs and prices and by reducing the transaction costs. With common currency the transparency of the economies will be increased and stronger incentives for factor movements will be created. What the likely effects of capital flows and structural changes to accession countries will be depend to a large extent on the working of the labour markets of those countries. The migration flows – often a cause of political concerns – will also be affected by the labour market institutions of the old member countries. If the labour markets of the accession countries fail to adapt to the challenges of monetary union, the convergence process will be hindered. This, in turn, may result in unemployment and migration.

The European Union is committed to being ready to accept new members in 2002. In practice enlargement will take place later. There are currently around 10 candidate countries that can be expected to become EU members in the next 3-10 years. Sizeable differences exist between the probable new Member States. They include small, medium-sized and one large country – Poland.

In terms of their population, most of the applicant countries are small or medium-sized. The total population of the new member candidates is around a quarter of the population of the current EU. The economies of these countries are correspondingly small also. The economic and other differences between the applicant countries are significant. The income level in the most advanced applicant countries (the Czech Republic and Slovenia) is close to that of some

current Member States. The weakest countries, on the other hand, are still well behind the EU level. On average, the income level of the applicant countries is around 40 per cent of that in the EU. Thus the differences in income between the current EU countries and the countries aiming for membership are larger than when Portugal and Greece acceded to the Union.

This study examines the effects of the EU's eastern enlargement on migration of labor, investments, consumption and production. These are evaluated using simulation results of a dynamic numerical general equilibrium model. The analysis is based on six different scenarios. The macroeconomic effects are evaluated in terms of fixed-price GDP, national income and per capita private consumption. GDP measures the change in the level of economic activity resulting from eastern enlargement. However, GDP is not a valid measure for regional income trends, if international capital movements change local ownership patterns and thereby regional capital income claims. Unlike GDP, national income describes the change in production factor incomes paid in the region. It also describes the growth in national economic potential better than GDP.

A special focus lies on the Baltic region countries. That is a region with many historical and cultural ties consisting now of two large countries (Germany and Poland) and a number of smaller ones. The three Baltic countries – Estonia, Latvia and Lithuania – are among the candidate countries. During the post-Soviet era they have established tight economic linkages with Germany and the Nordic countries. They have also experimented with currency board systems resembling the European monetary union in many ways.

2. The accession process and the candidate countries

The accession process

At present relations between the EU and the applicant countries are based on bilateral 'Europe Agreements', which set out the framework for the political and economic integration of the CEE countries with the EU. The first of these agreements were signed in 1991 with Hungary, Poland and Czechoslovakia, and subsequently with Bulgaria, Romania and the three Baltic states. However, the first agreements did not contain any statements referring to membership.

The Europe Agreements form a comprehensive framework for bilateral relations between the EU and each of the CEECs. From an overall economic perspective, the most important areas covered are establishment of a free trade for industrial goods, liberalization of capital movements, approximation of laws relevant for the EU's internal market and competition policy, and financial co-operation, notably under the Phare Programme[2].

However, the Europe Agreements fall short of full membership of the EU in certain important areas. While they include provisions for dismantling quantitative restrictions on agricultural products and improved market access in both directions, they do not yet give the CEECs free trade in the agricultural sector. Another economically important area where the CEEC 10 does not have full access to EU markets is in the area of labor mobility: migration from the CEEC 10 is still strictly regulated.

At the Copenhagen European Council in June 1993 a decision was reached on the long-term political strategy for European Union enlargement under which the associated countries of central and Eastern Europe could apply for EU membership. At the same time the general criteria for accession of the associated countries were adopted. Known as the Copenhagen criteria, these stipulate that applicant countries must have:

(1) stable social institutions to guarantee democracy, the rule of law, human rights and respect for minorities and their status;
(2) a functioning market economy and the ability to cope with the pressures of competition and market forces in the Union, and
(3) the ability to assume the responsibilities of membership, including the creation of a political union and the objectives of Economic and Monetary Union.

Table 1: Candidate country groups

	Year	Countries
Luxembourg group of candidate countries	1997	Poland, Czech Republic, Hungary, Slovenia, Estonia, Cyprus
Helsinki group of candidate countries	1999	Latvia, Lithuania, Slovakia, Malta, Bulgaria, Romania
Candidate country status granted	1999	Turkey

[2] Mayhew (1998) has a detailed presentation of the contents of these agreements.

In December 1997 the EU decided to begin membership negotiations with the countries subsequently known as the Luxembourg group – Estonia, Poland, Hungary, the Czech Republic, Slovenia and Cyprus. At the Helsinki summit in 1999 it was decided to begin negotiations with Latvia, Lithuania, Slovakia, Romania, Bulgaria and Malta – the so-called Helsinki group. Turkey was also granted the status of applicant country, but negotiations have not been started. A membership perspective has also been promised to the countries of the western Balkans, with whom the intention initially is to conclude Stability and Association Agreements.

The candidate countries

There are currently around 10 candidate countries that can be expected to become EU members in the next 3-10 years. Sizeable differences exist between the group of current member states and candidate countries as well as within the group of candidate countries. They include small, medium-sized and one large country – Poland. Table 2 presents the population figures of the applicant countries of central and Eastern Europe and their income level relative to the average of the EU's current Member States. The candidate members clearly diverge from the relatively homogeneous group of the current Member States.

In terms of their population, most of the applicant countries are small or medium-sized. The economies of these countries are correspondingly small also, which further accentuates the big differences in price levels in the different countries. Since the applicant countries are at least economically small states, the economic effects of their accession are small from the EU's perspective. However, the large number of countries relative to the EU's present membership presents problems and challenges to the decision making institutions of the Union.

Table 2: The candidate countries: population and income

	population	GDP, billion euros	GDP per capita as percent of EU15 average (PPP)
Poland	38.7	140	37
Czech Republic	10.3	50	60
Hungary	10.1	42	47
Slovakia	5.4	18	46
Lithuania	3.7	10	31
Latvia	2.4	6	27
Slovenia	2.0	17	69
Estonia	1.4	5	37
Cyprus	0.7	8	79
Malta	0.4	3	40
Total of the above 10 countries	75.1	299	40
EU15	375	7550	100
Romania	22.5	37	27
Bulgaria	8.2	11	23

The total population of the 10 most likely applicant countries – the most likely new Member States – is 75 million. Although this is a high figure, it is only 20 per cent of the Union's current population of some 375 million. The population of the first wave of candidate countries is thus so low in relative terms that even significant migration from these countries would not cause any major changes in the population of the current Member States.

Given the big economic differences between the EU15 and candidate countries, even small income transfers or investment flows (as a share of EU15 GDP) would be large in the candidate countries (as a share of their GDP). So modest changes in migration and capital flows would have a decisive impact on the economic development of the accession countries;

for them the enlargement is hence a large-scale economic issue. The same does not hold for the EU15.

The economic and other differences between the applicant countries are significant. The income level in the most advanced applicant countries (the Czech Republic and Slovenia) is close to that of some current Member States. The weakest countries, on the other hand, are still well behind the EU level. On average, the income level of the applicant countries is around 40 per cent of that in the EU measured by PPP values. Thus the differences in income between the current EU countries and the countries aiming for membership are larger than when Portugal and Greece acceded to the Union. Their income level was 60-70 per cent of the average of the then EEC. Now the income level of Slovenia and the Czech Republic is close to the member of the current Union with the lowest income level – Greece, the other applicant countries being well below this level.

The applicant countries differ in their economic structure. Compared to the current EU Member States, the share of agriculture of aggregate GDP is relatively large in applicant countries. Furthermore, the primary production's relative share of labour force is even higher than the corresponding relative figure of value added implying that the labour productivity compared to other sectors is lower in applicant countries than in the EU – which will make the need for structural change even greater. The agricultural sector in Poland is large in absolute terms. It produces almost 50 percent of the total value added of agriculture in the whole group of 10 candidate countries. The number of people employed by agriculture in the candidate countries is 40 percent of that in the current EU.

The applicant countries have managed to avoid uncontrolled inflation and to keep the monetary economy relatively stable. Almost all the countries have some form of exchange rate system based on a fixed exchange rate. The current account deficits and the need to finance these makes most of the candidate countries dependent on continual imports of foreign capital, and hence also vulnerable to changes in investor sentiment. Compared to the current EU countries all candidate countries still have a low income-level and low labour costs. Applicant countries have succeeded in attracting relatively large amounts of foreign capital in the 1990s.

The transition process

All post-socialist countries had significant output decline during the transition processes (Table 3). The output decline was predominantly related to supply side shocks and structural

imbalances, which have been accumulated for decades under the socialist regime (R. Holzmann *et al*, 1995).

At the beginning of the EU eastward enlargement processes – in year 1999, the Baltic states still had not achieved the GDP level that it had before the transition processes started, but other first round applicant countries like Poland, Czech Republic and Slovenia already succeeded to achieve it. Poland and Slovenia started with the market economy oriented reforms earlier and their initial conditions were more favourable for economic reforms and serious restructuring of their economies. Poland used the shock therapy while Slovenia has relied more on gradual reforms.

Transition reforms reduced output and affected also severely employment in all CEE countries. Reductions of output invariably reduced employment and increased both the number of the unemployed and inactive individuals. But the mode of adjustment differed significantly between countries both regarding how strongly employment was affected and which non-employment destinations were used. One of the most conspicuous consequences of the reforms of all former socialist economies was the emergence of large-scale unemployment (Table 4). At the beginning of the EU accession processes, unemployment rate was around 10% in all three transitional countries Estonia, Poland and Slovenia (respectively 9.6% in Estonia, 10,6% in Poland, and 7.9% in Slovenia). There have been some differences in the dynamics of unemployment rates between these countries over the period 1991-1998. Slovenian unemployment rate has been rather stable, between 7-9%. Poland's unemployment rate increased rapidly during the first years of transition (1991-1994), it declined in 1994-1998, and has been increasing again since 1999.

TABLE 3: GDP levels in the East and Central European Countries, 1989-1999

(GDP index, 1989 = 100**)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999*
Bulgaria	90.9	80.3	74.4	73.3	74.6	76.2	68.5	63.7	65.9	65.9
Czech Republic	98.8	87.4	84.6	85.1	87.8	93.4	96.9	97.2	95.0	95.0
Estonia	*91.9*	*79.4*	*68.1*	*62.0*	*60.8*	*63.4*	*65.8*	*72.8*	*75.7*	*75.7*
Hungary	96.5	85.0	82.4	81.9	84.3	85.5	86.6	90.6	95.2	98.1
Latvia	102.9	92.2	60.0	51.1	51.4	51.0	52.7	57.2	59.2	60.1
Lithuania	95.0	89.1	70.1	58.9	53.3	55.2	57.9	62.2	65.4	65.4
Poland	*88.4*	*82.2*	*84.3*	*87.6*	*92.1*	*98.6*	*104.6*	*111.8*	*117.1*	*121.2*
Romania	94.4	82.2	75.0	76.1	79.1	84.7	88.2	82.1	76.1	73.0
Slovakia	97.5	83.3	77.9	75.0	78.6	84.1	89.6	95.4	99.6	101.4
Slovenia	*95.3*	*86.8*	*82.0*	*84.3*	*88.8*	*92.5*	*95.7*	*100.1*	*104.0*	*107.6*

Source: EBRD Transition Report 1999; * - predictions

TABLE 4: Unemployment rate in the East and Central European Countries, 1991-1998, based on labor force surveys

	1991	1992	1993	1994	1995	1996	1997	1998
Bulgaria	-	-	21.4	20.5	14.7	13.7	15.0	16.0
Czech R.	-	-	3.9	3.8	4.1	3.9	4.8	6.5
Estonia	*1.5*	*3.7*	*6.5*	*7.6*	*9.7*	*10.0*	*9.7*	*9.6*
Hungary	-	9.3	11.9	10.7	10.2	9.9	8.7	7.8
Latvia	-	-	-	-	18.9	18.3	14.4	13.8
Lithuania	-	-	-	17.4	17.1	16.4	14.1	13.5
Poland	-	*13.7*	*14.9*	*16.5*	*15.2*	*14.3*	*11.5*	*10.6*
Romania	-	-	-	8.2	8.0	6.7	6.0	6.3
Slovakia	-	-	12.2	13.7	13.1	11.1	11.6	11.9
Slovenia	*7.3*	*8.3*	*9.1*	*9.0*	*7.4*	*7.3*	*7.4*	*7.9*

Source: Central European Countries´ Employment and Labour Market Review, EUROSTAT, Theme 3, 1999-1

The Baltic trio

Estonia, Latvia and Lithuania belong to a cluster called “The Baltic states”. The countries in this group are almost identical to each other in many aspects, but there are also some intra-cluster differences between the Baltic economies.

The initial conditions of transition and the first steps of macroeconomic stabilization in the Baltic states have been analyzed by Ardo Hansson and Jeffrey Sachs (see Hansson and Sachs, 1994; Hansson, 1997) in the middle of the 1990s. According to Hansson (1997, pp.256-261), the Baltic countries have been undergoing the same transformation as the CEE countries. At the same time, the Baltic countries stabilized their economies under much less favorable conditions than those of most CEE countries and Russia. They experienced larger terms of trade shocks, due both to a high dependence on energy imports and to relatively lower energy prices that prevailed in the FSU as compared to CEE. The Baltic countries as small countries were more affected by the collapse of trade that hit other economies in transition (for instance, Russia was least affected). In spite of having relatively reformist and within the FSU, the Baltic countries inherited more distorted economies than, say, Poland, Slovenia and Hungary, which already introduced some market elements during previous decade. Almost the only sense in which the Baltic countries had better initial conditions was their start from a position of zero foreign debt, as Russia took over all of the foreign assets and liabilities of the FSU.

After regaining their independence in 1991, the Baltic states were in a situation where they lacked macroeconomic policy completely. The economy was collapsed and it had a legacy of hyperinflation from the Soviet Union. Since that time, all Baltic governments have followed almost similar principles of economic policy that were directed to solving the following main tasks:

(i) liberalization of prices and gradual elimination of all state subsidies;

(ii) privatization of state owned enterprises;

(iii) introducing a separate currency by means of a currency board system (Estonia and Lithuania) or regular pegs (Latvia);

(iv) maintaining a conservative fiscal policy;

(v) implementing a comparatively liberal foreign trade regime.

The Estonian economic policy, and foreign trade policy has been the most liberal. Estonia introduced a foreign trade system without tariffs or quantitative restrictions. Lithuania introduced a relatively extensive system of trade barriers. Latvia has been somewhere between Estonia and Lithuania with its trade policy liberalisation.

3. The effects of integration

Factor mobility and trade

The CEE countries' trade is already very much directed towards the EU. Imports of industrial products from the CEECs to the EU have been liberalized since the start of 1997. The end of 2001 will conclude liberalization of exports of industrial products from the EU to the applicant countries. The overall trade implications will be much more pronounced in the applicant countries because CEE exports represent just under one per cent of the GDP of the current EU, whereas exports to the EU represent 15 per cent of the CEECs' GDP. Growth in CEE trade may continue to be rapid on account of economic growth and differences in growth rates, even if EU membership itself does not produce any further significant boost to growth.

The free trade provisions do not cover agricultural products, which are important to the CEECs. The concessions made by the EU under the Europe Agreements to agricultural products are negligible. The applicant countries give considerably less support to their agricultural sectors than in the EU, both in terms of boarder protection and domestic subsidies. Under the Europe Agreements, certain agricultural products from the EU are given preferential treatment in the applicant countries and most quantity restrictions have also been abolished. Thus the EU's agricultural trade surplus with the CEECs is largely attributable to asymmetrical trade liberalization. EU membership will alter this situation to the benefit of the new Member States unless the change is hampered by long transition periods.

Apart from some sensitive sectors, EU enlargement ought not to cause major changes to trade flows. On the other hand it is generally assumed that membership will have a major influence on investments even though most of the CEECs have a relatively open investment climate already. The biggest change with full membership is likely to be the reduction in investment-related risks and greater stability and credibility. Legislative harmonization and a reduction in institutional uncertainty may have a significant effect on investment growth both in the short and long term. In practice this means that investments will partly be redirected

from the old to the new Member States. The experience of Spain's accession to the EEC supports the view that membership will lead to a spike in investment flows (see Baldwin et al, 1997).

So far foreign direct investment has been concentrated only on the most successful CEECs. Those countries, which have been most proficient in implementing reforms, which have gone furthest in privatization and have succeeded in combating inflation, have also succeeded in attracting foreign investment. Privatization has already advanced very far, especially in Hungary and Poland and in recent years also in the Baltic States. This means that most of the companies that attract foreign investors have already been sold through privatization programs. Therefore the most advanced applicant countries are increasingly dependent not on companies being purchased but on true direct investments – new investments. Any reduction in direct investments would slow the catch-up process with the EU. Direct investments have also been the most important means of funding current account deficits.

The movement of capital via direct investments is generally easier and quicker than the movement of labour from one country to another. Capital is more mobile than labour. EU membership is likely to increase the credibility and attractiveness of the transition economies joining the Union as investment destinations. The prospect of EU membership and efforts undertaken by some of the transition economies themselves have already led to significant direct investments (particularly in Poland, the Czech Republic, Hungary and Estonia). When capital moves into the new Member States, labour does not need to move away. The movement of capital into the new Member States will slightly dampen demand for labour and the growth in real wages in the old Member States and thus marginally weaken their attractiveness as destinations for migration. Direct investments will correspondingly increase demand for labour, productivity and real wages in the new Member States, in turn reducing migration. If this favourable trend continues for long enough, the final outcome will be that the economies become more similar and the differences in living standards disappear.

Effects of full membership

The enlargement implies two kinds of changes for the economic environment of the new entrant economies. New members are affected by changes in traditional trade policy as well as institutional factors that will follow from the adoption of common market rules and institutions. In the sense of traditional trade policy, enlargement is a formation of a custom union. This implies removal of all bilateral border measures between the EU and CEECs and

adoption of common trade policy measures against third parties. Since tariffs in industrial trade are removed when the enlargement is planned to take place, the most important aspect in the bilateral trade relations are the removal of trade barriers in agricultural and food production and the introduction of Common Agricultural Policy (CAP) to new entrant economies. The customs union implies also harmonization of new entrants tariffs against third parties to those applied in EU.

Trade policy is only one aspect of the integration. EU is a single common market area with harmonized commercial legislation and industrial standards. Unified regulations cover common competition and state-aids policy as well as administrative procedures to implement these regulations. The internal trade is also free of border formalities. Despite the duty free character of trade in manufactures, this trade is subject to rules of origin regulations that impedes completely unparalleled access to EU's internal markets. The membership in Union removes these frictions in trade. Balwin et al. (1997) has emphasized the importance of these aspects for the improved business confidence in new member countries. Harmonized market rules constrains the opportunity of new entrants to conduct arbitrary commercial and industrial policy. In addition to the goodwill effects regional integration reduces transaction costs of bilateral trade with new partners in common market area.

If membership takes place without transition periods and without changes in the current EU policies, it will mean an immediate transition to the free movement of labor, significant income transfers to agriculture within Common Agricultural Policies and subsidized investments in infrastructure through the structural funds. The new members will also be involved in the EU's decision-making. Because agriculture and structural funds are overwhelmingly most important categories in budgetary terms, they will also be of major importance for new members states.

The Structural Funds are transfers to poorer member states and regions in the EU. Funds are targeted to increase 'social cohesion', that is generally taken to mean convergence of per capita incomes. EU's structural policy has strong regional emphasis but there are also non-regional objectives. From Single European Act onward the Structural funds have been allocated within operational periods. In period 1994-1999 regional policies were addressed under four objectives and non-regional cohesion policies under three objectives. These polices were financed from four different funds. In Agenda 2000 the number of objectives was diminished into three:

- Objective 1: Regions that are lagging behind,
- Objective 2: Economic and social conversion of areas facing structural difficulties,
- Objective 3: Adaptation and modernization of policies and systems of education training and employment.

In addition to these, there is a special Cohesion Fund for less developed member states to support the development to meet the criteria of monetary union. There's also a separate Community initiative program to support transnational, cross-boarder and inter-regional actions.

The first two objectives are regional and the third one uses horizontal measures that are not region specific, but are however directed towards regions with high unemployment. Only regions that are not qualified for support on the basis of objectives 1 and 2 are eligible for support on the basis of objective three. Previously the subsidies under objective one were based solely on the level of regional GDP per capita. Regions were GDP per capita were less than 75 per cent of EU average, measured by PPP-standards, were obliged to this support. Unemployment has been added to as supplementary criteria to allocate the funds. According to Wiese et al (1999) estimates two thirds of the expenditures of this objective goes to Greece, Portugal and Spain. The expenses under objective one covers 60 per cent of all structural subsidies. Germany, France and UK, but also Spain, are main recipients of objective 2 and 3 funds.

Convergence and migration

The main economic effects of EU enlargement have to do with movements in the factors of production and convergence of economies. Experience from previous enlargements, when countries poorer than the average acceded (Ireland, Greece, Spain, Portugal), shows that membership leads to growth in foreign trade and investments and to accelerated technical progress in the new member states (Baldwin et al, 1997). Closer participation in the international division of labor raises the economic welfare of nations participating in integration. Free movement of the factors of production and freedom of trade lead to gradual convergence. Integration does not only bolster trade but also creates incentives for increased investment in low-income countries and for labor to move to high-income countries.

The result of these changes is economic convergence. This will mean that income and production differentials between the countries of an enlarged EU will narrow, and especially in the new Member States structural change in the economy will accelerate. The greatest benefit from membership accrues to low-income applicant countries. Although the old Member States have to foot the bill for income transfers to the new Member States, they are also likely to benefit in this process; trade increases, the division of labor intensifies, and markets expand. It is also likely that in the old high-income Member States low-wage sectors will be exposed to greater competition and wage differences will grow as a result of movements in the factors of production. For the old Member States, however, the changes will be slight. Experience from earlier enlargements of the EU show that the adjustment processes have not been easy to new member countries. In most cases unemployment has increased significantly in the candidate countries. Unemployment has usually started to rise at the same time when the countries have applied for the EU membership (and started to reform their economies in order to adapt them to membership). The period of increased unemployment has lasted for several years. That happened in Ireland in the 1970s, in Spain (and to lesser extent in Greece and Portugal) in the 1980s and in Finland and Sweden in the 1990s.

The population of the current EU is around 375 million and the labour force 175 million. The total population of the candidate countries is around 104 million and the labour force of 53 million (including Bulgaria and Romania). There are currently around 12 million foreigners living in the EU, with around 5.3 million foreign employees in the workforce (EUROSTAT, 2000). Of this population, around 800,000 persons are from the present candidate countries. Of these, around 300,000 are legally employed in the EU area. According to the Commission's (2001) report, total annual immigration to the EU area in recent years has been around 800,000 and there have been around 300,000 asylum-seekers. Boeri and Brücker (2000) have estimated that at the first years, following the enlargement, the total migration from the new to old member countries can be around 350 thousand peoples per year. This figure will decline within 10 years to less than half of this and become negligible in twenty years. Compared to the current population flow from non-EU countries, the immigration caused by EU enlargement cannot be considered dramatic. The total flows would be small. However, if the migration concentrates to only few regions, it will have larger local effects. The countries neighboring the accession countries are the most likely target countries.

The impact of monetary union

Joining the EU will cause a major impact on the new member countries and speed up the convergence process. The new member countries are also expected to somehow participate to the monetary union – sooner or later. If full membership is not feasible from the beginning, there will be some kind of transitory exchange rate mechanisms, which link the currencies of the accession countries to the ERM. Estonia, for instance, already has tied her currency to the euro through a currency board system. At the moment it is not clear what kind of monetary and exchange rate policies the new members countries will adopt and when they will join the EMU. Assuming the new EU member countries would also become members of EMU and the Eurozone, it is interesting to ask what kind of economic consequences – and especially labour market consequences – such a regime shift would have?

All three Baltic States have made use of a liberal foreign exchange policy. In 1994, the Baltic countries established the convertibility of their currencies in accordance with Article 8 of the IMF. The role of the central banks of the Baltic States in the money supply has been relatively modest so far. Estonia and Latvia are all pursuing policies of fixed exchange in the context of a currency board and Latvia in a regular peg to SDR. There are some minor differences between the currency board regimes introduced in Estonia and Lithuania, which find expression not only in anchor currencies (German mark/euro in Estonia and the US dollar in Lithuania), but also in legal coverage of some aspects of currency board operations.

The currency board regimes in Estonia and Lithuania and fixed exchange rate regime in Latvia have been central elements in economic strategies and cornerstones of macroeconomic policy, and they have provided a rather predictable and stable policy framework and supported the credibility of the governments' policies. As a result of comparatively stable and liberal economic policies, the Baltic states' economies have been successful in attracting foreign direct investments which have had a positive influence on the rapid restructuring of their economies and enabled the countries to finance large current account deficits during the transition period.

In real world exchange rate regimes and monetary policies are not neutral. To the contrary, monetary shocks tend to have large and long-lasting real effects, as shown by the experiences of the Finnish and Swedish currency crises in the early 1990s. How large and long-lasting such effects are, depends partly on the functioning and flexibility of labour markets.

The economies of the Baltic states have been seriously influenced by the political and economic situation in Russia. In the aftermath of the Russian crisis in August 1998, the experience of the three Baltic countries was similar in many respects: (1) Exports declined driven by the collapse of the CIS markets; (2) economic growth turned negative; and (3) the budgetary positions weakened.

The current accounts adjusted differently in each Baltic country, although imports declined in all three cases. In Estonia, the recession led to a pronounced improvement in the current account to a deficit of about 6 percent of GDP in 1999. This resulted from a strengthening in the private sector savings-investment balance by about 13 percent of GDP between 1997 and 1999. In contrast, the current account deficits for Lithuania remained high at around 11 percent of GDP as the deterioration of the fiscal position broadly cancelled any improvements stemming from strengthened private sector saving-investment balances. In Latvia, the current account deficit widened from about 5 percent in 1997 to about 10 percent in both 1998 and 1999 (Keller, 2000). Some main indicators of the Baltic economies in the period 1997-1999 are presented in table 5.

Table 5. Selected indicators of the Baltic economies in 1997-1999

Indicator	Estonia			Latvia			Lithuania		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
Inflation	11.2	8.2	3.3	8.4	4.7	2.4	8.9	5.1	0.8
Unemployment rate (%)	9.7	9.9	11.7	15.9	14.7	14.0	14.1	13.3	14.2
Employment rate	61.2	60.5	59.2	60.2	59.3	58.4	61.2	61.7	61.9
GDP growth	10.6	4.7	-1.4	8.6	3.6	…	7.3	5.1	…
Average monthly gross wages (US $)	257	298	326	207	226	267	195	232	287

Source: Statistical Office of Estonia. Estonia, Latvia, Lithuania in Figures 2000, Tallinn, 2000; Balance of Payments, the Bank of Estonia, www.ee/epbe (May, 2000); Estonian Statistics Monthly 2000, No 1 (97), Tallinn, 2000

Recent years have pointed out the strengths and weaknesses of the Baltic economies. From the positive side, the currency board-based monetary system proved its performance efficiency in the economic downfall. In the case of Estonia, for instance, monetary policy framework coped with the sharp changes in the economic environment, but real sector recovery was slower than expected. The year 2000 has shown that the economic growth rate was picking up slowly.

Russia's crisis in 1998 also gave lessons to develop a more active economic co-operation and better trade relations with the neighbor countries around the Baltic Sea. The Baltic Sea region provided a first experience for restructuring the Baltic states' economies according to western rules, which enables them to be less dependent on the economic and political situation in Russia and to be more open to the EU negotiations and the adjustment process.

The EMU membership of the accession countries is not likely to cause problems for them – at least not in the beginning. The system of irreversibly fixed exchange rates and monetary

union are close to the current exchange rate regimes of most accession countries. Joining EMU would decrease the devaluation and country risks and hence yield lower nominal and real interest rates, which would boost demand and economic growth – at least in short run. However, it is not impossible that financial bubbles could emerge with subsequent recessions and painful adjustments. There are many examples in economic history that such monetary expansions can cause overshooting, if the perceived absence of currency risk and the improved availability of capital induces firms and households to build up excessive debt. The adjustment processes needed to restore financial balance, especially with unregulated capital movements and exchange rate peg, maybe painful. Such risks can realise also in the case of asymmetric shocks.

By definition, a membership in a monetary union means common money, the euro. This will have some real consequences. Joining the eurozone will decrease transaction costs and increase transparency. Wage and price differentials between countries will become more visible and that is likely to speed up convergence and factor movements. If these effects were taken into account in an economic model, they could be analogous with lower transport or trading costs. Hence, adoption of common money would increase the incentives to migrate (or if not to move permanently, to work shorter periods in the high-wage labour markets).

In principle, the membership in eurozone will increase the importance of fiscal policy as the only means of national economic policy and stabilisation. However, the effective use of fiscal stabilisers will be restricted in accession countries not only by Growth and Stability Pact but also by financial market. Adjustment processes and the risk of asymmetric shocks emphasises the need for sufficient labour market flexibility.

4. Determinants of migration

Economic theory of migration as well as past experiences of international population movements help us to understand the factors affecting the migration flows and to assess their magnitudes. The basic idea of economic theory is straightforward: people move to other countries if they expect to be able to earn higher incomes in the target country. Hence the crucial variable affecting the migration decision is the income difference between the target and source countries. Since the wage and GDP differentials between the old EU member counties (‘the West’) are large, on might expect a great flow of people from the CEE

countries (‘the East’) when they join the EU. However, it is obvious that there are also other factors, which should be taken into account.

Search theory is widely used to describe and analyse labour market flows. The theory assumes that firms search for suitably qualified workers to fill their vacancies and workers search for good jobs (wage offers). It is assumed that there is lack of information in the both sides of labour market and for this reason search is costly. So firms and workers need to consider how much resources should be devoted to search activities and what offers should be accepted. If unemployment is high relative to number of vacancies, the probability to find a job is low. The matching probability can be increased by higher search activity but that is costly.

The potential migrants in East need to consider how likely it is that they will find a job in the labour market of West and what will be the expected wage level. This expectation has to be compared with the expected future incomes in East. If the wage level in East can be expected to grow faster than that in West (that is the case if there is convergence) and if there is high unemployment in West lowering the matching probability, then it is not so obvious that current large wage differentials are sufficient to induce large migration flows from East to West. The situation gets of course reversed if the Western labour market moves close to full employment (when the probability to find a job increases) and if for any reason the convergence process would be disturbed. In such a case the expected future income differential would be even higher than the current income differential between the source and target countries and the incentives to move would increase. The most important variables affecting migration are listed in Table 6.

Table 6: Factors affecting migration

Variable	Effect on migration from low-income source country to high-income target country
Expected future incomes in target country	Positive
Expected future incomes in source country	Negative
Absolute real income level in source country	Negative
Unemployment rate in target country	Negative
Unemployment rate in source country	Positive
FDI to source country	Negative
Income transfers to source country	Negative
Structural change in source country	Positive

It is quite obvious that differences in expected future incomes and in current unemployment rates affect migration. According to empirical studies of migrations also absolute income levels matter. The higher is the absolute income level in the source country, the less likely are the people of that country to move although they could increase their incomes by doing so. This result applies especially to European countries. It is well-known that European labour mobility is low if compared to that of US because of language barriers and cultural differences. People clearly prefer to live in their home regions. That is why migration will cause non-pecuniary costs, too. If there are such cultural costs of moving and if people are risk averse, then sufficiently high absolute income level in source country can compensate for the expected benefits of migration.

In the case of EU enlargement, there are to main outside factors, which affect the labour market of East and hence also the incentives to migrate. Foreign direct investment to East

increases the capital-labour ratio and also the wages, incomes and future incomes. Thus FDI decreases migration. The other important variable is the income transfers from West to East through the EU. They increase the capital stock in East (structural funds channelled to infrastructure investment) and raise the disposable income (agricultural subsidies). Structural change, which is likely to speed up as a result of membership and specialisation, is expected to increase unemployment in short and medium run and that will increase pressure to migrate.

The labour market indicators of Table 7 show that there is quite a lot of need for labour-saving structural change in the candidate countries. In most of them, the labour shares of agriculture and manufacturing industries are higher than in the old member countries. There are pressures to decrease the labour share of these sectors and increase the underdeveloped service sectors. While beneficial in long run, such a structural change is likely to increase unemployment in short and medium run. The nominal income levels are low and unemployment rates relatively high in the most CEE countries.

Table 7: Labour market indicators 1998

				Share of labour force in				
	Labour force (Millions)	Participation rate (%)	Unemployment rate (%)	agriculture (%)	manufacturing (%)	services (%)	GDP per capita 1998 (€)	EU FDI stock in 1997 mio €
Poland	17.2	68	10.6	19.1	32.1	48.8	3639	7165
Czech Republic	5.2	73	6.5	5.5	41.3	53.2	4869	7669
Hungary	4.0	59	7.8	7.5	34.2	58.3	4201	8120
Slovakia	2.6	70	12.5	8.2	39.5	52.3	3356	1290
Lithuania	1.6	75	13.3	21.0	27.6	51.4	2567	390
Latvia	1.2	72	13.8	18.8	26.2	55.0	2337	177
Slovenia	1.0	71	7.9	11.5	39.2	49.3	8797	809
Estonia	0.7	73	9.9	9.5	33.2	57.3	3181	399
Cyprus	Na	62	9.6	9.6	na	Na	12217	269
Malta	na	Na	5.1	1.8	Na	na	8201	Na
CEEC10								
Romania	11.6	76	6.3	16.9	29.4	53.7	1507	748
Bulgaria	3.6	63	14.1	26.2	30.6	43.2	1337	347

Given that there will be migration from East to West, what will be the likely effects of such a change? These effects are summarised in Table 8. First, migration will decrease labour supply and unemployment in the source country. If the capital stock is given, that will mean higher capital-labour ratio and eventually also higher real wages in source countries. Thus migration will help to achieve convergence in income levels. In Western countries the effect will be the opposite: migration will slow the rate of increase of capital-labour ratio and real incomes. However, since West is much larger than East, the negative income effect will in relative terms be much lower in West than the positive income effect in East.

The migration is not likely to have an uniform effect on the Western labour market. It is usual that immigrant workers start their careers in low-skilled jobs. This means that migration will increase the supply of low- or unskilled labour in West, which in turn will cause a downward

pressure on the relative wage of that group. If lower relative wages will be reflected in lower relative prices in labour-intensive goods, the skilled labour in West will benefit.

What happens to unemployment rate in West is not clear. It is possible that migration will in medium term increase unemployment (Kiander and Viren (2001) have presented evidence that the West European labour markets have in past been relatively sluggish to adapt population changes). However, there is also evidence from large migrations, which have not caused unemployment or falling wages in the target regions. If the labour markets are flexible enough and if macroeconomic policies support expansion then it is not impossible that increased labour supply would transform smoothly to higher employment and higher output.

Table 8: The labour market effects of migration

Variable	Effect of migration from source to target country on:
Capital-labour ratio and wage level in source country	Positive
Capital-labour ratio and wage level in target country	Negative
Real wage of skilled labour in target country	Positive
Real wage of unskilled labour in target country	Negative
Unemployment rate in target country	Depends on labour market flexibility
Unemployment rate in source country	Negative

6. Modeling the enlargement effect on labour market - general equilibrium approach

The consequences of such a change have been studied by using computable general equilibrium models (CGE). However, usually such models are based on the assumption of flexible prices and wages and the questions related to gradual adjustment and nominal rigidities have been neglected.

CGE models have in recent years become one of the most widely used tools for the analysis of policies and shocks that involve structural changes in the economy. Francois and Reinert (1997) surveys a comprehensively CGE analysis applied on trade policy issues. CGE-models contain the necessary data on both the structures and markets of an economy that are necessary for such analyses. The distinguishing characteristics of computable general equilibrium models are as follows.

(i) They include explicit specifications of the behavior of several economic actors. Typically they represent households as utility maximizers and firms as profit maximizers or cost minimizers. Through the use of such optimizing assumptions they emphasize the role of commodity and factor prices in influencing consumption and production decisions by households and firms.

(ii) They describe how demand and supply decisions made by different economic actors determine the prices of at least some commodities and factors. For each commodity and factor they include equations ensuring that prices adjust so that demands added across all actors do not exceed total supplies. That is, they employ market *equilibrium* assumptions.

(iii) They produce numerical results (i.e. they are *computable*). The coefficients and parameters in their equations are evaluated by reference to a numerical database. The central core to of the database of a CGE model is a Social Accounting Matrix (SAM) that shows for a given year the flows of commodities factors and transfers between industries, households, governments, importers and exporters. The SAM data is usually supplemented by numerical estimates of various elasticity parameters. These may include substitution elasticities between different inputs in production processes, price and income elasticities of demands by households, and and foreign elasticities of demand for exported products.

The main strength of CGE models is the analysis of inter-industry linkages of policy shocks or exogenous impulses. CGE models links industries via economy wide constraints e.g. constraints on deficits in balance of trade, constraints on availability of labor, capital and land. With these constraints in place, the economy-wide implications of stimulation of one industry can be negative and a favorable outcome for some industries can be at the expense of others.

The main deficiency of conventional CGE models is that they are suitable only in analyzing the efficient use of given resources. All policy-induced effects on factor accumulation are out of the scope of this type of analysis. The existing distortions, caused e.g. by taxes, tariffs and subsidies, may be magnified in the growth context, either because of productivity growth or capital accumulation. In dynamising a comparative static CGE -model three inter-temporal links were added to connect the model's individual simulation periods: (1) accumulation of fixed capital, (2) accumulation of financial claims and (3) lagged adjustment mechanisms (see e.g. Dixon and Rimmer, 2000).

In multiregional setting the modelling of financial claims to take into account the implications of the cross-ownership of wealth caused by capital movements is highly important (McDougall and Ianchovichina, 2001). If on a regional basis investments and saving can permanently diverge from each other, this will lead to changes in the areas' financial position over time. Changes in the financial position affect the definition of payments to the factors of production made abroad and received from abroad. GDP and gross national income (GNI) diverge from one another over time as the domestic and foreign financial positions change. In terms of local spending decisions and welfare, national income is a relevant variable because it describes changes in available income, unlike GDP, which describes economic activity in the region.

The model contains two types of lagged adjustments. Investment expectations may differ from the actual level of return on capital. Expectations adjust towards equilibrium by means of error-correction mechanisms. Similarly in labour markets in which unemployment is

This study assesses the economic effects of the eastern enlargement of the EU using simulations generated by a numerical equilibrium model. The model used is a dynamic extension of the comparative static GTAP model. In its production technology, the standard GTAP model (see Hertel and Tsigas, 1997) is a constant returns to scale multi-region computable general equilibrium model. The model regions are linked by bilateral trade flows. Industries are linked by input-output flows. Although product pricing is characterised by

perfect competition, commodities produced in different regions are differentiated. Differentiating commodities by region makes it possible to take into account inter-industry - trade between sectors as in Armington (1969). From the point of view of dynamic analysis the central feature of the GTAP model is the modelling of saving and investment behaviour.

In the GTAP model regional investments and saving are separate decisions. Regional saving depends on the spending decisions of households and regional investments depend on investment decisions based on the expected return. Thus in equilibrium regional saving and investments can diverge in magnitude. The payments balance need not be balanced. The average return on capital varies whilst saving and investments are globally equal.

In dynamising the GTAP model three inter-temporal links were added to connect the model's individual simulation periods: (1) accumulation of fixed capital, (2) accumulation of financial claims and (3) lagged adjustment mechanisms.

In designing the accumulation of physical capital in the model, the solutions of the Australian single-area MONASH model for dynamising the numerical equilibrium model were used (Dixon and Rimmer, 2000). The model assumes that in each period capital is sector-specific. The sector-specific capital stock changes based on the investments targeted at it.

The approach of McDougall and Ianchovichina (2001) was used in designing the accumulation of capital claims. In modelling financial claims the central motivation is to make macro accounting reflect the income distribution effects of the cross-ownership of wealth caused by capital movements. If on a regional basis investments and saving can permanently diverge from each other, this will lead to changes in the areas' financial position over time. Changes in the financial position affect the definition of payments to the factors of production made abroad and received from abroad. GDP and gross national income (GNI) diverge from one another over time as the domestic and foreign financial positions change. In terms of local spending decisions and welfare, national income is a relevant variable because it describes changes in available income, unlike GDP, which describes economic activity in the region.

The model contains two types of lagged adjustments. Investment expectations may differ from the actual level of return on capital. Expectations adjust towards equilibrium by means of error-correction mechanisms. Similarly in labour markets in which unemployment is at a level at which the price trend is stable, wage demands may diverge from equilibrium wages.

The movement of wages towards NAIRU equilibrium is described by means of error-correction mechanisms as set out by Solow (1990).

Accumulation of fixed capital

The model assumes the capital stock, $\boldsymbol{K}_t^r(\boldsymbol{i})$, to be both sector- (*i*) and region- (*r*) specific. The model calculations assume that it takes one period for investments, $\boldsymbol{I}_t^r(\boldsymbol{i})$, to turn into productive capital. Thus investments made in period *t* become productive capital in period *t+1*. Productive capital grows as per the equation:

$$\boldsymbol{K}_{t+1}^r(\boldsymbol{i}) = (1 - d^r(\boldsymbol{i})) \cdot \boldsymbol{K}_t^r(\boldsymbol{i}) + \boldsymbol{I}_t^r(\boldsymbol{i}) \qquad (1)$$

in which the parameter $d^r(i)$ describes the depreciation of the capital stock. In the model investments are defined as a positive function of the expected return on capital:

$$\frac{\boldsymbol{K}_{t+1}^r(\boldsymbol{i})}{\boldsymbol{K}_t^r(\boldsymbol{i})} - 1 = \boldsymbol{F}_{i,t}^r\left[\boldsymbol{EROR}_t^r(\boldsymbol{i})\right] \qquad \frac{\partial \boldsymbol{F}_{i,t}^r[\ ]}{\partial \boldsymbol{EROR}_t^r(\boldsymbol{i})} > 0 \qquad (2)$$

According to equation (2), an acceleration in the rate of growth of the capital stock requires an increase in the expected rate of return on capital, $\boldsymbol{EROR}_t(\boldsymbol{i})$. The fact that investments are a increasing function of the expected return on capital is based on the view that investors are cautious and shun risks. The investment allocation mechanism used in the MONASH model prevents unrealistically high short-term investment reactions relative to small changes in expected returns entering the model simulations.

Expected returns can be defined in two ways in the MONASH model, either as static retrospective expectations or as forward-looking expectations that are model consistent. In the case of static expectations investors only weigh the current return on capital and evaluate past performance in terms of expected returns. In the case of model consistent expectations investors use the model's calculations of future returns as the basis for investments. The advantage of static expectations is that the model can be solved recursively as a sequence of successive solutions. In the case of rational expectations the entire equilibrium path of the model has to be solved iteratively (Dixon and Rimmer, 2000, chapter 5). In the dynamisation of the GTAP model only static expectations have been used, where the expected return on capital converges in a lagged fashion via an error-correction mechanism towards equilibrium.

Accumulation of financial claims

The financial markets are not actually modelled in the dynamic model. In this respect the model is stylised and is constructed in such a way that it can be operationalised from minor data requirements. The main motivation for modelling financial claims is to reflect the dynamic consequences of the difference between domestic investments and saving in balance of payments accounting. In the model households do not own productive capital: this is owned by companies. The only savings vehicle of households is company shares, which represent an indirect claim on productive capital.

For the sake of simplicity the model assumes that companies' investments are financed from equity capital. In the model, the shares of a company in a particular region can be owned either by households in the region, i.e. domestic owners, or an international investment fund. The wealth of households in a region is invested either in domestic shares or in shares in an international investment fund. There is no inter-regional bilateral ownership in the model; only domestic ownership abroad and foreign ownership domestically. The aforementioned are the basis of the determination of payments to the factors of production made abroad and received from abroad. The return on domestic productive capital is shared between domestic and foreign owners on the basis of their ownership. The return on the international investment fund is distributed to the regions on the basis of the shares owned regionally. Vaittinen (2000, chapter 4.3) documents how cross-ownership of capital is reflected in the model's data. The pool of regional financial claims develops over time as follows:

$$\boldsymbol{WF}_{t+1}^{r} = \boldsymbol{WF}_{t}^{r,f} + \boldsymbol{SF}_{t}^{r} + \boldsymbol{GF}_{t}^{r} \qquad (3)$$

where $\boldsymbol{WF}_{t+1}^{r}$ is the wealth invested in companies in region r in period t+1,

$\boldsymbol{WF}_{t}^{r}$ is the wealth invested in companies in region r in period t,

$\boldsymbol{SF}_{t}^{r}$ is the savings in region r allocated to domestic wealth,

$\boldsymbol{GF}_{t}^{r}$ is the investments by the international investment fund in region r.

The pool of regional financial claims grows on the basis of the domestic savings and investments in the international investment fund allocated to it. Domestic savings $\boldsymbol{S}_{t}^{r}$ are divided into investments in domestic shares $\boldsymbol{SF}_{t}^{r}$ or shares in the international investment fund $\boldsymbol{SG}_{t}^{r}$:

$$S_t^r = SF_t^r + SG_t^r \qquad (4)$$

The resources of the international investment bank, which it can diversify, between different regions are determined by the allocation of regional savings into the international investment fund:

$$\sum_r SG_t^r = \sum_r GF_t^r \qquad (5)$$

The allocation of domestic savings between the foreign investment fund and shares in domestic companies is based on the principle whereby the aim is to keep the division of wealth between foreign and domestic wealth constant. Although this rule as such is ad hoc in nature, it is nonetheless in keeping with the empirical observation that savings strive to converge on domestic assets. The background to this is more fully described in McDougall and Ianchovichina (2001).

Labour market slow to adjust

In reality, the labour market does not generally adapt all that quickly to changes in the production structure, for instance. The result is often frictional or structural unemployment. The model attempts to replicate this observation by having the labour market slowly adjust to equilibrium. The model describes this adjustment as follows:

$$\Delta^2 w_t = -b \cdot \left(u_t - \bar{u}\right) \qquad (6)$$

where $\Delta^2 w_t = \left(w_t - w_{t-1}\right) - \left(w_{t-1} - w_{t-2}\right)$,

w_t is the logarithm of the unit wage,

u_t is the actual rate of unemployment at moment t and

$\bar{u}$ is the rate of unemployment that is appropriate at any given stable rate of inflation (NAIRU).

According to equation (6), the rate of increase in wages accelerates when the unemployment rate falls below the equilibrium rate of unemployment and slows when the unemployment rate exceeds it. Using OECD cross-sectional material, Solow (1990) has estimated the

reaction parameter of wages to be 0.5. The above model is in line with a number of micro theory models describing the labour markets (cf. Layard, Nickell and Jackman, 1994).[3]

7. Model baseline and enlargement scenarios

To our simulation purposes the 45-region 50-commodity version of GTAP-4 database is aggregated to be more suitable for our purposes. In the commodity aggregation activities closely related to CAP and sectors likely to be influenced by enlargement, are better presented in the industry breakdown. In the modeling exercise we assume that enlargement will take place at 2005. The model baseline and data is described in next section and the simulation scenarios that characterize enlargement in section 7.2

7.1. Baseline scenario of the simulation

For the model simulation the GTAP database[4] was aggregated into three regions and 15 sectors. The model's areas are the present EU, central eastern Europe (CEA) and the rest of the world (ROW). Central eastern Europe is an aggregate area comprising Bulgaria, the Czech Republic, Poland, Romania, Slovakia, Slovenia and Hungary[5]. The model contains 15 aggregated sectors. The main sectors from the point of view of the EU's agricultural policy have an important ranking[6].

In our simulation analysis the EU's eastern enlargement is assumed to take place in 2005. The model's parameters assume that prior to enlargement agriculture of present EU has been reformed in line with the AGENDA 2000 reform as adopted by the Council of Ministers in Berlin in April 1999.

[3] Kiander & Viren (1999) present empirical evidence of the times taken by the labour markets to adjust to supply shocks. In western European countries the adjustment times are typically over 5 years.

[4] The main contribution of the GTAP project to research of the international economy is its database, which describes the input and output of 45 countries or regions in 50 sectors and the bilateral trade flows between these. The database also contains information on border controls and transport costs (McDougall et. al., 1998).

[5] The GTAP database does not describe the economy of the individual candidates, only the region consisting of the countries listed above, so that our analysis of EU enlargement relies on a partly unsatisfactory regional aggregation. Bulgaria and Romania are unlikely to be among the first countries acceding to an enlarged EU. These countries' share of the composite region's GDP is around one fifth.

[6] The aggregated GTAP sectors are: cereals, beef, dairy, other agriculture, beef products, dairy products, other processed foods, natural resources, textiles, wood processing, chemical industry, metal products, transport equipment, other machinery and equipment, and services. The sector aggregation is the same as in the study by Vaittinen (2000), which describes how they have been aggregated from the GTAP database.

From now on, the EU's eastern enlargement is evaluated such that the integration scenario is compared against the baseline scenario, which is calculated up to the year 2025, i.e. the effects of integration are assessed over a 20-year period. The simulation results are reported as deviations from the basic path. The base year of the GTAP database is 1995, when many customs duties on EU and eastern European industrial goods were still in force. Also in that year, the commitments made in the GATT Uruguay round to remove barriers to trade began to be implemented. Implementation of the AGENDA 2000 programme's reforms is also a precondition for the EU's eastern enlargement because agricultural reform will significantly reduce the costs of integration to the EU budget.

These factors have been included in the baseline path. Allowance has been made for the reduction in bilateral trade barriers under the Association Agreements, the GATT commitments and the changes to border controls required by AGENDA 2000 in the basic path for 1995-2005. The factors have been gradually built into the basic path, with bilateral customs duties on industrial products between the EU and the association partners reduced in 1995, the GATT reform implemented in stages in 1996-2001 and the reforms required by AGENDA 2000 phased in 2001-2005. The aforementioned factors have been taken into account in the basic path of the model, with trade policy shocks representing the reforms built into the trend growth path. Otherwise the economies are assumed to evolve in line with trend growth determinants.

Table 9: Regional trend growth paths and their components

Table 9 describes the factors of trend growth. In the model, growth in GDP and the capital stock are determined endogenously. Sector-specific total factor productivity and growth in the labour force are exogenous factors. Population growth is not in itself of significance for the behaviour of the model, but the welfare measures it produces are calculated in per capita terms. Aggregate productivities for the EU and the rest of the world are calculated on the basis of the data in the study by Coyle et. al. (1998) on GDP, as residuals of the income weights of the trend growth in the labour force and the capital stock. The rate of growth in the labour force is taken to be the average rate of growth for 1980-1990. For eastern Europe there is no sense in using historical reference material; the figures are calculated based on the study by Jensen et.al. (1998, s. 16), which uses medium-term growth scenarios calculated by the World Bank.

Productivity growth in the whole economy has been divided into sectoral components by interpreting sectoral productivity figures corresponding to Bernard and Jones' (1996) material on productivity in the whole economy using least-squares regression (Vaittinen, 1999). The method as such is ad hoc, but can accommodate the general feature of growth in overall productivity that agricultural and industrial productivity regularly grow faster than productivity in services (Bernard and Jones, 1996).

7.2 Simulation shocks accompanying EU eastern enlargement

The significance of EU membership for the new Member States can be divided into two types of factors. Besides traditional trade policy, EU membership means the harmonisation of economic legislation, industrial standards and norms, common competition and business support policies and the approximation of administrative standards governing business life. Trade in the single market is not hampered by the customs formalities of ordinary foreign trade, which cause trading costs on top of the customs tariffs themselves. Institutional harmonisation lowers the risk premium on investments and channels new investments into the region. For example, Baldwin et al. (1997) have emphasised this aspect in the economic development of the countries of central eastern Europe.

This study characterises the EU's eastern enlargement by means of six alternative simulation scenarios, which are set out in *box 1*. The first and second scenarios attempt to sketch out the consequences of the policy changes without any changes in the factor mobility. The first scenario analyses the effects of traditional trade policy. The second scenario also factors in income transfers from the EU's structural funds. The third scenario analyses the option under which foreign investments in the new Member States grow with the increased economic policy credibility brought by EU membership.

BOX 1 EU's enlargement simulation scenarios

Capital has traditionally been more internationally mobile than other factors of production. However, with EU enlargement it is to be expected that labour will migrate from the new low-income Member States to the area of the Member States of the present Union. Scenarios 4-6 evaluate the significance of migration for economic development given different assumptions about the propensity to labour force movements.

Scenario 1:Trade policy

From the point of view of traditional trade policy, enlargement of the EU means the establishment of a customs union between the current EU and the new Member States and the harmonisation of the instruments of trade policy. In practice this means the dismantling of mutual border controls and the installation of a similar level of border controls towards third parties. The most significant individual element in this regard is the extension of the EU's Common Agricultural Policy to the new Member States.

With the common market barriers to mutual trade between the current EU and the new members will be removed. For the current EU, import tariffs and export subsidies will fall significantly in trade in agricultural products with eastern Europe. For eastern Europe, integration will mean moderate reductions in customs both in intraregional trade and with the EU's outlying regions. On the other hand, EU membership will significantly increase export subsidies and import duties vis-à-vis third parties. Export subsidies are funded directly from the EU's general budget. The model makes provision for this in the EU budget, which is a new element added to the GTAP model. The budget's income comprises common customs income and a GDP contribution, which keeps income and expenditure in equilibrium in the model's budget. In the model, the budget's expenditure consists solely of agricultural subsidies. Apart from changes to the actual instruments of trade policy, the simulation assumes that trade transaction costs for the EU's new and old Member States will drop by 10%. This is a standard estimate of the reduction in transaction costs in literature on the formation of the single market (e.g. Harrison and Rutherford, 1996).

Scenario 2: Structural funds

The EU has largely attempted to use the structural funds to balance out regional development within countries, but another aim of the structural funds has been to promote social cohesion. Often this has meant that Community funding has been used to solve the problems of regions suffering from high unemployment. Low GDP relative to the EU average has been the main factor in the allocation of structural funds expenditure. Regions whose GDP has been below 75 per cent of the EU average have received the bulk of funding from the structural funds. Of individual countries, the majority of structural funds expenditure has been directed at the four current Member States Greece, Ireland, Portugal and Spain. The new Member States are all poor in the sense that most of their regions are entitled to structural subsidies. At the same time, the entry of the new Member States will lower the

EU's average GDP so that many of the current recipient regions will lose the structural support they enjoy at present.

Structural subsidies have been factored into this study very much in a simple, straight-line way, being modelled simply as regional investment subsidies in central and eastern Europe. The magnitude of the subsidies is taken directly from the five-year estimate of the EU's budget guidelines (Official Journal of the European Communities, C172/1, 1999). In this estimate, the provision for structural funds expenditure on the new Member States in the period 2002-2006 is that in the first year expenditure is 3750 million euros, rising to 12 billion euros by 2006. In the estimate 2002 is the first possible year of membership for the six new Member States. In the study's scenario, the start of the planned budget expenditure is deferred until 2005. The increased expenditure has been covered by corresponding deductions from the current Member States.

The way in which the subsidies have been accounted for here is very rough. Investment subsidies, for example, have not been targeted by sector. Nor does the model distinguish between public and private investments, i.e. it is not possible to analyse the possible ways in which public investments crowd-out private investments. In the model, the structural funds are simply public support for the purchase of commodities, which promotes the accumulation of capital and economic growth. The model's calculations totally lack dynamic efficiency analyses, for example from the point of view of optimal saving. As regards any appraisal of the impact of the structural funds, therefore, the results should be seen as being indicative only.

Scenario 3: Capital movements

European Union membership will integrate the new members more closely than free trade and the customs union into the Common Market institutions and the legislation governing business life within the Community framework as a whole. EU legislation forms a harmonised operating environment – familiar especially to EU investors – and also removes the possibility of individual countries making unforeseen trade or industrial policy changes. Membership also accords companies in the new Member States full access to the Common Market. For reasons of various rules of origin, amongst others, this is not the case with free trade or the customs union.

In this study the effect of the boost to credibility brought about by institutional factors is estimated in the form of a reduced capital return requirement. The magnitude of the effect is

taken from the estimate by Baldwin et al. (1997), according to which the increased credibility would reduce the required return on capital by 15 per cent. Even allowing for this, the required return on capital remains permanently above the EU average in the model. In other words capital return rates do not need to converge in the model's calculations even in the long term, so in that sense the estimate used can be considered conservative.

Scenarios 4-6: Labour force mobility

It is believed that the freedom of movement of the labour force made possible by the EU's eastern enlargement will increase migration from the new Member States to the area of the current EU[7]. A number of studies have attempted to estimate the scale of this migration, and the findings of these are summarised in a Commission (2001) report. In assessing the labour market effects of this migration, the research findings typically range from 70-150,000 workers per annum. Higher estimates of the numbers of migrants have also been put forward, but these include dependants brought by workers and migration for other reasons. These estimates put total migration at 120-380,000 immigrants. According to the Commission's (2001) report, total annual immigration to the EU area in recent years has been around 800,000 and there have been around 300,000 asylum-seekers. Compared to this population flow, the immigration caused by EU enlargement cannot be considered dramatic.

The population of the current EU is around 384 million and the labour force 176 million. The total population of the candidate countries is around 104 million and the labour force 53 million. There are currently around 12 million foreigners living in the EU, with around 5.3 million foreign employees in the workforce (EUROSTAT, 2000). Of this population, around 800,000 persons are from the present candidate countries. Of these, around 300,000 are legally employed in the EU area.

Figure 1: Changes in employment at current member countries in alternative migration scenarios

Figure 1 presents three different scenarios of the effect of labour force mobility on the supply of labour in the current EU area. Of these, scenarios 1 and 2 are very close to the estimate of

[7] For movement of labour, see Faini (1995), Borjas (1999), Boeri and Brücker's (2000), and Bauer and Zimmermann (1999).

Boeri and Brücker (2000) of labour force mobility[8]. In the calculations in scenario 1 in the aforementioned sources the estimate is based on a calculation in which Romania and Bulgaria are not members, whereas they figure in the estimates in scenario 2. In the third scenario the propensity to migration is doubled.

In the model used in the study, migration is explained by income differences. The propensity to labour force mobility is calibrated so that it is close to Boeri and Brücker's (2000) estimate of migration. The estimates of changes in the cumulative pool diverge because in the model in this study income differences decline somewhat slower than in the estimates used by Boeri and Brücker (2000). However, they are of a similar order of magnitude.

In scenario 1, cumulative migration increases labour supply in the EU over a ten-year period by 0.35%, in scenario 2 by 0.75% and in scenario 3 by 1.4%. The corresponding figures after 15 years are 0.5%, 1.0% and 2%, and after 20 years 0.65%, 1.3% and 2.5%. The calculations assume that each employee is accompanied by one dependant. Since the share of the labour force of the total population of the EU is around half, the impact of migration on the population is relatively speaking the same as that on the labour force.

The relative impact of migration into the EU area on the labour supply or the population total remains comparatively small even if migration is assumed to be fairly substantial. But for eastern Europe the impact of migration is significantly higher. In scenario 1, cumulative migration over 10 years reduces the labour supply and the population in eastern Europe by 1.3%, in scenario 2 by 2.7% and in scenario 3 by 5.2%. The corresponding figures over 15 years are 1.9%, 3.8% and 7.3%, and over 20 years 2.4%, 4.8% and 9.2%. Relatively speaking the figures are four times the effect on the current Member States. For comparison, in the 10-year period since the border was opened, 7.3% of the population of the former East Germany has moved to the western parts of the country (Commission, 2001). Of these migrants, one third – 2.8% of the total population – moved to the west in the first six months, i.e. before German unification.

[8] Boeri and Brücker's (2000) study bases its estimate of migration on a model in which the main factor explaining migration is income differences adjusted for purchasing power. The material for the model is migration to Germany from countries from which there has been 'free' movement of the labour force.

8. Results of the model simulations evaluating EU eastern enlargement

In this section the macroeconomic effects of the six model scenarios estimating the EU's eastern enlargement are presented. The macro economic effects are assessed in terms of fixed-price GDP, national income and per capita private consumption. GDP measures the change in the level of economic activity following eastern enlargement. However, this is not a valid measure for the regional incomes trend if international capital movements alter regional ownership and thus requirements for regional capital income. The change in national income describes the change in incomes of the factors of production paid in the area. It describes national potential economic growth better than GDP. Fixed-price per capita consumption has been used here to measure the change in welfare because measures of welfare commonly used in comparative and static models such as equivalent variation cannot be computed directly in models that develop over time (see Ianchovichina and McDougall, 2001).

The effects of the EU's eastern enlargement are analysed as cumulative deviations from the basic growth path, which was described in section 3.1. In the model's calculations eastern enlargement is assumed to take place as of the beginning of 2005. The economic effects of enlargement are simulated for 20 years from that date. The effects are analysed for six scenarios (sim1-sim6). The shocks characterising the scenarios are described in *box 1*.

8.1 Impacts of enlargement on Eastern Europe

Impact of trade policy and structural funds on eastern Europe

Figure 2 presents the simulated GDP effects of eastern enlargement on the eastern European region. The cumulative effects of scenarios 1-3 are rendered as stacked bars. The results of the scenarios estimating labour force mobility are represented by lines. Scenario 1 is an estimate of the effects of traditional trade policy. The impact of this on GDP growth is remarkably small. The cumulative effect is around half of one per cent of GDP. The effect is somewhat greater in the first years of membership. The effect on GDP is the result of the more efficient use of resources. The effect on private consumption is bigger, however. This is because with the EU's Common Agricultural Policy the costs of agricultural policy are paid from the Community budget, and the resulting incomes are greater than the candidate countries' contributions to common expenditure. Another important aspect in this respect is the improvement in the terms of trade of the eastern Europe region as a result of trade liberalisation. This increases disposable incomes but not fixed-price GDP.

Figure 2: Deviation of GDP from baseline in CEA's

Scenario 2, which takes account of structural fund transfers, increases GDP only slightly at first, but more so over time. This is partly because of the assumed growth profile of structural fund income transfers, but partly because the cumulation of investments leads to increased production capital capacity. This increases disposable incomes in that when some of the increased additional incomes are saved and invested, this has multiplier effects in promoting economic growth. This can also be seen in figure 3, which compares the changes in GDP (GDP 2) and national income (GNI 2) in scenario 2. Initially, structural fund income transfers increase disposable incomes more than GDP, but the cumulation of investments means that GDP growth accelerates more than the growth in incomes.

It can be seen from figure 2 that the immediate effect of EU enlargement is that economic growth accelerates in the new Member States such that the cumulative divergence from trend is initially around 2 per cent compared to the basic path. This is largely due to the increased income transfers accruing to the new Member States. The simulations assume that at the time of enlargement unemployment in the candidate countries is at an appropriate level for stable inflation, i.e. it is at the NAIRU level. Growing income transfers increase overall demand and accelerate the rate of price increases. This increases unemployment, which dampens wage demands, so that the price trend over time stabilises on a path that is in keeping with stable growth. The growth in production immediately following integration slows for a period to below trend. After an adjustment phase, however, growth picks up again and in the model's calculations it is above previous trend growth for the entire period of the analysis.

The slowing in the initial growth stimulus should not be interpreted as a 'prediction' of the future trend in this regard, because at the time in question the countries' economic development will be affected by factors other than those in the analysis. Also, the growth profile in figure 2 is dependent on the assumptions made in the model, for example that at the outset unemployment is in equilibrium and that integration does not affect the level of equilibrium unemployment. It is to be expected, however, that after the initial growth impulse increasing income transfers will lead to a temporary acceleration in price rises and slowing growth.

Figure 3: GDP and GNI - deviations from baseline in CEA's

Impact of foreign investments on eastern Europe

Scenarios 1 and 2 analyse the effects of EU income transfers on the changed operating environment in the new Member States. Scenario 3 attempts to assess the significance of the possibly increased mobility of the factors of production as far as capital movements are concerned. Increased investor confidence will potentially be of major significance for growth in overall production in the region. In the simulated model analysis in this study the cumulative GDP divergence is twice as great at the end of the analysis period as the effects of the policy shocks purely induced by membership. In scenario 3, the cumulative GDP trend divergence is 15% above the basic scenario at the end of the period, whilst in the calculation reflecting the joint effect of scenarios 1 and 2 it is around 7% higher than the basic scenario.

The growth in foreign investments is seen in the form of strong growth in overall production, but the effect on the incomes of the factors of production in the region is very slight. This can be seen in the comparison between GDP (GDP 3) and GNI in figure 3. Disposable incomes grow only fractionally more than in scenario 2, where no assumption is made regarding the reduced anticipated rate of return on capital. At the end of the analysis period, per capita private consumption is around one per cent higher than in the scenarios that do not take account of the growth in capital movements.

As regards scenario 3, it should be noted that in the GTAP model capital income taxes are not included for any of the regions in the model. If for example a 20% effective capital income tax in eastern Europe were to be a 'competitive' rate of tax that would not alter investor behaviour, disposable incomes in the region would grow by around two per cent compared to the basic path.

Figure 4: Consumption per capita - Deviations from baseline in CEA's

Impact of labour force mobility on eastern Europe

Labour force mobility from the new Member States to the area of the current EU decreases economic growth as measured by GDP in the new Member States. At the end of the analysis period cumulative GDP in the low-migration scenario is around two per cent lower than in scenario 3. The corresponding variations for scenarios 5 and 6 are four and seven per cent. In

the maximum migration case the GDP-depressing effect of the outflow of labour is approximately equivalent to the boost received to GDP from increasing investments.

However, the outflow of labour raises the wage level and per capita incomes, which is seen in the form of significant growth in private consumption in all the migration scenarios vis-à-vis a situation with no labour outflow. In the maximum migration scenario, per capita private consumption grows almost twice as much vis-à-vis a situation with no labour outflow.

8.2 Effect of eastern enlargement on the EU's current Member States

The economic effects of the EU's eastern enlargement are an order of magnitude smaller on the current Member States. Figure 5 shows that initially the GDP effects of scenarios 1-3 are almost non-existent and even at the end of the analysis period are only around 0.25 compared to the basic growth path. In all the scenarios labour force mobility turns GDP growth positive. In the case of maximum migration overall production is 1.5 per cent above the trend growth path.

In comparing national product and national income it is noticeable that in scenario 2 national income initially declines more than GDP. This is because the current EU countries are the net payers of the income transfers received by the new Member States. In terms of national income, however, the costs are only around 0.2 per cent compared to incomes in the basic growth path. This ratio remains reasonably stable throughout the analysis period. Taking into account the possible growth in capital movements, the GDP effects are greater than the national income effects. This is because some of the investments directed at the current EU area are targeted at the new Member States. Increasing capital incomes from these countries compensate effects resulting from slowing GDP growth. As a result of the growth in capital incomes, the costs of enlargement in the calculations presented here are in fact somewhat smaller than without growing capital movements.

Migration has a distinct effect on changes in per capita consumption. In the lowest migration scenario per capita consumption falls around twice as much as without migration. However, the decline is only 0.3 per cent compared to the basic growth path. In the maximum migration scenario the change in consumption is just short of one per cent, whilst the growth in population is 2.5 per cent.

Figure 5: Deviation of GDP from baseline in the current EU

Figure 6: GDP and GNI - deviations from baseline in the current EU

Figure 7: Consumption per capita - Deviations from baseline in the current EU

8.3. Enlargement of the Eurozone and the labour market

Above we have analysed only the effects of EU enlargement and consequent factor movements on real variables like real income. However, there is also a monetary side in the enlargement process. In what follows se assume that in addition to full membership in EU, the new member countries join also the monetary union and become members of Eurozone. A new monetary regime will not only have an impact on exchange rates and price level but also on labour market adjustment, unemployment and migration flows, depending on how flexibly the labour markets react to changing environment.

Price developments in CEA's after enlargement

Real exchange rate is the ratio of the domestic GDP deflator to the rest of the world GDP deflator. If domestic inflation exceeds the foreign inflation, real exchange rate appreciates.

The starting point within the enlarged Union is large gap between the price levels of the EU15 countries and that of the CEA. The domestic price level is generally much lower in the candidate countries than in the EU15 countries. However, real economic convergence together with monetary integration should gradually result in uniform prices in the enlarged Union. This means that there has to be a significant real exchange rate appreciation in the candidate countries. It can safely be assumed that their membership in the monetary union will speed up this adjustment process.

That is why we assume in the model simulations that there will be an initial real exchange rate appreciation (up to 7%) relative to baseline in the case of early membership in the Eurozone. The change is assumed to be the largest within the first 5 years after enlargement.

After this first phase adjustment the real exchange rate is expected to return to its baseline path and then even to depreciates a little bit in the last (five) years of simulation experiment. Labour mobility starts to have a visible impact on real exchange rate only after it has taken

place quite a while (10 years). Even then this impact is fairly modest improving slightly the real exchange rate in the last years of simulations.

Trade balance and real exchange rates are mirror images of each other. Imports increase when they became relatively cheaper and exports decline when production to domestic markets becomes relatively profitable. So what we expect to happen as a result of monetary integration is that the candidate countries are first going to experience an inflationary boom with increased imports. That will end after a couple of years and a period of slower growth follows. The main reason for this growth period will be the lower interest rates and better access to capital which follow from the monetary union.

Real wages

The initial period of real exchange rate appreciation will also cause the real wages (wages divided by consumer price index) to increase in all scenarios except for the firs year of enlargement when overall price development is faster than nominal wage growth. Structural funds policies that stimulate investments have positive impact on wage also and increased capital mobility (scenario 3) further strengthens this development.

After the first year's decline there's a strong acceleration in real wage growth that overshoots and generates unemployment to moderate wage claims. After 5-years time real wage development (relative to baseline) stagnates for several years an starts to pick up its trend path in 2013.

Initially labour mobility has only very modest impact on wage development. Only after five years will changes in labour supply start to have really visible impact as higher real wages in CEA's. At the end of our simulation experiment real wages are from one to four per cent higher than in the most favorable no immigration scenario. Real wages grow faster than GDP and change the distribution of income in favor of labour.

Investments and current account

Investment increases because of structural funds subsidies and increased credibility in CEA’s. In trade policy only scenario, investments increase negligibly. The introduction of structural funds induce investments that are, after few years adjustment, about three percent above the baseline if measured relative to GDP.

When increased capital mobility is taken into account investments are roughly eight percent higher relative to GDP than in the baseline. Migration moderates this pattern only slightly. Increased capital mobility is reflected in current account deficit when domestic resources are not sufficient to finance the increased investments. Initially, the current account deficit grows faster than investments relative to GDP. This is due to the fact that increased foreign ownership induces increased capital income paid abroad. Later on this is moderated by positive trade balance development.

Monetary stability and inflation targets

[to be written]

COMMENTS ON MONETARY STABILITY, FINANCIAL SUSTAINABILITY, PRICE LEVEL CONVERGENCE AND PRICE STABILITY

IMPACT ON EUROZONE INFLATION

LABOUR MARKET CONSEQUENCES OF TIGHT MONEY – ARE THERE ANY?

9 Discussion of the results

EU enlargement will have a significant impact on economic development in the new Member States. The countries of central and eastern Europe will gain substantially from EU membership. For the EU's current Member States, on the other hand, the economic effects of enlargement – both the benefits and the costs – will be small. This difference results naturally from the difference in size between the current and the new Member States. The total population of the new Member States is only around a quarter of the population of the current EU, and their economies are very small compared to the economy of the old Member States.

The actual effects of the EU´s eastern enlargement will depend on when and in what order enlargement takes place and what transition periods are applied. The present study assumes that the new Member States will gain immediate access to the EU's Common Agricultural Policy and structural policy. If this happens, the principal effects of eastern enlargement will be the liberalisation of trade - extending also to agriculture, large agricultural and structural policy income transfers to the new Member States, growth in direct investments directed at

the new Member States, and migration from new to old Member States as a result of the free movement of labour.

The effect of enlargement on private consumption in the new Member States is greater than the change in the rate of growth in GDP. This is because the calculations assume that with the EU's agricultural policy the costs of agricultural policy will also be paid to the new Member States from the Community budget. The resulting income to the candidate countries is greater than their contributions to common expenditure. In other words the new Member States become net beneficiaries and the old Member States on average net payers. This change increases disposable incomes in the new Member States. Another aspect that is important in this connection is the improvement in eastern Europe's terms of trade as a result of the liberalisation of trade. This increases disposable incomes but not fixed-price GDP.

It turn out that that conventional trade policy effects of enlargement - formation of custom union and implementation of common agricultural policies to new member states - are of minor importance compared to the effects of factor mobility. Factor mobility is induced by institutional changes that on the one hand boosts business confidence and on the other hand removes obstacles to labour mobility.

The calculation that takes account of structural fund income transfers to the new Member States increases GDP only slightly at first, but increasingly so over time. This is partly because of the assumed growth profile in structural fund income transfers, but partly because the cumulative effect of investments increases the capacity of productive capital. This is because the model calculations assume that structural subsidies increase the investment rate in the new Member States. Initially, structural fund income transfers increase disposable incomes more than GDP, but the cumulation of investments means that GDP growth accelerates more than the growth in incomes.

Increased investor confidence as a result of EU membership is of major significance for growth in overall production in the new Member States. The growth in foreign investments is seen in the form of strong growth in overall production, but the effect on the incomes of the factors of production in the region is substantially smaller. This is because part of the profits are ploughed back to the foreign investors.

The free movement of labour is the issue that has raised the most discussion and concern in the EU's eastern enlargement. Big differences in wages and incomes will encourage people to move, and the gap in living standards between eastern Europe and the current EU countries

is large. Measured by exchange rates, the income differences between Poland, for instance, and the current EU countries are significant – around eightfold. However, income differences adjusted for purchasing power are considerably smaller, which will also reduce the willingness to move.

EU membership for transition economies entails integration and convergence. It is thought that EU membership will boost economic development in the new Member States so that eventually they will close the gap in production and productivity with the existing Member States. If convergence takes place (as it has already taken place in Poland and Hungary for five years), the income level in the new Member States will gradually approach that in the current Member States. The progressively narrowing income difference between countries will also gradually reduce migration pressures.

The model's calculations quantify the economic effects of different scales of migration. The migration of labour from the new Member States to the current EU area reduces economic growth as measured by GDP in the new Member States. A contracting labour force reduces their growth potential. However, the effect of migration is not only negative. The outflow of labour increases the salary level and per capita incomes in the new Member States, which is seen in the form of significant growth in private consumption under all the migration scenarios compared to a situation with no migration.

The economic effects of the eastern enlargement of the EU on the existing Member States will be smaller by an order of magnitude. A comparison of the trends in national product and national income shows that initially national income declines more than GDP as compared to the basic trend path. This is because the current EU countries are net payers of the income transfers received by the new Member States. In terms of national income, however, the costs are very small - only around 0.2 per cent compared to incomes in the basic growth path.

Following enlargement, the increasing capital incomes from the new Member States produced by direct investments will compensate for the effects arising from the slowing in GDP growth. As a result of the growth in capital incomes, the calculations presented in this study actually show the costs of enlargement to be somewhat smaller than they would be without increasing capital movements.

In the current Member States, too, inward migration will affect changes in per capita consumption. Even in the lowest migration scenario, per capita consumption declines around twice as much as without migration. However, the decline is only 0.3 per cent compared to

the basic growth path. In the maximum migration scenario the change in consumption is just short of one per cent, whilst the growth in population and GDP is 2.5 per cent.

Theoretical analyses of labour force mobility show that improved migration opportunities generally improve total incomes in the target country. However, the benefits of immigration are not distributed equally, and the incomes and welfare of certain groups can even deteriorate. The distribution of benefits depends on the configuration of skills of the newcomers compared to the configuration of skills of the original population. But the configuration of newcomers' skills is not coincidental, but rather depends on the economic incentives both in the country of departure and the target country and in particular on the distribution of incomes and salaries. Although EU enlargement may cause welfare losses to certain groups in the current Member States, the overall benefit of enlargement is sufficient to make up for these losses.

10. Conclusions

EU enlargement will have a significant impact on economic development in the new Member States. The countries of central and Eastern Europe will gain substantially from EU membership. For the EU's current Member States, on the other hand, the economic effects of enlargement – both the benefits and the costs – will be small. This difference results from the difference in size between the current and the new Member States. The total population of the new Member States is only around a quarter of the population of the current EU, and their economies are very small compared to the economy of the old Member States.

The actual effects of the EU´s eastern enlargement will depend on when and in what order enlargement takes place and what transition periods are applied. Eastern enlargement will imply liberalised trade also in agriculture, growth in direct investments to the new Member States, large agricultural and structural policy income transfers to the new Member States and migration from new to old Member States as a result of the free movement of labour.

Direct investments and increased investor confidence will potentially be of major significance for growth in overall production in the region. Foreign investments will accelerate GDP growth, but their effect on the incomes of the factors of production in the region is considerably smaller. This is because part of the profits is ploughed back to the foreign investors.

The migration of labour from the new Member States to the current EU area will reduce economic growth as measured by GDP in the new Member States. But at the same time, the contraction in the labour force will increase the salary level and per capita incomes. Thus migration will help to narrow the differential in living standards between the new and the old EU countries.

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1. Initial condition **Category**	**Short characteristics**
Physical geography	The Baltic states are located on the eastern shore of the Baltic Sea; they have good access to seaports. Due to their favourable location, the countries could serve as a bridge between East and West. There are also some minor differences in location that may have affect their ability to reorient trade to western markets and to attract FDI; Estonia is probably the most favourably placed. The Baltic countries are not rich in natural resources.
Human capital	According to the World Bank measures of wealth of nations, Baltic's human capital is comparatively highly evaluated: the share of human capital is 72% in total wealth of Estonia, 68% of Latvia, and 62% Lithuania (the world average is 64%).
Industrialisation	The Baltic countries were industrial-agrarian economies. The share of industry was about 40% of net material product (NMP), and agriculture more than 20% in1990. Latvia was more industrialized than Lithuania and Estonia. Estonia produced a significant share of its primary energy; Latvia and Lithuania did not. The industrial sector was characterized by a high degree of concentration (about 20% of all enterprises produced more than 60% of total industrial input). The Baltic's economies were supply-sided.
Trade orientation	The share of USSR and CMEA in imports and exports was 91.6% in Estonia; 88.6% in Latvia; 89.7% in Lithuania in 1990; trade with the rest of the world: 4.5% of Estonian exports and 11.1% of imports; 3.4% of Latvian export and 17.1% of imports; 5.7% of Lithuanian exports and 12.3% of imports.
Market memory	About 50 years under central planning. The Baltic countries were independent between the two world wars; their economies were market oriented.
Culture	The countries belong to the Baltic Sea region. The Baltic Sea region countries have economic and cultural relationships that were established already during the Middle Ages (Hanseatic League). Religion: mainly Christians (majority) and Orthodox.
Political situation	The political situation was stable, no wars. People have a social memory of democracy due to the independence of the Baltic countries between the two world wars. Political changes have significantly influenced the economic cooperation of the countries around the Baltic Sea.

Hansson, 1997; Mundell, 1997, Sachs, *et al*, 2000

Source: Author's considerations based on the data of the national banks and statistical authorities; see also

Table 1: Regional trend growth paths and their components

Percentage changes in growth

	GDP	*Capital stock*	***Labour force***	*Population*
European Union	2.4	2.7	0.5	0.2
Central and eastern Europe	3.2	3.5	0.2	-0.2
Rest of the world	2.6	2.8	0.6	1.7

	Sector-specific total factor productivity			
	Overall productivity growth %	*Agriculture*	*Industry*	*Services*
European Union	1.0	2.4	1.8	0.8
Central and eastern Europe	1.8	3.6	2.3	1.2
Rest of the world	1.0	2.5	1.7	0.7

BOX 1: EU's enlargement simulation scenarios

Scenario 1
Changes in trade policy

- Formation of customs union between the EU and its new members and removal of remaining barriers to trade,
- 10% reduction in bilateral trade transaction costs,
- Extension of Common Agricultural Policy and related subsidy mechanisms to the new Member States.

Scenario 2
Trade policy and structural funds

- Structural Fund expenditure measured as defined in the appropriations in the EU's budget framework for Community enlargement. In the simulations, the appropriations are deferred until 2005, being initially 3750 million euros and rising to 12,080 million euros over a five-year period.

Scenario 3
Trade policy, structural funds and growth in investments into eastern Europe

- and in addition to (2) it is assumed that with the institutional credibility brought by EU membership the expected capital yield requirement in eastern Europe will fall 15 per cent from the pre-membership level.

Scenario 4
Same as scenario (3) but including a moderate estimate of labour force mobility (employment 1).

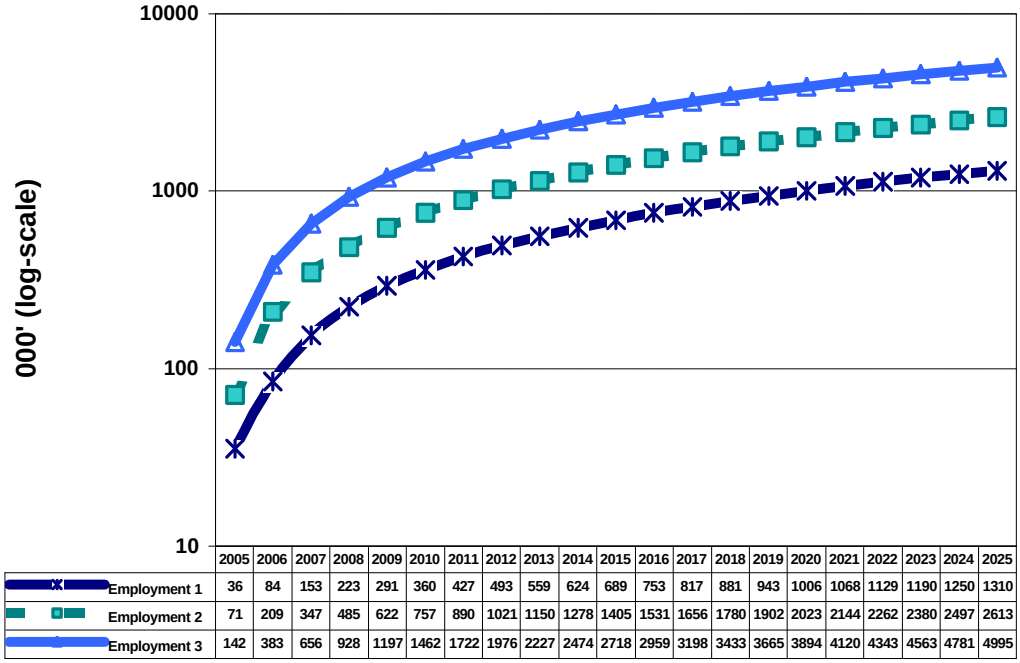
- Mobility declines in stages; initially 70,000 persons annually and later 60,000. Effect on the work force over 10 years around 0.7 million and over 20 years around 1.3 million.

Scenario 5
Same as scenario (3) but including 'consensus estimate' of labour force mobility (employment 2).

- Mobility initially 140,000 persons annually and later 115,000 persons. Effect on the work force over 10 years around 1.4 million and over 20 years around 2.6 million.

Scenario 6
Same as scenario (3) but labour force mobility assumed to be double to the 'consensus estimate' (employment 3).

- Mobility initially 280,000 persons annually and later 215,000. Effect on the work force over 10 years around 2.7 million and over 20 years around 5 million



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Employment 1	36	84	153	223	291	360	427	493	559	624	689	753	817	881	943	1006	1068	1129	1190	1250	1310
Employment 2	71	209	347	485	622	757	890	1021	1150	1278	1405	1531	1656	1780	1902	2023	2144	2262	2380	2497	2613
Employment 3	142	383	656	928	1197	1462	1722	1976	2227	2474	2718	2959	3198	3433	3665	3894	4120	4343	4563	4781	4995

Figure 1: Changes in employment at current member countries in alternative migration scenarios

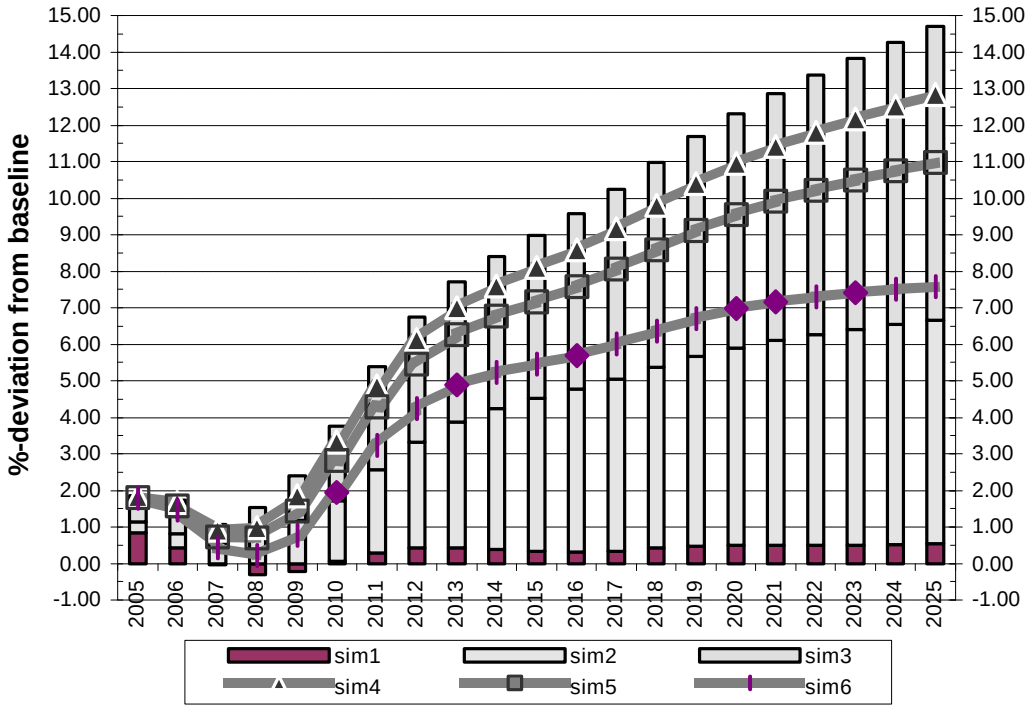


Figure 2: Deviation of GDP from baseline in CEA's

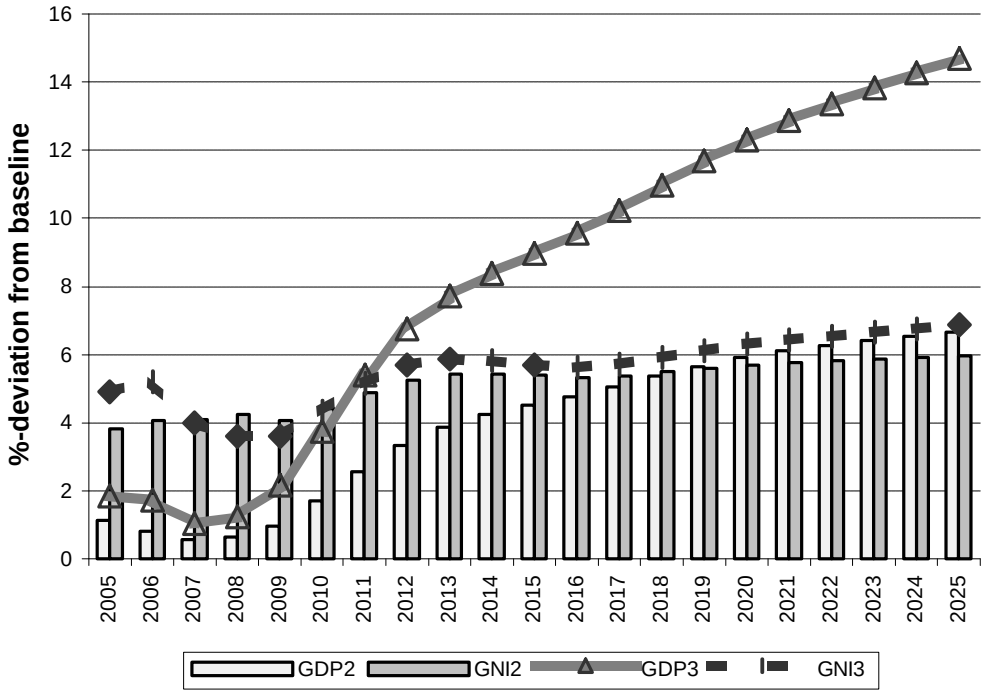


Figure 3: GDP and GNI - deviations from baseline in CEA's

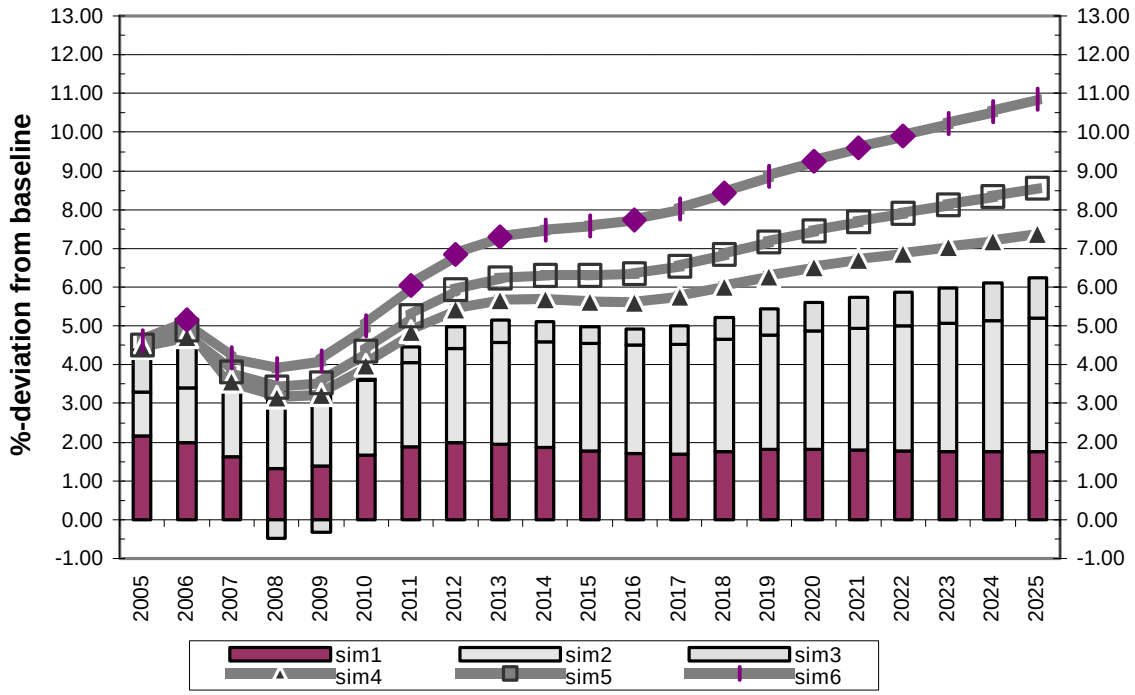


Figure 4: Consumption per capita - Deviations from baseline in CEA's

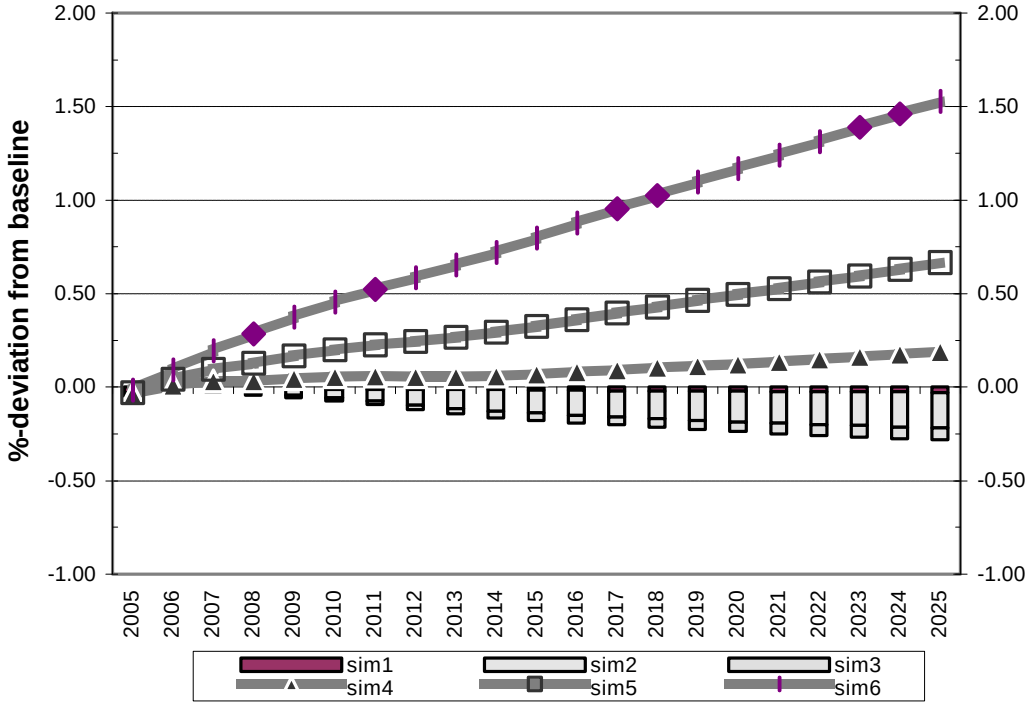


Figure 5: Deviation of GDP from baseline in the current EU

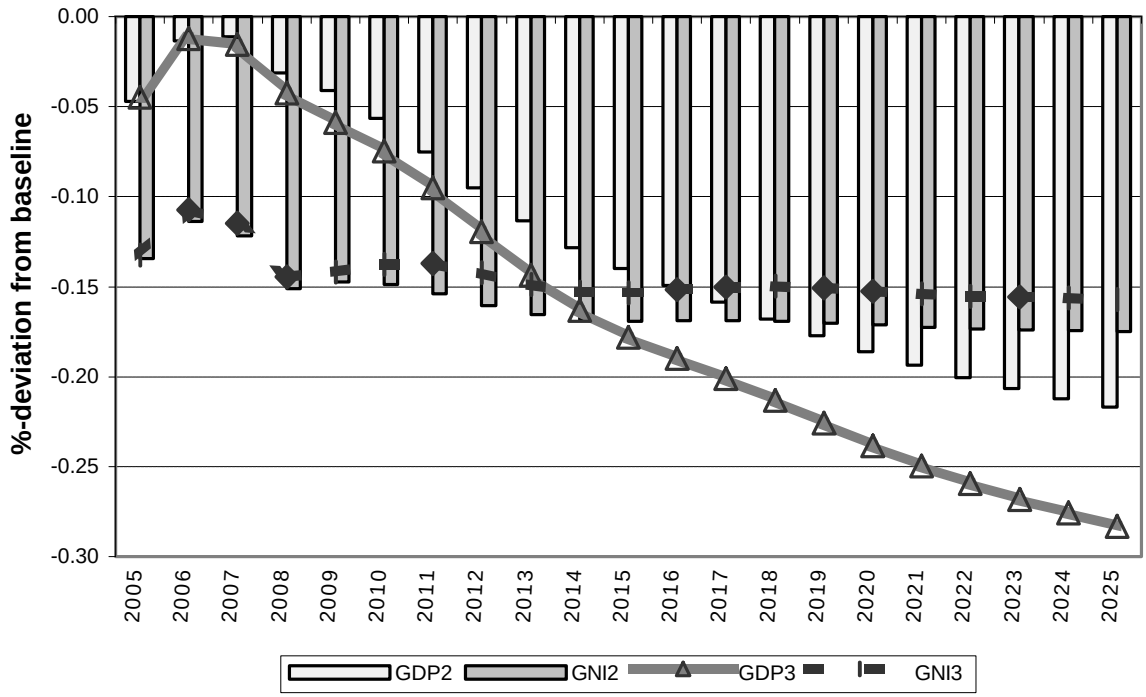


Figure 6: GDP and GNI - deviations from baseline in the current EU

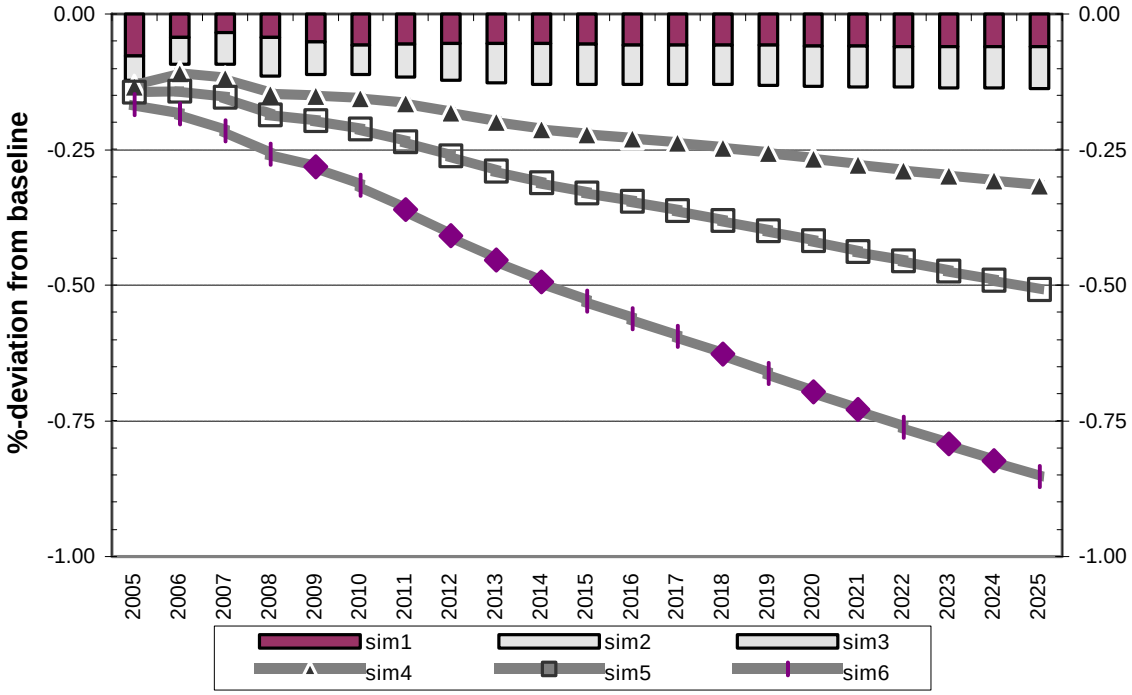


Figure 7: Consumption per capita - Deviations from baseline in the current EU