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**THE IMPACT OF EU ENLARGEMENT ON MEMBER STATES:
A CGE APPROACH**

SUMMARY

Future enlargement raises several concerns in current EU members. The huge disparities between accession countries and current member states in terms of per capita income will have several consequences. Regions currently benefiting from Objective 1 support risk losing EU structural funds, while such inequalities might lead to massive immigration and/or relocation of labour intensive industries.

However, liberalisation of markets has been developing for at last ten years up to now, and East-West trade patterns have already dramatically changed. The EU is already CEECs main trading partner, and adjustments have taken place, mostly via FDI flows and plant relocation. In the same way, convergence will reduce competitive pressure and enlarge the markets. Lastly, limited migration flows are expected due to the high adjustment cost immigrants have to bear and to negative network effects, and at least in the short run, by the institutional barrier to labour mobility. All in all the expected impacts should be rather smooth for EU current members.

The potential impact is much larger for accession countries, which will join a hugely integrated area. It is difficult to assess a priori what will be the behaviour of firms, which will face a dramatic change in the scale of their playing field, in terms of investment, mark ups etc, and the behaviour of consumers, confronted to a huge variety of goods.

On the other hand, accession countries' economy have undergone a deep change in production structures, redirecting resources towards sectors of comparative advantage, but also increasing two-way trade in differentiated products. These changing patterns are reflecting the move from a trade based upon low wage-costs in CEECs towards a trade based on more diversified and catching up economies, benefiting from increasing returns to scale. By the same token, adjustment costs associated with such trade are expected to be much more limited, and the impact on wages in incumbent countries will not necessarily match the traditional Stolper-Samuelson view.

In order to sort out these various impacts, we rely on MIRAGE, a computable general equilibrium model developed by CEPII. The model has a sophisticated treatment of market structure, with products differentiated by variety and by quality, and imperfect competition *à la* Cournot. The number and the size of firms in each sector adjust progressively according to pro-competitive effects: mark-ups are affected, as well as returns to scale. Lastly, capital accumulation is gradual and subject to adjustment costs.

Three scenarios will be considered.

In a first scenario (“trade liberalisation”) all remaining barriers at the date of accession are cancelled, but markets remain fragmented from a competition point of view. In a second scenario (“market integration”) the market is fully integrated: we use a specific development inspired from Smith & Venables (1988) in which economic integration eventually translates into the elimination of firms' ability to price-discriminate between different national markets. In a third scenario (“accession”), we combine economic integration with farm support in accessing countries, according to the scheme of financing adopted in Copenhagen.

Effects are highly asymmetric as expected. The first scenario has a negligible impact on the eurozone. The effect is similar for the rest of EU15, however a bit more unfavourable in terms of GDP and welfare as a result of a slight trade diversion. In contrast, the macroeconomic impact is much more pronounced for accession countries as a result of limited initial efficiency, greater liberalisation, and small economic size. While these countries have already reaped the short-term benefits from previous trade agreements with the EU, the medium run adjustment is likely to have adverse consequences for them. Huge and painful adjustments are to be expected, before efficiency gains increase overall welfare. Hence, while most of the countries (especially Poland and Hungary) experience a trade boom, the cost associated with the change in the productive structure will cause a detrimental effect on GDP (-0.5% in Hungary, up to -1.8% in Poland, -1.2% for the rest of accession countries). In the long run, GDP is 2.6% above the baseline in Hungary but only 1.4% in Poland and 4.0% in the rest of accession countries. While the evolution of factor incomes is detrimental to unskilled labour in Hungary and Poland, skilled wages are above the base line in Hungary and Poland in the long run.

The second scenario does not change significantly the conclusions concerning the current member states. In contrast, accession countries' GDP does no longer decline in the short run. Even the static impact is slightly positive. Similarly, the adverse effect on unskilled wages is much more limited than in the previous scenario, and in the long run, skilled and unskilled wages are above the level reached in the previous scenario. This scenario is also beneficial to Baltic and the rest of accession countries. The explanation is simple: under imperfect competition a full market integration leads to a reduction in mark ups, a reduction in the number of firms, an increase in the size of firms. All this turns into efficiency gains.

In the last scenario, accession countries are eligible to CAP, along the lines of the agreement reached in Copenhagen. The negative impact for the eurozone is more pronounced, but it remains modest: -0.7% of GDP in 2015. The outcome for the other EU countries is roughly similar. In contrast, the macroeconomic gains are much larger for accession countries except Baltic states.

In total, market accession will provoke huge swings on relative prices and big fluctuation in the real exchange rate. Such a phenomenon should be taken into account by the accession countries for their decision about exchange rate arrangements, and especially on the timing of the adoption of the Euro.

ABSTRACT

This paper seeks to analyse the impact of European Union enlargement on accession countries and current EU as a whole, using a Computable General Equilibrium Model. Our aim is to provide an assessment of the impact of enlargement on the size and efficiency of firms and the varieties of products offered to consumers on the one side, quantify the macroeconomic effects in terms of welfare and factor prices (in particular wages) and gauge which sectors will be most heavily affected and in which countries production is more likely to relocate. We find that, all in all the impact on current EU members is negligible, whereas accession countries will face huge, and not always beneficial consequences. We also find that Copenhagen CAP agreements will play a crucial role.

JEL Classification: F15-F14-F17

Key Words: European integration-enlargement-CGE modelling-transition economies

**L'IMPACT DE L'ELARGISSEMENT SUR LES PAYS MEMBRES DE L'UNION:
LES ENSEIGNEMENTS D'UN MODELE D'EQUILIBRE GENERAL**

RESUME

Le prochain élargissement européen soulève de nombreuses interrogations dans les actuels pays membres de l'Union. Les très importants écarts de revenu par tête entre pays membres et candidats pourraient en effet avoir de nombreuses conséquences. Les régions bénéficient actuellement du classement en Objectif 1 courent le risque de perdre le bénéfice des fonds structurels européens, tandis que l'importance des écarts de revenus est susceptible d'entraîner des flux massifs d'immigration et/ou la relocalisation de pans entiers des industries de main d'œuvre.

Toutefois, la libéralisation des marchés est en cours depuis au moins dix ans maintenant, et les caractéristiques des échanges Est-Ouest se sont profondément transformées. L'union est le principal partenaire commercial des PECO, et des ajustements ont eu lieu, notamment via d'importants flux d'investissements directs à l'étranger et des relocalisations d'unité de production. Il faut également tenir compte du processus de convergence, qui réduira la pression concurrentielle et élargira les marchés. Enfin, les flux migratoires devraient être limités : les migrants font face à des coûts d'ajustement importants et doivent supporter des effets de réseaux négatifs, sans parler des obstacles institutionnels de court terme à la mobilité. Au total, les impacts attendus devraient être relativement amortis concernant les membres actuels de l'Union.

L'impact attendu sur les pays de l'élargissement est beaucoup plus important, dans la mesure où ils rejoignent une zone déjà fortement intégrée. La réponse des firmes en termes d'investissement et de comportement de marge, face à un changement majeur d'échelle de leur champ stratégique, tout comme le comportement des consommateurs confrontés à une offre décuplée de variété de biens, constituent des aspects importants.

D'un autre côté, les pays candidats ont déjà largement ajusté leurs structures productives, et réorienté leurs ressources vers les secteurs où ils disposaient d'un avantage comparatif, tout en s'orientant de façon croissante vers des échanges intra-branche de biens différenciés. Ces évolutions sont le reflet de l'abandon progressif du schéma de spécialisation tirant parti de bas coûts de main d'œuvre au bénéfice d'un tissu économique se diversifiant avec la convergence et privilégiant les activités à rendements croissants. Du même coup, les coûts d'ajustements accompagnant le développement des échanges commerciaux changent de nature : l'impact sur les salaires dans les pays membres actuels devrait alors s'écarter des prédictions du théorème de Stolper-Samuelson.

Afin de mettre au clair ces différents mécanismes, nous utilisons MIRAGE, un Modèle d'Equilibre Général Calculable développé par le CEPII. Ce modèle offre un traitement approfondi des structures de marché, avec des produits différenciés en variété et en qualité,

et une concurrence à la Cournot.

Le nombre et la taille des firmes dans chaque secteur s'ajuste progressivement au choc concurrentiel: les marges s'ajustent, et des économies d'échelle sont réalisées. Enfin, l'accumulation du capital est graduelle et comporte des coûts d'ajustement.

Nous considérons trois scénarios.

Le premier scénario ("libéralisation commerciale") se contente de supprimer toutes les barrières résiduelles aux échanges à la date de l'élargissement, tout en maintenant une segmentation des marchés. Dans un second scénario ("marché intégré"), le marché européen élargi devient parfaitement intégré. Nous utilisons ici une méthode inspirée de Smith et Venables (1988) dans laquelle l'intégration économique s'analyse comme l'impossibilité pour les firmes de discriminer en prix entre leurs marchés. Dans un dernier scénario ("accession") nous combinons l'intégration des marchés avec l'extension de la PAC aux nouveaux membres, selon les règles définies à Copenhague.

Comme prévu, les effets de l'élargissement sont très asymétriques. Le premier scénario a un impact négligeable sur la zone euro. Il en va de même pour le reste de l'Union, toutefois légèrement affectée par un détournement d'échanges. Au contraire, l'impact macroéconomique sur les nouveaux membres est plus important, en raison de leur petite taille, d'une efficacité économique initiale plus limitée, et d'un choc de libéralisation plus important du point de vue de ces pays.

Alors que ces pays ont déjà tiré les bénéfices de court-terme des accords commerciaux passés avec l'Union, l'ajustement de moyen terme est susceptible d'être plus difficile. D'importants coûts transitoires sont attendus, avant que les gains d'efficacité économique l'emportent. C'est ainsi qu'en dépit d'une forte augmentation des échanges (en particulier pour la Pologne et la Hongrie), les coûts d'ajustement des structures productives affectent négativement le PIB à court terme (-0,5% en Hongrie, jusqu'à -1,8% en Pologne, et -1,2% pour les autres nouveaux membres). A long terme les effets bénéfiques l'emportent : le PIB est 2,6% au-dessus de son niveau de référence en Hongrie, 1,4% en Pologne et 4% pour les autres pays accédants. Tandis que l'évolution des revenus est défavorable au travail non qualifié en Hongrie et en Pologne, les salaires qualifiés s'établissent au-dessus de leur niveau de référence à long terme dans ces deux pays.

Le deuxième scénario ne modifie pas fondamentalement les conclusions concernant les membres actuels de l'Union. Au contraire, les nouveaux membres échappent désormais au recul de court-terme de leur PIB. L'effet négatif sur les salaires non qualifiés est très amorti et à long terme toutes les qualifications voient leur situation meilleure que dans le premier scénario. Ce scénario est également bénéfique pour les pays baltes et les autres pays candidats. L'explication de ces résultats est simple : en concurrence imparfaite, une intégration complète du marché conduit à des gains d'efficacité transitant par un ajustement des marges ainsi que du nombre et de la taille des firmes.

Dans le dernier scénario, les nouveaux membres bénéficient de la PAC, aux termes de l'accord de Copenhague. L'impact négatif sur la zone euro est plus prononcé, mais reste limité : -0,7% du PIB en 2015. Les résultats sont similaires pour les autres membres actuels de l'union. Au contraire, les gains macroéconomiques sont beaucoup plus importants pour les nouveaux membres, à l'exception des pays baltes.

Au total, l'accession provoquera des mouvements importants des prix relatifs et du taux de change réel pour les nouveaux membres. Un tel phénomène devrait être pris en compte lorsque ces pays auront à prendre les décisions concernant leur régime de change, en particulier quant au calendrier d'entrée dans l'euro.

RESUME COURT

Ce document analyse l'impact de l'élargissement de l'Union européenne sur les pays candidats, et sur l'Union elle-même, en utilisant un Modèle d'Equilibre Général Calculable. L'intérêt se porte en particulier sur l'impact de cet élargissement sur la taille et l'efficacité des firmes, comme sur la variété des produits offerts aux consommateurs, et d'autre part sur les effets macro-économiques en termes de bien être et de rémunérations de facteurs (en particulier de salaires). Les secteurs susceptibles d'être le plus fortement affectés sont identifiés, tout comme les pays dans lesquels les productions pourraient être amenées à se relocaliser. Les résultats soulignent que l'impact global sur les pays membres sera négligeable, au contraire des pays candidats qui feront face à des conséquences beaucoup plus marquées, voire parfois négatives. Nous montrons également que l'arrangement financier de Copenhague concernant la PAC jouera un rôle décisif.

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Mots-clefs : Intégration européenne-élargissement-modèles d'équilibre général calculable-economies en transition

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1- INTRODUCTION

There are 10 new members to be welcomed from 1 May 2004 into the European Union; notwithstanding the historical opportunity to achieve the reunification of Europe on the basis of values such as democracy, competition and social welfare, is EU enlargement good news for the economies of current member states?

Future enlargement raises several concerns in current EU members. First of all this enlargement episode will involve a large number of countries and thus raises institutional issues. Secondly, these countries have per capita income levels much lower than the ones in current member states, which raises the issue of social competition and the fears of massive relocation of industries or massive migrations. Last but not least, the agricultural sector represent a disproportionate share of GDP and employment in certain accession countries, which raises the issue of the CAP and how it is adjusted or not in order to take into account the new member states.

However, these impacts should be smoothed by the fact that liberalisation of markets is an ongoing process, and has been developing for at least ten years. EU industries are already confronted to the competition of East European producers, and adjustments have taken place, mostly via big FDI flows or plant relocation. In the same way, convergence of accession countries will reduce the competitive pressure and enlarge the markets opened to incumbent countries' producers.

These are typically issues that have to be tackled by taking into account general equilibrium mechanisms. Such an approach allows to take fully into account the relationships between goods markets and factor markets, while accounting for the sizes of the countries considered, which is a very important determinant of the magnitude of the impacts to be expected.

In sum, if it is rather elementary to compute how the EU budget will be affected by this enlargement, it is much more difficult to assess how will economies of incumbent member states be affected at the macro-economic as well as sectoral level.

This paper is organised as follows. Section 2 describes some of the main issues related to EU eastward enlargement. In Section 3 we provide a brief description of the trade relations between accession countries and European Union. Section 4 illustrates the general equilibrium dimensions of the integration process and describes MIRAGE, the Computable General Equilibrium Model we employ in order to assess the quantitative implications of EU enlargement. The results of the simulations are presented and commented in Section 5 and are compared with similar studies in Section 6. Section 7 concludes.

2- EU ENLARGEMENT: KEY ISSUES

Some issues such as the EU budget and the impact on immigration have been extensively dealt with in the last few years.

2-1 European Budget

A comprehensive survey can be found in Weise (2002), which also presents some simulations. A great deal of discussion is centred on the effect on the Common Agricultural Policy (CAP). The size of the farming sector (both as percentage of GDP and as number of people employed) in the new EU members would call for relevant transfer of funds to accession countries, under the current CAP rules. In 2000 21.6% of the labour force in the candidate countries were employed in agriculture, compared to only 4.3% in the EU. Provided that increasing the funds needed to finance CAP without resorting to cofinancing by single member states appears politically unfeasible, enlargement is likely provoke to a redistribution of resources at the expenses of current EU members. The EU has agreed a temporary rural development package, entailing direct aids for the new members for a total amount of €5.1 billions for 2004-2006. Afterwards, direct aids will be phased in over 10 years. These funds can be topped up to some extent by member states rural development funds. The farmers from the new states will be entitled to full and immediate access to CAP market measures. If no changes are made to current CAP rules, some problems could arise, even if we leave aside any consideration about European budget. Income support via direct payments to farmers can cause problems with WTO rules but more importantly can have serious problems in accession countries. Farmers' income will be raised by the generalised increase in food price CAP is likely to bring about and by EU payments. This will increase the already high level of income inequality within these countries.

At the same time the huge disparities between accession countries and current member states in terms of per capita income and infrastructures will entail a major reallocation of structural funds. As Weise (2002) points out, as a consequence of enlargement, average GDP per capita in the EU will drop by roughly 10-15%. Consequently all current EU regions will improve their relative position: if rules do not change, regions currently benefiting from Objective 1 support risk losing EU structural funds. Back-of-the-envelope calculations show that nearly 50% of the Objective 1 regions (concentrated mainly in Germany, Greece and Italy) run this risk. Moreover, enlargement will change the way EU budget is financed: assuming no dramatic changes in agricultural policy, the burden of enlargement will be split in quite an inequitable way (see Weise (2002) Table A2), with Germany being particularly badly affected. Weise concludes that keeping the status quo in CAP and structural funds is hardly sustainable (politically, if not economically) and therefore enlargement will increase the pressure for policy reforms.

2-2 Immigration

Boeri and Brücker (2000) look at the effects on goods and factor markets. According to their analysis higher trade openness will exert a small influence on employment and wages

in current EU members and will be limited to some specific, labour intensive industries, located in a few regions sharing borders with accession countries, as the economic size of new members is too small to have an important effect on the EU. Concerning migration, the very slow convergence in per capita income will surely trigger migration to current EU members, once the barriers to labour movements from Central and Eastern Countries are lifted. However, assuming that the pattern of migration follows that observed in post-war Europe, huge flows of immigrants should be ruled out. Boeri and Brücker estimates that peak in migration will be reached within 30 years from the lifting of the barriers and that immigrants will represent no more than 1.1% of EU-15 population. Such a relatively small flow can be explained by the high adjustment cost immigrants have to bear and by negative network effects, that is the propensity to migrate being negatively correlated to the proportion of people which has already emigrated. Moreover it is likely that they will compete not only with unskilled labour, as it is commonly imagined), but also with other skill groups, given the generally high level of formal education immigrant from accession countries show.

Sinn (1999) develops a theoretical model of capital and labour migration, based on the German unification experience. The result he obtains is that labour migration to EU current member states will be only temporary. While capital has only set up costs slowing down installation without affecting the long run allocation, immigrant workers must bear permanent costs lasting for the whole period they live and work abroad, and consisting of higher rents, the discomfort of not living at home and the costs of regular visits back home. While not influencing the short term reallocation of labour across countries, these last factors, according to Sinn, are likely to affect the long term equilibrium, tending to stabilise the initial allocation of labour. At the end the adjustment process would lead to a first best factor allocation, and therefore governments should not intervene to slow down migration by limiting access to EU old members or by subsidising new ones. However these results are somehow weaker once minimum wage and welfare payments in current EU members are taken into account.

2-3 Institutional issues

Increasing the number of member countries to 25 (possibly 27 in 2007) is likely to raise problems with the way the European Council takes decision. Baldwin et al. (2000) show that with the current voting rules, an increase in the number of EU member will lead to a jump in the probability of having coalitions blocking important decision and to a much hugger risk of decision making process being slowed down by the polarisation between the block of Northern richer countries and that of less well off Southern and Eastern states.

2-4 Good and factor markets

Given the very large gap in per capita income and factor endowments, one natural concern is that the EU enlargement will dramatically alter the specialisation pattern in the continent, with existing EU member suffering the high re-allocation costs. In particular a clear risk commonly envisaged is that labour intensive industry will relocate massively to new member states (whose wages are on average 15% at current exchange rate or one fourth at

Purchasing Power Parity levels of the EU average). Such a dramatic shift would possibly harm blue collars who would face a drastic reduction in wages or (more probably given the characteristics of EU labour market) mounting unemployment.

The potential impact should be different for accession countries since they will join a hugely integrated area, what is much more than simply entering into a free trade arrangement. It is very difficult to draw a precise picture since previous episodes of enlargements hardly provide comparisons. For instance, combining transition and enlargement can have interesting outcomes associated with imperfect competition mechanisms: Boeri & Oliveira-Marins (2002) point out that taking into account the “love for variety” of consumers profoundly affects conclusions. Confronting the consumers to a huge variety of products, as compared to the previous situation of planned economies, has translated in an initial large trade deficit in differentiated goods to be balanced by large exports of the homogeneous goods. In the same way, it is difficult to assess a priori what will be the behaviour of firms changing dramatically the scale of their playing field, in terms of investment, mark ups etc. On top of that it is important to stress the role joining the Euro could have. Frankel and Rose (2002) show that the size of the gains in terms of increase in trade volumes can be huge.

In this paper we will deal with some of these last issues, analysing the impact of enlargement on both Eurozone as a whole, the rest of the EU members and on accession countries.

3- THE CURRENT SITUATION

East-West trade patterns have already dramatically changed within a decade. The European Union is already CEECs main trading partner, absorbing roughly 68% of their total exports. Of course, given the difference in economic size, the reverse is not true: only the 4% of EU total imports come from these countries. With the exception of agriculture and antidumping, accession countries have been granted free access to the European market. The reverse is not true however, as some accession countries still keep some forms of import restriction. However, as a consequence of transition to market economy and ongoing integration to the rest of Europe, accession countries' economy are undergoing a deep change in production structures. Redirecting resources towards sectors in which accession countries are granted a comparative advantage is only part of the story. As highlighted in various studies on European integration, intra-industry trade, defined as two-way trade in (horizontally or vertically) differentiated products is a by-product of integration (Fontagné and Freudenberg (2000)). Freudenberg and Lemoine (1998) highlight a similar phenomenon in the case of accession countries. For instance, at the 6 digit level of the nomenclature of traded products, the share of intra-industry trade in total trade for the Czech Republic is equal to the EU average, and increasing at a high pace in every accession country.

The increasing bilateral trade integration has thus led to an increasing share of intra-industry trade reflecting the move from a trade based upon low wage-costs in CEECs towards a trade based on more diversified and catching up economies. Benefits from this

latter trade are theoretically higher, because of the presence of increasing returns to scale. On the other hand, adjustment costs associated with such trade are expected to be much more limited (Fontagné and Freudenberg, 2002). This is why the impact on wages in incumbent countries is not necessarily detrimental to their low-skilled labour force: in sectors characterised by increasing returns to scale, imperfect competition and cross-hauling, the impact on blue collar wages is more complex than what the traditional Stolper-Samuelson view suggests. The same reasoning applies to blue collars competing in actual Member states with imports of labour intensive goods produced in accession countries.

These developments are reflected in the rapid evolution of the specialisation of accession countries economies in the recent period, as measured by the revealed comparative advantage (defined as the contribution of each sector to the trade balance). Hungary (Figure 1) is specialising in computers, consumer electronics and engines and to a lesser extent cars and cycles. In contrast, Poland (Figure 2) is largely specialised in (unskilled) labour-intensive activities such as clothing, furniture, or primary products (coal). Coke, shipbuilding, iron and steel, metallic structures, or wood articles also characterise a specialisation in production inherited from the previous regional division of labour. A slight specialisation in electrical apparatus or consumer electronics has been developing only recently. Contemplating this specialisation, much higher transition costs associated with the accession are expected for Poland than for Hungary.

Lastly, the specialisation of Baltic countries (figure 3) is very specific: refined oil and non-edible agricultural products, and to a lesser extent clothing, are the sectors in which these countries have increasingly allocated their resources in the recent period. Other fields of specialisation comprise furniture, knitwear, wood articles, coal, fertilisers, non ferrous and ferrous ores. Telecommunication equipment is the only dynamic sector in which Baltic countries are positioned.

4- GENERAL EQUILIBRIUM DIMENSIONS OF ENLARGEMENT

As long as the EU15 economies are concerned, the big difference in size with respect to the accession countries and the pronounced asymmetry in the trade structure hints at a very limited impact of trade integration.

On the contrary, the effects on new members will be enormous. At this stage, accession countries have already reaped the short-term benefits from previous trade agreements with the EU, as they have been trading with it without barrier for the last seven years. However, the medium run adjustment is likely to have at least two adverse consequences for them. First of all, the removal of the remaining trade barriers will entail a deterioration in their terms of trade. The second, and probably more important consequence, is that a higher exposure to international competition will harm those sectors still showing large inefficiencies. Huge and painful adjustment are expected, noticeably in sectors characterised by large increasing returns to scale. After that, however, the efficiency gains are expected to increase overall welfare.

A full account of the integration dynamics and the quantification of its effects needs to take into account a wide range of transmission channels. Moreover one has to control for the general equilibrium effects of the changes in production trade patterns, the role played by market structures (i.e. the type of competition) and the degree of factor specificity (which is very important for agriculture) and the degree of substitutability across goods from different sectors and/or country of origin.

In order to meet these needs we carry on the analysis using MIRAGE (see Bchir et al. (2002) for a detailed description of the model), a multi-region, multi-sector computable general equilibrium model (CGEM), developed by CEPII and devoted to trade policy analysis.

Mirage has a sophisticated treatment of market structure, where products are differentiated by variety and by quality. Imperfect competition is modelled in an oligopolistic framework¹, in which firms exploit their market power and adopt a *pricing-to-market* strategy. Horizontal product differentiation is associated with varieties as well as with geographical origin. The elasticity of substitution is higher for goods having the same quality level. Then, for example, a EU15 firm will face much harder competition from other EU firms or CEECs' ones than for developing countries' ones.

The number and the size of firms by sector adjusts progressively to market conditions². This change in the number of firms is associated with a pro-competitive effects: mark-ups are affected, as well as returns to scale. Consumers are affected too, given the *love for variety* assumption made. Capital accumulation is gradual and subject to adjustment costs. Data on trade barriers are provided by MAcMaps_2001 (Bouet et al, 2002)³.

The simulation with MIRAGE provides results at the sectorial level for the Euro Area as a whole, and for a selected group of accession countries (see table 1 for the breakdown). The variables analysed are trade patterns, structure of employment and wages by qualification level, activity and firms' number and size.

5- ENLARGEMENT SCENARIOS

Enlargement has at least two different meanings. First of all trade liberalisation with the break-up of the residual tariffs and non-tariffs (essentially anti-dumping) protection, and the

¹ Competition is *à la Cournot* : firms do not take into account the impact their decision might have on competitors or on the global level of demand.

² Each sector has a specific market structure: in some sectors, called "fragmented", growth increases the number of firms, on others, called "segmented", it is the size of existing unit that expands (see for example, Sutton (1991) and Oliveira-Martins et al. (1996)). Profits are thus driven to zero much faster in fragmented than in segmented sectors.

³ This database, developed by ITC (UNCTAD-WTO) in collaboration with CEPII, includes ad-valorem tariffs, ad-valorem equivalent of specific tariffs, tariff quotas, prohibitions and anti-dumping duties, on bilateral and tariff line level.

applications by new members of the same common external tariff as the existing EU countries as well as the trade agreement with other areas (for example some Mediterranean countries). Secondly it will mean economic integration, in line with the completion of the Single market. Firms, both in the EU15 and the CEECs, will take their production decision considering an enlarged market of 25 members. Products from the CEECs will be regarded by consumers as belonging to the same quality ladder as EU15 ones. The end of market fragmentation will make competition harder, pushing mark-up down. On average, firms' size will increase. The magnitude of these effects is bound to vary greatly across industries, with the difference between fragmented and segmented sectors playing a crucial role

The assumptions about product differentiation play a key role in determining the results of economic integration. As long as vertical differentiation is concerned, a process of integration in which the entrant countries' goods will share the same quality as incumbent countries' ones will increase greatly the level of competition faced by entrant countries' firms, lowering thereby mark-ups. The assumption is central as well for the behaviour of accession countries' firms. Full entry in the EU increases their share in this area, thus enabling them to increase their mark-up in this market. On the contrary, fiercer competition with EU firms on their domestic market will oblige them to reduce the mark-up there, with beneficial welfare effects on the accessing countries.

Here we use a specific development inspired from Smith & Venables (1988) in which economic integration eventually translates into the elimination of firms' ability to price-discriminate between different national markets.

Increased capital mobility is modelled as a reduction in the required rate of return for investment in the accessing region. Migration between the old and new EU countries is assumed to reflect income disparities. The sensitivity of migration to income disparities is assumed to follow the results from study of Boeri and Brücker (2000).

Three scenarios will be considered.

In a first attempt to identify the basic mechanisms associated with the removal of formal trade barriers alone, we cancel all remaining barriers at the date of accession but leave the markets fragmented from a competition point of view. This first scenario will be referred to as "trade liberalisation". This is a kind of pre-Single market situation in which formal barriers are abolished but where markets are still hardly integrated.

In a second scenario – "market integration"- the market is fully integrated: firms take their decisions on this basis, which affects the degree of competition they face on domestic as well as foreign markets, their pricing behaviour and lastly their size and the benefits to be reaped from increasing returns in industry and services. Moreover, since the perceived quality of CEEC is the same as EU15 ones, accession countries will face a much higher competition from existing members' firms. In both scenarios, CAP remains unchanged and accession countries do not benefit from it.

In the third scenario, which is the only one aiming at reproducing the real nature of the enlargement process, we combine economic integration with farm support in accessing countries. This scenario will be referred to as “accession”. In this scenario all countries contribute to the CAP according to their GDP, a sum which is augmented by EU tariff revenues on agricultural products. This amount is then shared among incumbent and accessing countries in proportion of their agricultural output, as follows: current member states receive immediately the full amount, whereas accessing countries receive only 30% in 2005 and increase progressively their share up to 100% in 2012 on a linear basis.

For each scenario, the percentage deviations from the baseline (no-integration) solution, in 2005, 2010 and 2015 are provided. Our aim is to answer three basic questions

- i) What is the impact on production and microeconomic equilibrium, i.e. the size and efficiency of firms, and the number of varieties produced and offered to consumers?
- ii) What are the macroeconomic effects in terms of trade welfare and factor prices (especially skilled and unskilled workers’ wage)?
- iii) What are the most affected sector and in which countries will production relocate?

5-1 Trade liberalisation

Trade liberalisation has a negligible impact on firms within the Eurozone: markets are already wide open to accession countries’ exports, with the exception of agriculture and a limited range of sensitive products. Hence, the change in the volume of imports do not affect market structure and mark up behaviour. And if accession countries open their market, which was more protected, its size is too limited to have an impact on current member states. Hence, even if trade liberalisation may foster trade, microeconomic efficiency gains might be limited. This is confirmed by a glance at the size of the firms in the various industries after all adjustments have taken place, in table 2. With the exception of metal products in Hungary and Poland, and automobile in the latter country and the rest of accession countries, economies of scale cannot be achieved as a result of trade liberalisation.

As far as the macroeconomic impact is concerned, effects are highly asymmetric as expected. This first scenario has a negligible impact on the eurozone (see Table 3), as the decrease of welfare in the short run, which is reversed afterwards when adjustments have taken place, is very small. The real exchange rate adjusts in order to balance the current account in value terms. The impact on wages is less intuitive: there is no sizeable impact on unskilled wages, even in the long run, whereas a slight decrease of the skilled wages is to be expected. This is the result of the slight change of the pattern of EU15 exports, and of the real exchange rate appreciation with respect to the eurozone main trading partners, with which trade consist mainly in skilled labour intensive goods. The only sizeable impact is on land’s rate of return, as a result of our set of assumptions: both eurozone and accessing countries are cancelling its tariffs in agriculture (in fact its ad valorem equivalent of tariffs, tariff quotas and possibly prohibitions). But the difference is that initially accessing

countries where protecting their agriculture by means of tariffs only, whereas eurozone members are largely relying on domestic support. Since the latter is neither dismantled nor extended to accessing countries in this first scenario, current member states benefit from a competitive advantage which is beneficial to the specific factor used in agriculture.

The effect is similar for the rest of EU15 (Table 4), however a bit more unfavourable in terms of GDP and welfare as a result of a slight trade diversion.

The macroeconomic impact is much more pronounced for accession countries as a result of limited initial efficiency, greater liberalisation, and limited economic size. It is important to notice that most of the countries (especially Poland and Hungary) will experience a trade boom: this is not only due to increased trade with current EU members, but also to the non negligible effects of CEECs adopting EU external tariff system. Bchir et al. (2003) analyse the effects of accession on trade with Mediterranean countries, finding that the increase in trade flows to this area is higher than that addressed to EU members. The static effect is detrimental to GDP (-0.5% in Hungary, up to -1.8% in Poland, -1.2% for the rest of accessing countries: see tables 5, 6 and 8) and the real exchange rate has to adjust in order to balance current account. Unskilled and skilled wages decline during the adjustment process and recover only in the long run. The impact on agriculture is highly detrimental: this is due to the set of assumption used here: in this first scenario, accession countries do not benefit from any payment associated with the CAP. Hence, one should not pay too much attention to this result at this stage: these figures simply confirm that these countries cannot join without receiving support in the agricultural sector. In the long run, GDP is 2.6% above the baseline in Hungary but only 1.4% in Poland and 4.0% in the rest of accession countries. It must be stressed that if the evolution of factor incomes is detrimental to unskilled labour in Hungary and Poland, skilled wages are 3.1% above the base line in Hungary and 5.6% in Poland in the long run. In contrast unskilled wages remain below their baseline in these countries.

A glance at results for Baltic countries (table 7) points out a different evolution. The static effect is positive, but the dynamic and long term effect is detrimental: trade, GDP and skilled wages below their baseline, contrasted with increased unskilled wages. This is due to the very peculiar pattern of specialisation they have (see figure 3).

The results shown here are obtained despite a sizeable increase in trade flows, which are magnified in the long run. In total, we can expect a potentially adverse macroeconomic effect that should be taken into account by policy makers: there is a case for a transitory support to these countries. However, before addressing such issue, it must be kept in mind that integration is more than simply trade liberalisation. Additional mechanisms associated to full market integration will now be taken into account in a second scenario.

5-2 Market integration

From a microeconomic point of view, this scenario highlights the changes in market structures and the induced responses of firms. Mark ups are similar over the whole (enlarged) Single market: there is no country-specific price discrimination. At the same

time, the number of competitors is changing. These changes impact much more accession countries: given their small domestic market before market integration, the competitive shock is very large (table 9). This is not the case for current member states in contrast. For the latter countries, the only significant economic impact is observed in the car industry, and is slightly negative. In Poland, large gains in efficiency are obtained for metal products, wood and other services. In Hungary, the size of the representative firm increases by a quarter for wood, metal products and in other services. In the latter country, sizeable efficiency gains are also recorded in the car industry. For Baltic countries, a similar evolution is recorded (wood, other services).

In terms of macroeconomic effects, for the eurozone, as well as for the rest of EU15 (tables 10 and 11) this new set of assumptions does not change the results significantly and we can rely on previous comments: accession is a negligible shock to current European member states. In the steady state GDP recovers after a marginal decline during the adjustment process.

Sizeable differences with the previous scenario are in contrast observed for accession countries. First, GDP does no longer decline as a result of the shock in the short run. Even the static impact is slightly positive (0.5%) in Hungary (Table 12), whereas the adverse evolution is smoothed in Poland (-0.7% instead of -1.8%), as shown in table 13. Similarly, the adverse effect on unskilled wages is much more limited than in the previous scenario. In the long run, skilled and unskilled wages are above the level reached in the previous scenario. This scenario is also beneficial to Baltic countries (Table 14): GDP increase more in the short run and stays above the baseline in the long run, in contrast to the previous scenario. For the rest of accessing countries (Table 15), the positive impact already observed with the previous scenario, with a positive impact on GDP and wages (skilled and unskilled) increasing over time, is confirmed.

The reasons explaining these favourable outcomes have already been identified above: under imperfect competition a full market integration leads to a reduction in mark ups, a reduction in the number of firms, an increase in the size of firms. All this turns into efficiency gains thanks to increasing returns. In total, the positive impact of efficiency overcompensates the negative impact on welfare of the reduction in the number of varieties offered to the consumers.

5-3 “Accession”

In this scenario, accession countries are eligible to the CAP, along the lines of the agreement reached in Copenhagen. They do contribute to the European budget in proportion of their GDP and income from tariff duties on agricultural products, and CAP payments (modelled as a negative tax on production) are increasing progressively to the levels suggested by their agricultural output according to the rules for the existing EU members, on a linear basis between 2004 and 2006. Therefore this simulation is the closest to what is likely to happen.

The results in terms of firms size, displayed in Table 16 are roughly the same as in the

previous scenario, with a slight increase in the magnitude of the deviation from the baseline.

In this scenario, the negative impact for the eurozone is more pronounced, but it remains modest: -0.7% of GDP in 2015. The outcome for the other EU countries is roughly similar.

In contrast, the macroeconomic gains are much larger for accession countries except Baltic states (tables 19, 20 and 22). Important gains in terms of GDP are likely to materialise in the medium-long run, as the boom in domestic demand will offset the huge increase in imports.

The most surprising result is probably the substantial welfare loss incurred by Baltic states (Table 21). The explanation has to do to a large extent with the perverse effect CAP funds will have on their pattern of specialisation. The full adoption of EU tariff system will entail a sizeable loss in tariff duties. At the same time CAP flow will lead to a dramatic shift of resources to the agricultural sector (in which Baltic states is less efficient than the rest of the EU) at the expenses of the rest of the economy.

5-4 Comparison across scenarios

In order to evaluate the relative contribution of the different elements of economic integration, figures 4 to 9 show the impact on GDP of the three different scenarios.

The most striking effect is the impact CAP rules would have on most accession countries. Agricultural subsidies are bound to amplify the beneficial effect of full market integration. On the contrary, CAP only would be responsible for the small GDP loss EU15 would get from integration. The same applies for Baltic state, for which the most beneficial situation is the one not including CAP.

6- COMPARISON WITH OTHER STUDIES USING A SIMILAR METHODOLOGY

There has been a lot of recent studies adopting CGE methodology. Bchir & Maurel (2002), Lejour & Nahuis (2002) or Maliszewzka (2002) all raise the issue of integration aspects going beyond the reduction of formal tariffs: full entry means accession to the internal market (and thus reduction in border formalities or decisions taken by firms on a different geographical scope, for instance) and eventually expected migration flows. Bchir & Maurel, using the MIRAGE model, develop three scenarios, namely trade integration, economic integration, and economic convergence in line with Total Factor Productivity (TFP) catch up. Their geographical break down identifies Hungary and Poland among CEECs, and France versus the rest of EU15 on the other side. Lejour & Nahuis start by assessing the impact of the accession to the internal market by estimating gravity equations at the industry level. This first step is used as an input in a second step in which this trade potential is used in a CGE model of the world economy. Maliszewska focuses on Single market-related mechanisms.

As far as agriculture is concerned, the final impact relies on the type of assumption made on transfer payments and farm support granted to accessing countries. Assumptions can range from zero to full benefit; in the latter case one can either redistribute the shares of the pie, or increase the size of the pie with constant shares (Frandsen & Jensen, 2001; Bchir & Maurel, 2002). A key assumption is the magnitude of the output changes in accessing countries when farm support is introduced, namely the elasticity of production. Reciprocally, any general increase in the output in agriculture should be constrained by the availability of arable land and other resources used. Depending on the set of assumptions made, the change in output can be either limited or very large.

According to Vaittinen (2002), EU's enlargement will have a significant economic impact on the new entrants, with GDP 10 % above its baseline within 10 years. This is qualitatively the same result as ours, but quantitatively much larger (2% to 7% at most in our simulations). In both cases the model are of dynamic nature. These differences are due to different basic assumptions: we do consider that rigidities and factor specificity impede the reallocation of factors. We do not allow for migrations, since huge migrations (up to 5.6 million migrants over ten years in Vaittinen) would certainly not be easily accepted by incumbent countries concerned and, moreover, have not been recorded in the past, as discussed above. In addition there has been so far evidence of limited mobility of labour for accession countries. Lastly, we do not take into account foreign investments, due to a lack of reliable data and to the fact that firms have already anticipated this accession and invested (in Hungary for instance). In contrast Vaittinen finds that a large share of the increased output is generated by FDI and that increase in per capita consumption is partially driven by migration flows towards incumbent countries that decrease the labour force faster than the GDP. In addition to that, Vaittinen introduces a 10% cut in transportation costs associated with integration plus immediate benefit of CAP payments for accessing countries, plus structural funds. Lastly, payments on services of foreign capital strongly reduce the benefit of integration, and income is only 6% above the baseline.

Maliszewska (2002) finds gains for accessing countries more in line with our own estimates. She evaluates the implications of enlargement by focusing on Single market-related mechanisms such as the removal of border costs and reduced costs for achieving national standards. The volume of GDP increases by 1.4% to 2.4% in accession countries as a result of these mechanisms. After adjustment of the capital stock, these static welfare gains are more than doubled.

Both Vaittinen (2002) and Maliszewska (2002) confirm our results of quite a small impact of enlargement on current EU members as a whole, given the big difference in economic size .

7- CONCLUSIONS

The simulation shows that the impact on the EU15 economy as a whole is negligible, because of the relatively small economic size of accession countries and the new opportunities Western firms will find on the Eastern markets. Therefore, the fears of eastward integration producing massive delocalisation of firms and hurting low skilled

workers appear not to be grounded. However, as pointed out for example by Boeri and Brücker, some effects on specific sectors in some neighbouring regions cannot be ruled out. This could call for some specific policy intervention. Obviously the identification of the regions and sector is not possible within the framework we adopted. The impact on CEECs will be major and highly positive in the medium-long run. However the transition is unlikely to be smooth, and will entail sizeable reallocation of factors (especially labour force) across sectors. This is likely to create temporary unemployment: in this case too public policy will be needed in order to smooth the effects of the integration.

Another issue concerns the exchange rate. Market accession will provoke huge swings on relative prices and big fluctuation in the real exchange rate. Such a phenomenon should be taken into account by the accession countries for their decision about exchange rate arrangements, and especially on the timing of the adoption of the Euro. If on the one side, the adoption of a common currency has been proven to boost trade and economic integration, on the other side losing monetary freedom too quickly could be harmful for countries undergoing big macroeconomic and structural adjustments⁴.

We cannot conclude without stressing the drawbacks of our approach. As already recalled, MIRAGE does not take into account the externalities openness and integration create in recipient economies, such as technological spillovers, which might affect dramatically the economic structure. Moreover, a key domain of future improvement of such approaches is to properly model the labour market and to assess the differences in labour market flexibility. In particular, Baltic countries appear to have relatively flexible markets (Paas & Eamets, 2002), and this could favour the adjustment process and bring about more favourable outcomes than those obtained by our simulations.

⁴ Larèche-Révil and Egert (2003) estimate real equilibrium exchange rates for five accession countries (Czech Republic, Slovakia, Slovenia, Poland and Hungary), finding that some currencies are strongly overvalued with respect to the Euro and the dollar.

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TABLES

Table 1. Geographical breakdown

<u>GTAP 5 2 database</u>	<u>Current exercise</u>
(Bulgaria)	Rest of the World
Czech Republic	Rest of accessing
Hungary	Hungary
Malta	Rest of accessing
Poland	Poland
(Romania)	Rest of the World
Slovakia	Rest of accessing
Slovenia	Rest of accessing
Estonia	Balt
Latvia	Balt
Lithuania	Balt
<u>Rest of CEEC</u>	<u>Rest of accessing</u>

Table 2. Trade liberalisation: output per firm

« Trade liberalisation » : Output per firm

Sector	Eurozone	Rest of EU15	Hungary	Poland	Baltics	Rest of CEECs
Agriculture	-	-	-	-	-	-
Machine and tools	0.08	0.01	-0.55	1.1	-0.52	-1.66
Automobile	-1.55	-1.65	0.93	7.68	ns	6.73
Textile clothing	0.07	-0.07	-1.11	1.35	-0.65	-0.98
Wood	0.24	0	-0.45	-3.62	-1.6	-4.56
Electronics	-0.14	-0.19	1.08	0.72	-0.42	-2.45
Chemicals	0.2	-0.11	-1.38	2.75	-0.25	-8.66
Metal products	0.11	-0.1	6.59	9.28	-4.97	-6.71
Transport	0.78	0.51	0.28	1.75	-2.68	-13.1
Other industry	0.08	0.01	-0.24	0.66	-0.25	-1.7
Other Services	0.03	0	0.25	0.67	-0.34	-0.67
% deviation from baseline in 2015						

Table 3. Trade Liberalisation: impact on Eurozone

« Trade liberalisation » : Macroeconomic impact on eurozone

	2005	2010	2015
Welfare	-0.03	0	0.05
GDP (volume)	-0.02	-0.01	0.04
Terms of trade	-0.07	-0.3	-0.4
real effective exchange rate	-0.06	-0.29	-0.4
Unskilled wage	0.03	-0.05	-0.05
Skilled wage	-0.08	-0.26	-0.29
Return to capital	0.07	0.18	0.27
Land return	2	2.49	3.05
Exports (volume)	-0.05	0.03	0.12
Imports (volume)	-0.27	-0.82	-1.13
% deviation from baseline			

Table 4. Trade Liberalisation: impact on the rest of the EU

« Trade liberalisation » : Macroeconomic impact for the rest of EU15

	2005	2010	2015
Welfare	-0.05	-0.08	-0.1
GDP (volume)	-0.02	-0.05	-0.06
Terms of trade	0.04	-0.14	-0.22
Real effective exchange rate	0.06	-0.16	-0.26
Unskilled wage	0.02	-0.06	-0.09
Skilled wage	-0.09	-0.21	-0.26
Return to capital	0.11	0.17	0.23
Land return	3.65	4.06	4.61
Exports (volume)	-0.32	-0.32	-0.34
Imports (volume)	-0.01	-0.4	-0.63
% deviation from baseline			

Table 5. Trade Liberalisation: Effects on Hungary

« Trade Liberalisation » : Macroeconomic impact on Hungary

	2005	2010	2015
Welfare	-0.68	0.92	2.62
GDP (volume)	-0.53	1.21	2.98
Terms of trade	-1.1	0.84	2
Real effective exchange rate	-1.12	1.57	3.19
Unskilled wage	-7.27	-4.89	-2.72
Skilled wage	-2.11	0.47	3.19
Return to capital	-2.53	-0.21	1.3
Land return	-50.8	-51.3	-52.2
Exports (volume)	7.37	9.23	10.86
Imports (volume)	7.53	14.06	18.95

% deviation from baseline

Table 6. Trade Liberalisation: Effects on Poland

« Trade Liberalisation » : Macroeconomic impact for Poland

	2005	2010	2015
Welfare	-1.85	-0.12	1.38
GDP (volume)	-1.89	0.28	1.84
Terms of trade	-5.49	-2.7	-2.14
Real effective exchange rate	-4.9	-1.98	-1.66
Unskilled wage	-11.1	-6.01	-3.59
Skilled wage	-3.25	2.03	5.64
Return to capital	-4.88	-2.59	-2.16
Land return	-77.8	-77	-76.1
Exports (volume)	22.63	20.48	20.06
Imports (volume)	15.51	19.78	20.41

% deviation from baseline

Table 7. Trade Liberalisation: Effects on Baltic countries

« Trade liberalisation » : Macroeconomic impact for Baltic countries

	2005	2010	2015
Welfare	0.38	-0.56	-0.89
GDP (volume)	0.91	-0.33	-0.77
Terms of trade	2.13	0.32	-0.4
Effective real exchange rate	3.06	1.18	0.62
Unskilled wage	5.9	3.69	3.02
Skilled wage	1.23	-1.81	-2.67
Return to capital	4.18	3.07	3.21
Land return	34.49	33.85	33.52
Exports (volume)	6.69	-3.31	-5.96
Imports (volume)	-2.63	-5.6	-6.74

% deviation from baseline

Table 8. Trade Liberalisation: effects on the rest of CEECs

« Trade liberalisation » : Macroeconomic impact for the rest of CEECs

	2005	2010	2015
Welfare	-1.18	2.93	4.04
GDP (volume)	-1.26	3.68	4.87
Terms of trade	-1.9	3.91	5.49
Real effective exchange rate	-1.9	5.66	7.1
Unskilled wage	-0.16	6.27	8.85
Skilled wage	1.17	7.98	9.89
Return to capital	-0.08	4.48	4.87
Land return	-29.4	-32.1	-34.7
Exports (volume)	10.45	10.72	8.65
Imports (volume)	8.1	26.3	31.79

% deviation from baseline

Table 9. Market Integration: Effects on Output per firm

Sector	Eurozone	Rest of EU15	Poland	Hungary	Baltics	Rest of CEEC
Agriculture	-	-	-	-	-	-
Machine and tools	-0.37	-0.05	-0.65	3.8	0.11	-0.94
Automobile	-2.51	-1.61	2.35	12.93	ns	6.77
Textile clothing	-0.01	-0.08	-0.92	1.49	0.12	1.23
Wood	-0.3	-0.05	8.25	23.41	22.25	32.85
Electronics	-0.29	-0.21	0.95	1	-0.03	-1.35
Chemicals	-0.05	-0.15	1.15	6.76	1.22	-4.64
Metal products	-0.8	-0.21	15.3	24.43	4.11	24.31
Transport	0.76	0.49	0.51	1.83	-2.67	-13
Other industry	0	-0.02	1.6	6.07	2.33	3.27
Other Services	-0.03	-0.03	24.97	24.7	22.49	23.09

% deviation from baseline

Table 10. Market integration: impact on eurozone

« Market integration » : Macroeconomic impact for eurozone

	2005	2010	2015
Welfare	-0.04	-0.01	0.04
GDP (volume)	-0.03	-0.02	0.03
Terms of trade	-0.13	-0.35	-0.44
Real effective exchange	-0.06	-0.29	-0.38
Unskilled wage	-0.02	-0.06	-0.06
Skilled wage	-0.12	-0.29	-0.31
Return to capital	0.04	0.18	0.27
Land return	2.06	2.57	3.11
Exports (volume)	0.14	0.26	0.35
Imports (volume)	-0.28	-0.87	-1.15

% deviation from baseline

Table 11. Market integration: impact on the rest of EU

« Market integration » : Macroeconomic impact on rest of EU15

	2005	2010	2015
Welfare	-0.05	-0.08	-0.1
GDP (volume)	-0.03	-0.05	-0.07
Terms of trade	0.02	-0.16	-0.24
Real effective exchange rate	0.07	-0.16	-0.25
Unskilled wage	0.01	-0.06	-0.09
Skilled wage	-0.1	-0.22	-0.27
Return to capital	0.1	0.17	0.23
Land return	3.68	4.11	4.66
Exports (volume)	-0.29	-0.29	-0.33
Imports (volume)	0.01	-0.41	-0.62

% deviation from baseline

Table 12. Market integration: impact on Hungary

« Market integration » : Macroeconomic impact for Hungary

	2005	2010	2015
Welfare	0.35	2.08	3.74
GDP (volume)	0.53	2.42	4.13
Terms of trade	-0.47	1.32	2.38
Real effective exchange rate	-3.66	-1.11	0.59
Unskilled wage	-4.16	-3.54	-1.45
Skilled wage	1.27	1.82	4.82
Return to capital	0.95	1.03	2.03
Land return	-49.8	-51	-51.9
Exports (volume)	4.18	6.23	7.79
Imports (volume)	8.11	15.64	20.11
% deviation from baseline			

Table 13. Market integration: impact on Poland

« Market integration » : Macroeconomic impact for Poland

	2005	2010	2015
Welfare	-0.73	1.18	2.89
GDP (volume)	-0.7	1.68	3.5
Terms of trade	-4.92	-2.59	-1.8
Real effective exchange rate	-7.62	-5.08	-4.29
Unskilled wage	-7.66	-4.59	-2.19
Skilled wage	0.65	4.07	8.03
Return to capital	-1.11	-1.28	-1.12
Land return	-77.2	-76.6	-75.8
Exports (volume)	17.22	14.99	14.39
Imports (volume)	15.18	19.75	21.29
% deviation from baseline			

Table 14. Market integration: impact on Baltic states

« Market integration » : Macroeconomic impact for Baltics

	2005	2010	2015
Welfare	1.4	0.4	0.15
GDP (volume)	2.05	0.74	0.38
Terms of trade	2.88	0.55	-0.22
Real effective exchange rate	0.73	-1.67	-2.19
Unskilled wage	8.94	4.98	4.31
Skilled wage	4.6	-0.83	-1.6
Return to capital	7.4	4.07	4.03
Land return	36.42	35.4	35.15
Exports (volume)	4.11	-5.65	-8.13
Imports (volume)	-2.54	-5.4	-6.5
% deviation from baseline			

Table 15. Market integration: impact on the rest of CEECs

« Market integration » : Macroeconomic impact for rest of CEECs.

	2005	2010	2015
Welfare	0.13	4.58	5.26
GDP (volume)	0.16	5.49	6.14
Terms of trade	-1.09	4.86	5.77
Real effective exchange rate	-3.94	3.63	4.49
Unskilled wage	3.79	8.31	9.96
Skilled wage	5.25	10.42	12.25
Return to capital	3.86	5.92	5.12
Land return	-28.1	-31.6	-33.8
Exports (volume)	5.93	6.03	4.6
Imports (volume)	8.42	28.6	32.26
% deviation from baseline			

Table 16. Accession: Effects on firm size

« Accession » : Output per firm

Sectors	Eurozone	Rest of EU15	Hungary	Poland	Baltics	Rest of CEEC
Machine and tools	-0.45	-0.13	-0.58	3.69	-0.42	0.90
Automobile	-1.73	-0.76	4.97	14.14	1407.00	7.18
Textile clothing	-0.04	-0.03	-0.81	0.92	-0.40	2.07
Wood	-0.48	-0.05	8.41	22.42	22.00	34.60
Electronics	-0.24	-0.24	0.82	0.95	-0.93	0.39
Chemicals	-0.26	-0.13	2.28	6.28	-1.86	2.55
Metal products	-0.92	-0.21	13.68	23.17	2.07	28.35
Transport	-0.18	-0.24	2.24	1.67	-7.25	-2.62
Other industry	-0.07	-0.05	1.75	5.94	1.50	4.51
Other Services	-0.16	-0.11	25.00	24.84	21.67	23.03

% deviation from baseline in 2015

Table 17. Accession: effects on the eurozone

« Accession » : Macroeconomic impact for eurozone

	2005	2010	2015
Welfare	-0.72	-0.82	-0.93
GDP (volume)	-0.5	-0.64	-0.73
Terms of trade	-0.19	-0.34	-0.41
Real exchange rate	-0.09	-0.24	-0.28
Unskilled wage	1.1	0.72	0.53
Skilled wage	-0.51	-0.91	-1.13
Return to capital	-0.2	-0.06	0.12
Land return	2.94	1.97	1.98
Exports (volume)	-0.01	0.05	0.16
Imports (volume)	-0.84	-1.1	-1.29
% deviation from baseline			

Table 18. Accession: effects on the rest of EU15

« Accession » : Macroeconomic impact for the rest of the EU15

	2005	2010	2015
Welfare	-0.57	-0.66	-0.74
GDP (volume)	0.11	-0.04	-0.12
Terms of trade	-0.04	-0.11	-0.15
Effective real exchange rate	0.14	0.06	0.02
Unskilled wage	0.28	0.08	0
Skilled wage	-0.15	-0.44	-0.62
Return to capital	0.41	0.55	0.74
Land return	8.94	8.1	8.86
Exports (volume)	-0.14	-0.29	-0.43
Imports (volume)	-0.05	-0.16	-0.32
% deviation from baseline			

Table 19. Accession: Effects on Hungary

« Accession » : Macroeconomic impact for Hungary

	2005	2010	2015
Welfare	3.44	4.9	6.67
GDP (volume)	3.02	5.79	7.59
Terms of trade	1.2	1.35	1.81
Real effective exchange rate	-1.32	-0.24	0.93
Unskilled wage	-4.14	-2.32	-0.23
Skilled wage	1.8	3.23	6.26
Return to capital	0.27	-0.95	-0.86
Land return	-40.5	-30.8	-28.4
Exports (volume)	-0.64	1.6	2.64
Imports (volume)	12.22	16.86	20.25

% deviation from baseline

Table 20. Accession: Effects on Poland

« Accession » : Macroeconomic impact for Poland

	2005	2010	2015
Welfare	-1.1	1.81	4.33
GDP (volume)	0.91	4.57	6.98
Terms of trade	-3.15	-1.22	-0.11
Real effective exchange rate	-5.14	-2.42	-1.13
Unskilled wage	-9.52	-5.75	-3.13
Skilled wage	-1.09	3.5	8.09
Return to capital	-3.32	-3.42	-3.65
Land return	-4.86	-6.92	-6.89
Exports (volume)	12.12	10.3	8.76
Imports (volume)	21.13	26.39	29.38

% deviation from baseline

Table 21. Accession: Effects on Baltic States

« Accession » : Macroeconomic impact for Baltics

	2005	2010	2015
Welfare	-11.9	-17.6	-20.6
GDP (volume)	0.89	-1.11	-3.36
Terms of trade	0.88	-1.33	-1.79
Real effective exchange rate	-1.4	-3	-2.99
Unskilled wage	9.24	5.84	3.44
Skilled wage	-1.79	-12.6	-18.2
Return to capital	6.18	7.25	10.54
Land return	48.7	61.58	64.15
Exports (volume)	11.99	-1.23	-5.93
Imports (volume)	-8.32	-12.7	-14.9
% deviation from baseline			

Table 22. Accession: Effects on the rest of CEEC

« Accession » : Macroeconomic impact for the rest of CEECs

	2005	2010	2015
Welfare	4.51	5.62	6.7
GDP (volume)	3.15	6.17	7.22
Terms of trade	1.28	1.28	1.51
Real effective exchange rate	-0.94	-0.49	-0.02
Unskilled wage	2.97	4.34	5.31
Skilled wage	5.37	6.61	8.55
Return to capital	3.01	1.71	1.07
Land return	-11.2	-0.19	1.48
Exports (volume)	-2.35	-0.94	-1.13
Imports (volume)	16.88	19.87	21.69
% deviation from baseline			

FIGURES

Figure 1. Hungary : Revealed Comparative Advantage. Unit, per thousand of GDP – Source CHELEM Database

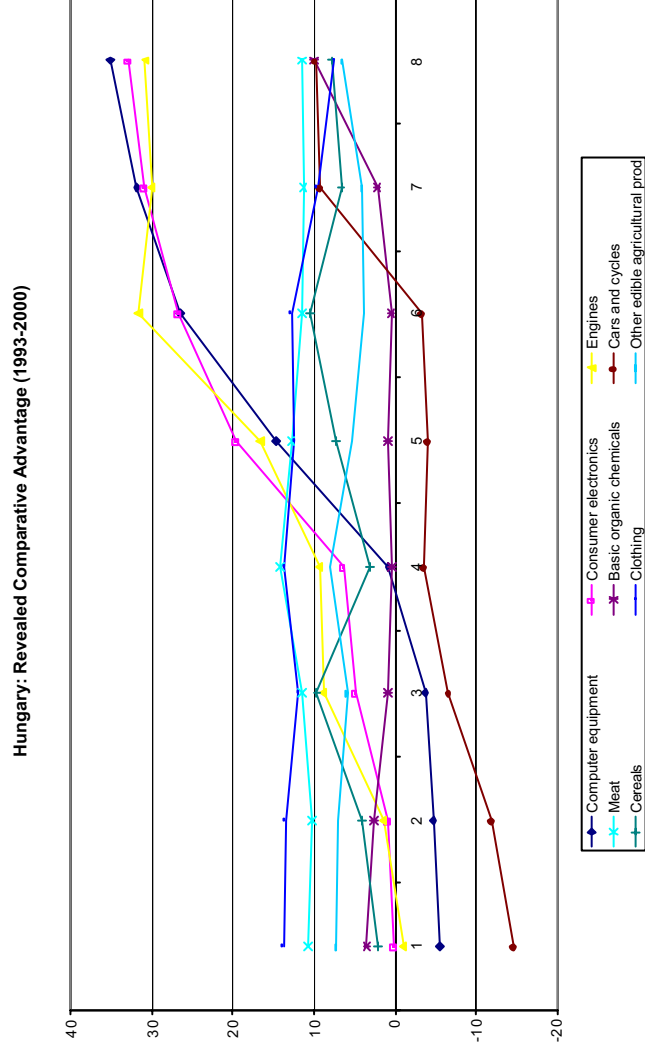


Figure 2. Poland : Revealed Comparative advantage. Unit, per thousand of GDP – Source CHELEM Database

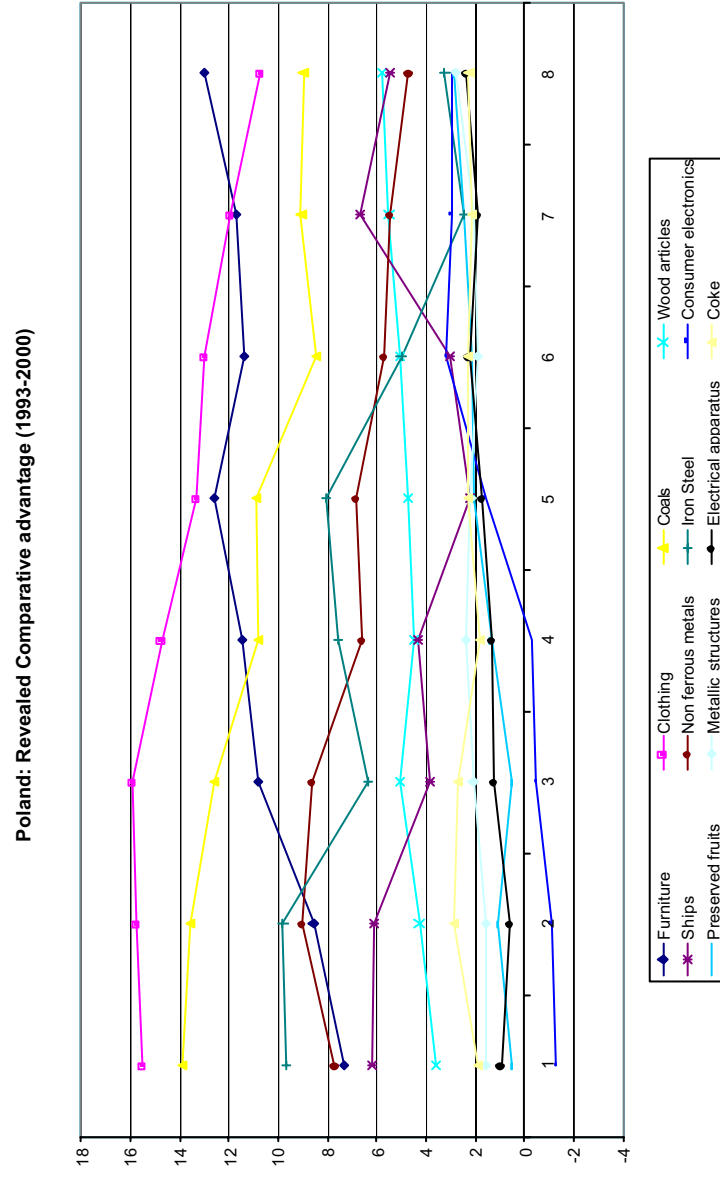


Figure 4. Eurozone: impact on GDP of different enlargement scenarios

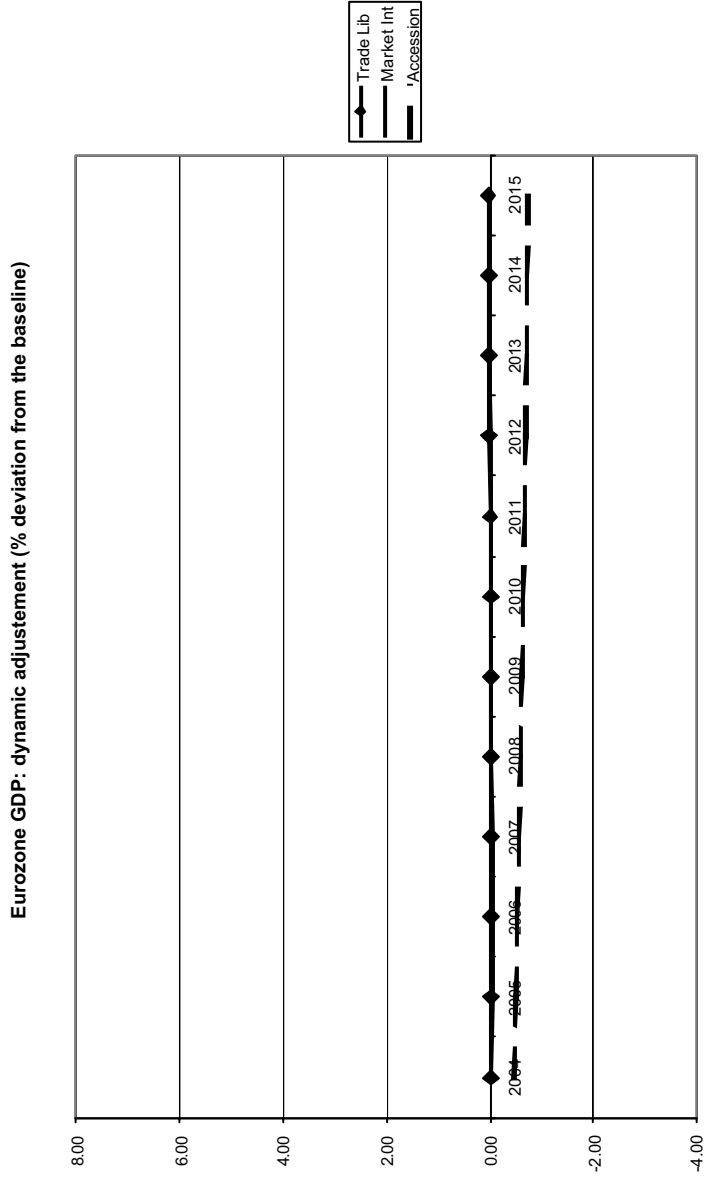


Figure 5. Rest of EU: impact on GDP of different enlargement scenarios

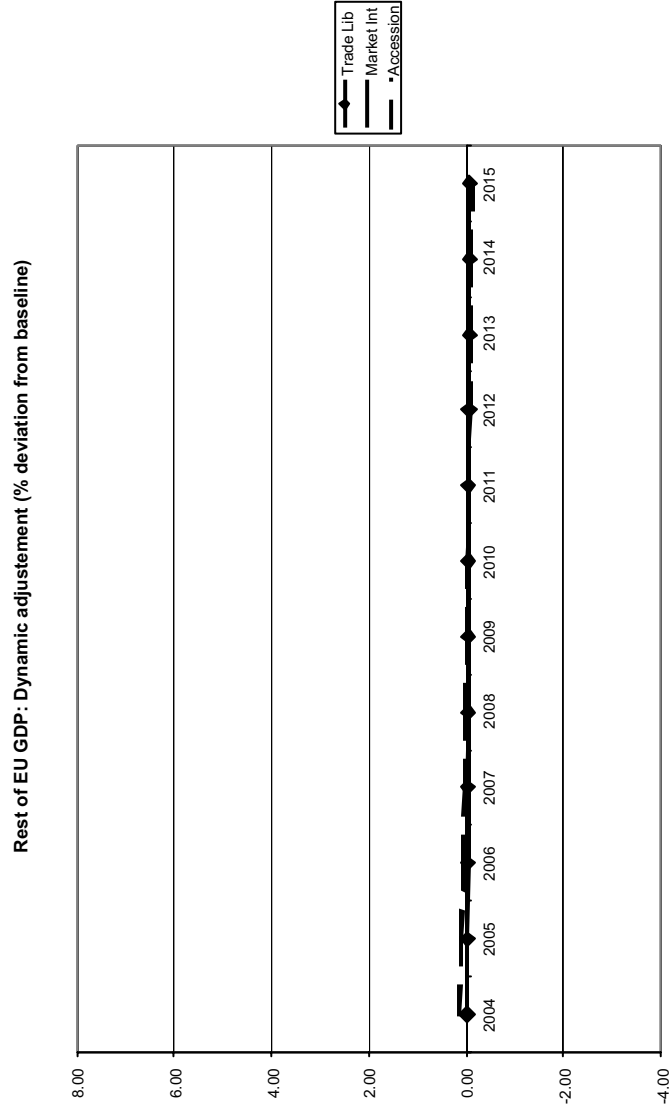


Figure 6. Hungary: impact on GDP of different enlargement scenarios

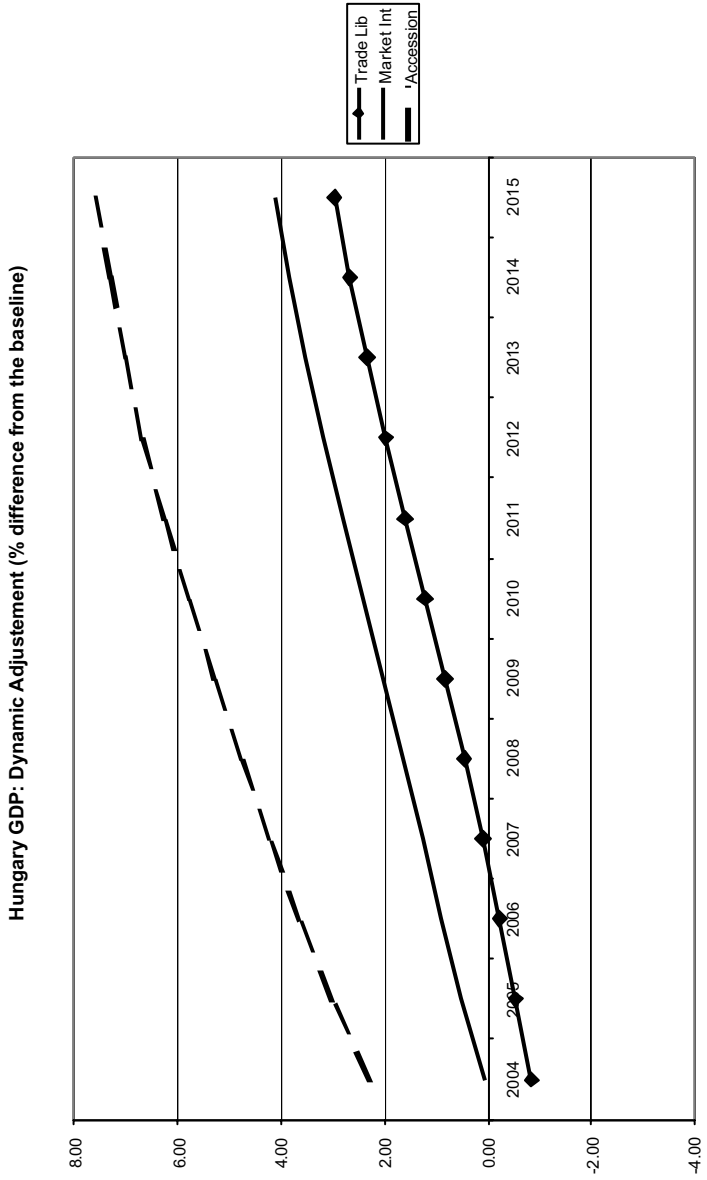


Figure 7. Poland: impact on GDP of different enlargement scenarios

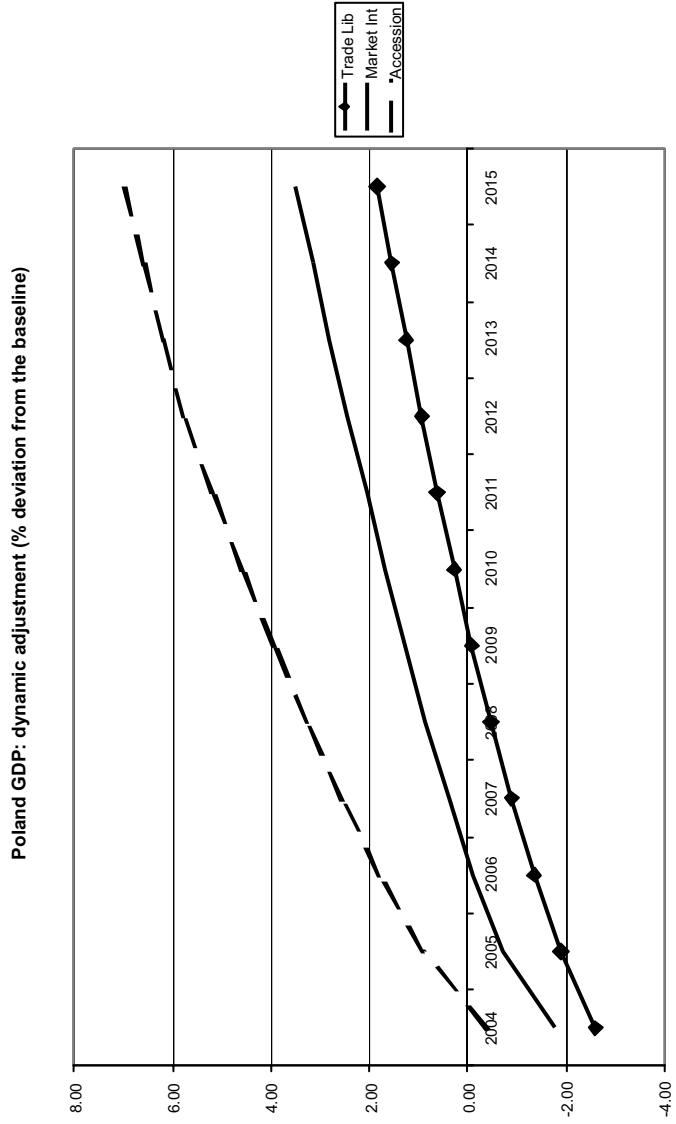


Figure 8. Baltic Countries: impact on GDP of different enlargement scenarios

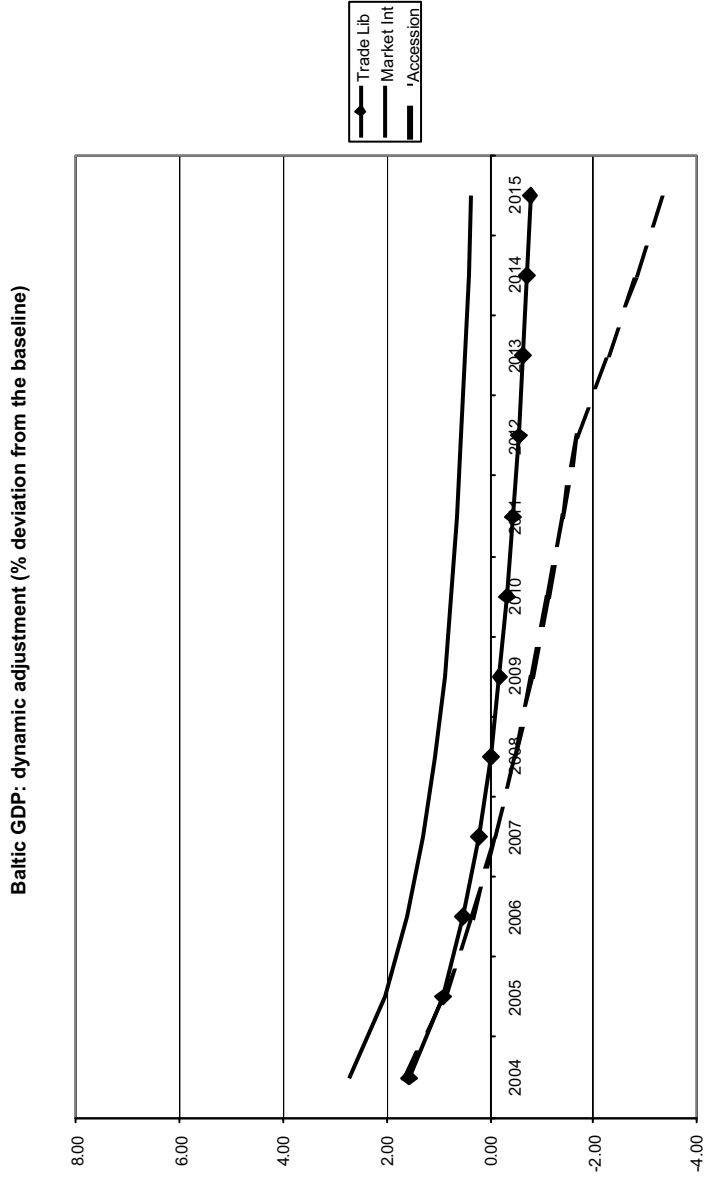
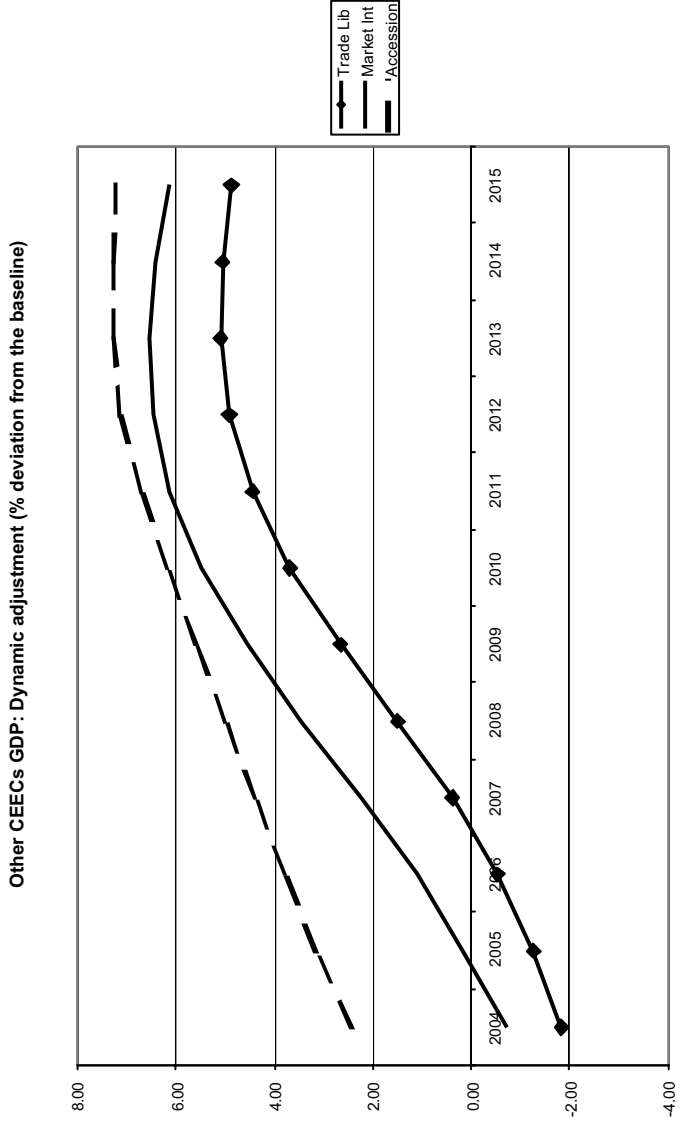


Figure 9.other CEECs: impact on GDP of different enlargement scenarios



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