



OECD Economics Department Working Papers No. 432

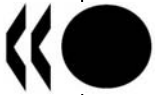
The Benefits of Liberalising
Product Markets
and Reducing Barriers
to International Trade
and Investment: The Case
of the United States and the
European Union

OECD

<https://dx.doi.org/10.1787/770775252885>

Unclassified

ECO/WKP(2005)19



Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

26-May-2005

English - Or. English

ECONOMICS DEPARTMENT

ECO/WKP(2005)19
Unclassified

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ABSTRACT/RÉSUMÉ

The Benefits Of Liberalising Product Markets And Reducing Barriers To International Trade And Investment: The Case Of The United States And The European Union

This paper provides an assessment of the impact of a package of structural reforms in the European Union and the United States on long-run trade and output gains accruing to OECD countries. The package includes reforms that reduce competition-restraining regulations, cut tariff barriers and ease restrictions on foreign direct investment to “best practice” levels in the OECD area. The analysis, which is based on earlier OECD studies, indicates that such reforms could lead to gains in GDP per capita in both transatlantic areas of up to 3 to 3 ½ per cent. Moreover, due to trade linkages, the benefits of reforms in the United States and the European Union would spread to other OECD countries, with an estimated increase in GDP per capita of up to 1½ per cent. As the analysis is confined to a relatively narrow set of policies and abstracts from potential dynamic effects from reform-induced increase in innovation, the overall gains from broad reforms could be significantly higher than reported in the paper.

JEL : F13, F21, K2, O4

Key Words : International trade, Foreign Direct Investment, Regulation, Growth and productivity

Les benefices de la liberalisation des marchés de produits et de la reduction des barrieres aux échanges et aux investissements internationaux : le cas des Etats-unis et de L'Europe

Ce document offre une évaluation des réformes globales structurelles en Europe et aux États-Unis sur les échanges et la croissance de long terme dans les pays de l'OCDE. Ces réformes incluent l'ensemble des mesures politiques visant la réduction de la réglementation anti-compétitive, la baisse des barrières tarifaires et des restrictions sur les investissements directs étrangers vers les «meilleures pratiques» observées au sein des pays de l'OCDE. L'analyse, qui s'appuie sur de précédents travaux de l'OCDE, montre que de telles réformes peuvent conduire à une augmentation du PIB par habitant entre 3 et 3 ½ pour cent. De plus, en raison d'effets de transmission *via* les échanges, le bénéfice des réformes en Europe et aux États-Unis devrait se répandre à l'ensemble des autres pays de l'OCDE conduisant à une augmentation du PIB moyen par habitant de plus de 1 ½ pour cent. Étant donné que l'analyse ne couvre qu'un nombre de mesures spécifiques et exclut les effets dynamiques potentiels de l'innovation, les bénéfices tirés d'un ensemble de reformes beaucoup plus large pourraient bien être plus élevés que ceux reportés dans ce document.

JEL:F13, F21, K2, O4

Mots clés: Commerce International, Investissement Direct Etranger, Réglementation, Croissance et productivité.

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TABLE OF CONTENTS

EDITORIAL	5
1. Introduction and summary of key results	7
2. Economic integration in the OECD.....	9
3. Structural policies in the European Union and the United States.....	12
3.1 Product market restrictions	12
3.2 FDI restrictions and barriers to trade and investment.....	16
3.3 Tariff and non-tariff barriers.....	16
3.4 Barriers at the sectoral level.....	19
4. The potential for enhanced economic integration	22
5. Benefits of closer economic co-operation	24
5.1 The impact of closer economic co-operation on economic performance: the key linkages	24
5.2 Estimating the benefits of reform	25
5.3 The benefits for the United States and European Union.....	26
5.4 The benefits for the OECD area as a whole and impacts on the rest of the world.....	31
6. Concluding Remarks	34
BIBLIOGRAPHY.....	37
ANNEX: Supporting material	40
A1 Impact of policy reforms on output <i>via</i> increased trade exposures	40
A1.1 Empirical approach.....	40
A1.2 Detailed Results	40
A2 Impact of policy reforms on output <i>via</i> increased productivity.....	46
A3 Impact of policy reforms using the GTAP model.....	46
A3.1 Overview of the model and data.....	46
A3.2 Detailed Results	47
REFERENCES	50

Boxes

- Box 1. Barriers to economic integration
- Box 2. Barriers to trade from non-tariff measures
- Box 3. Estimating the benefits of structural reform
- Box 4. The links between reforms, innovations and growth

Figures

- 2.1 Developments in trade relative to GDP in the OECD
- 2.2 Trends in foreign direct investment in the OECD – per cent of GDP
- 2.3 Employment in foreign affiliates in selected OECD countries
- 3.1 Product market regulation indicators in the OECD, 2003
- 3.2 Indicators of state control and barriers to entrepreneurship in the OECD, 2003
- 3.3 OECD indicators of FDI restrictions, 2001

- 3.4 Applied tariff levels in the EU, US and other OECD countries, 2003
- 3.5 Product market regulations in services sectors in the EU, US and OECD, 2003
- 3.6 Sectoral barriers to FDI in the EU, US and OECD, 2001
- 3.7 Estimates of producer support on agriculture in the OECD, 2003

Tables

- 3.1 Ad-valorem equivalent measures of applied border protection in the United States and the European Union, 2001
- 4.1 Required intensity of reforms by sectors to attain OECD best practices, 2003
- 5.1 Impact of reforms on EU and US export levels using OECD panel data studies
- 5.2 Impact of reforms on GDP per capita levels using OECD panel data studies
- 5.3 Impact of inward-oriented product market reforms on MFP levels and GDP per capita
- 5.4 Impact of tariff cuts on exports and GDP per capita using the GTAP model
- 5.5 Impact of tariff cuts and productivity boost on exports and GDP using the GTAP model
- 5.6 Impact of reforms on GDP per capita levels and trade in the OECD area using OECD panel data studies
- 5.7 The global impact of reforms on GDP per capita and trade using the GTAP model

Annex Tables

- A1 Summary impact of the policy variables on exports
- A2 Impact of reforms on goods exports levels using OECD panel data studies
- A3 Impact of reforms on services exports levels using OECD panel data studies
- A4 Summary impact of reforms in the United States and the European Union using OECD panel data
- A5 Impact of tariff cuts and a boost in productivity on trade using the GTAP model
- A6 Impact of tariff cuts and a boost in productivity on welfare using the GTAP model

EDITORIAL

This study quantifies the macroeconomic benefits that would arise from significant reductions of the barriers that still limit product market entry, foreign direct investment and trade in the United States and the European Union.

In a paradoxical way, this work is very topical. At a time when Europe may be losing momentum in its drive to opening product and services markets, the study shows that the economic rationale for such liberalisation remains very strong. Room for progress is indeed still large in the area of product market reforms in Europe and so are the rewards to be reaped in terms of higher living standards. As past OECD research strongly suggests, more open product markets translate ultimately into higher productivity growth. Such a boost would be welcome in a context where Europe's economic performance over the past 15 years has been poor relative to other OECD countries and especially the United States.

Moving from these sorts of general analytical conclusions to a more concrete, policy focused exercise was an interesting challenge for the OECD Economics Department. Here we tried precisely to quantify the gains that could be achieved by deepening liberalisation efforts both in Europe and the United States and evaluated the positive spillovers that would accrue for other countries in the OECD.

The idea behind the exercise is to identify across the OECD the countries which have, in one sector or another, the regulatory framework most supportive of good economic performance and evaluate what economic benefits would materialise if other countries aligned their own framework on "best practice".

The barriers that are relaxed comprise:

- Product market regulation, including barriers associated with state control of companies and state involvement in business operations in the form of *e.g.* administrative barriers to start-ups, administrative opacity and barriers to competition..
- Obstacles to FDI.
- Tariffs, including for agriculture.

In all these areas, over the past few years, the OECD has constructed a large number of structural policy indicators that are comparable across countries. These structural indicators have been used in empirical analysis to determine the effects of barriers and related policies on employment and growth. We were thus able to draw on this empirical evidence to quantify the effects of eliminating those barriers in the EU and the United States.

It should be noted, however, that the scope of liberalisation illustrated in this exercise focused only on barriers that inhibited economic performance but not those like environmental or safety regulations aimed at non-economic objectives. The study also left aside most public interventions in agriculture, all of labour market and financial market regulations, and the distortions induced by welfare systems. This exercise is thus about quantifying the consequences of a set of regulatory reforms that is deep but not very broad in scope.

The benefits to be expected from such a liberalisation exercise are nonetheless substantial:

- In the United States, GDP per capita would increase by 1% to 2.5%;
- In Europe, GDP per capita would be boosted by between 2 to 3%, which is equivalent to two years of growth. Compared with the United States, gains would be stronger in Europe, reflecting its tighter initial stance of regulation.
- Spill-overs outside the European Union and the United States may be large: 2% for Canada and Mexico, 1.5% for Turkey, Japan and Central Europe.

An important lesson of this work is that product market deregulation rather than tariff lowering would provide the main source of economic gains. This finding should not come as a surprise, however, knowing that tariff and non-tariff barriers are now rather small while domestic product market regulations remain often substantial, especially so in the services sector.

The magnitude of estimated output gains look very significant to us but they may seem too modest to some observers. A first answer would be that our estimation of the gains of liberalisation are indeed very prudent. In this exercise, we have only assessed the “one-shot” or “static gains”, coming from greater international trade specialisation and better allocation of resources. But many would argue that liberalisation produces “dynamic gains”, that is more open product markets stimulate research, innovation and technical progress on a sustained basis. Empirical research indeed suggests that these gains could be quite large although their estimated magnitude is still surrounded by substantial margins of uncertainty.

I would conclude by noting that it may look surprising to model the outcome of a joint liberalisation on both sides of the Atlantic, knowing that in any case unilateral liberalisation is already beneficial. There are nonetheless good reasons to consider such a joint approach. It will be easier to implement a reform programme if it is part of an internationally agreed package. And there will be spill-overs. The more countries that participate in liberalisation, the higher will be the collective gains.



Jean-Phillippe Cotis
Chief Economist

**THE BENEFITS OF LIBERALISING PRODUCT MARKETS AND REDUCING BARRIERS
TO INTERNATIONAL TRADE AND INVESTMENT: THE CASE OF THE UNITED STATES
AND THE EUROPEAN UNION**

1. Introduction and summary of key results

1. Improving the functioning of product markets could play a key role in raising living standards in the OECD area. As the first stage of a wider project, this paper provides an assessment of the potential long-run trade and output gains accruing from a package of structural reforms in the European Union and the United States that enhances product market competition, reduces broad tariff barriers, and eases restrictions on foreign direct investment (FDI).¹ Given that such reforms have important positive spill-over effects on trading partners, international co-operation is likely to amplify the beneficial effects of changes in policy in this area.

2. The specific features of the reform package considered in the paper are inferred from OECD estimates of the current gaps between EU and US structural policy settings and measures of what are considered to be “best-practice” policies across OECD countries.² The analysis of the impact of reforms on trade and output is based on earlier regression results obtained by the OECD in its work on the determinants of economic growth and on the drivers of trade and FDI, supplemented by general equilibrium analysis using the Global Trade Analysis Project (GTAP) model. Throughout the analysis reported in the paper, it is assumed that the reductions in the external barriers to trade and investment in the European Union and the United States apply globally. Hence, the estimated benefits of reform are spread through all OECD countries and the rest of the world.

3. The key results with respect to gains in economic performance for the main geographical areas analysed are:

- At the level of the OECD area as a whole, exports are estimated to increase by up to around 25% while GDP per capita levels increase by around 1¼ to 3%, depending on the analytical approach used to estimate the gains. This increase in GDP per capita is equivalent to the expansion that would be expected over one to two years when OECD economies are growing at around their potential growth paths. While these gains may seem modest, it should be noted that they are permanent. Once adjustments to the reforms are complete, individuals would be able to reap the gains each year thereafter. For example, over an average 40-year working life of an individual, the cumulated addition to earnings would equal between one-half and more than a full year’s worth of earnings.
- In the United States, the reform package is estimated to boost GDP per capita by around 1% to 3% per capita. Reductions in domestic product market reforms play the most important role in

explaining this improvement in economic performance, followed by reductions in external barriers to trade and investment.

- In the European Union, gains in GDP per capita are estimated to be around 2 to 3½ per cent per capita, with the majority of EU countries fairly close to this average. The larger estimated benefit of reform for the European Union relative to the United States reflects that structural policy settings for many EU countries tend to be further removed from best practice, especially policies governing domestic product market regulation.
- In the OECD area outside the United States and the European Union, output per capita could increase from around ½ to 1½ per cent. As the exercise only considers policy reform in the European Union and the United States, the output gains in other OECD countries stem only from an increase in their trade levels as barriers to trade with the European Union and the United States are reduced, and the associated expansion of their output-generating capacity.

4. The size of these gains should be seen in the context of the scope of the policy reforms considered and the techniques used to assess the benefits. The scope of the reforms is quite deep with respect to competition-restraining regulations in product markets, FDI restrictions and external tariff barriers. Indeed, movement to “best practice” policies implies a more liberal overall policy stance than seen in any OECD country at present. However, such liberalisation efforts are not unprecedented in the OECD, and should be seen as a continuation of past trends rather than a radical shift. For example, for the United States and some members of the European Union, the reform intensities implied are only moderately larger than those seen over the 1998-2003 period. Moreover, the reform package is relatively narrow as it excludes reforms to labour markets, financial markets, agricultural support and taxation, all of which could strengthen economic integration and performance.³ And reforms are likely to set in motion dynamic growth effects, for example through increased innovative efforts, which have not been considered in calculating the benefits. Overall, the gains from reform may be considerably larger than presented in this study.

5. Although this study does not formally consider the sectoral consequences of the reforms, evidence is provided that anti-competitive regulatory stances, or levels of protection, tend to be relatively high in a range of services sectors and in agriculture. This suggests that broad gains in output outlined above will require very ambitious reforms in these sectors. The sectoral focus of reforms would, however, differ across countries:

- Competition-restraining regulations in most EU15 countries would have to be lowered significantly in domestic air, rail and road transportation, electricity and gas, and/or telecommunications. On the other hand, the United States would have to concentrate reform efforts on electricity and rail transportation.
- The required easing of restrictions on foreign direct investment in the United States would be largest in transportation services, while in the European Union it would be particularly extensive in electricity generation.
- Reductions in tariff levels in the European Union would have to be concentrated on agricultural products; in the United States, tariff reductions would imply relatively more adjustment to rates of protection on textiles, apparel and other manufactured goods.

It is important to note that the reforms considered in the analysis concern reform of competition-restraining regulations only. Regulations that may serve important and legitimate social objectives, such as those

governing health and safety standards and the environment, are not included in the measures of the regulatory stances, nor envisaged as areas in need or reform.

6. The remainder of the paper is structured as follows. Section 2 briefly documents the current extent of economic integration in OECD countries. In Section 3, structural policy settings in the United States and the European Union are discussed. The distance between these settings and best-practice policy settings in the OECD are used to calibrate reform packages in Section 4. The potential impact of such reforms on output and trade in OECD economies is analysed in Section 5. In Section 6, conclusions are offered, while an annex provides more detailed results of the impact of the reform packages.

2. Economic integration in the OECD

7. The salient features of the extent of economic integration of OECD countries in general, and the United States and the European Union in particular, are as follows:

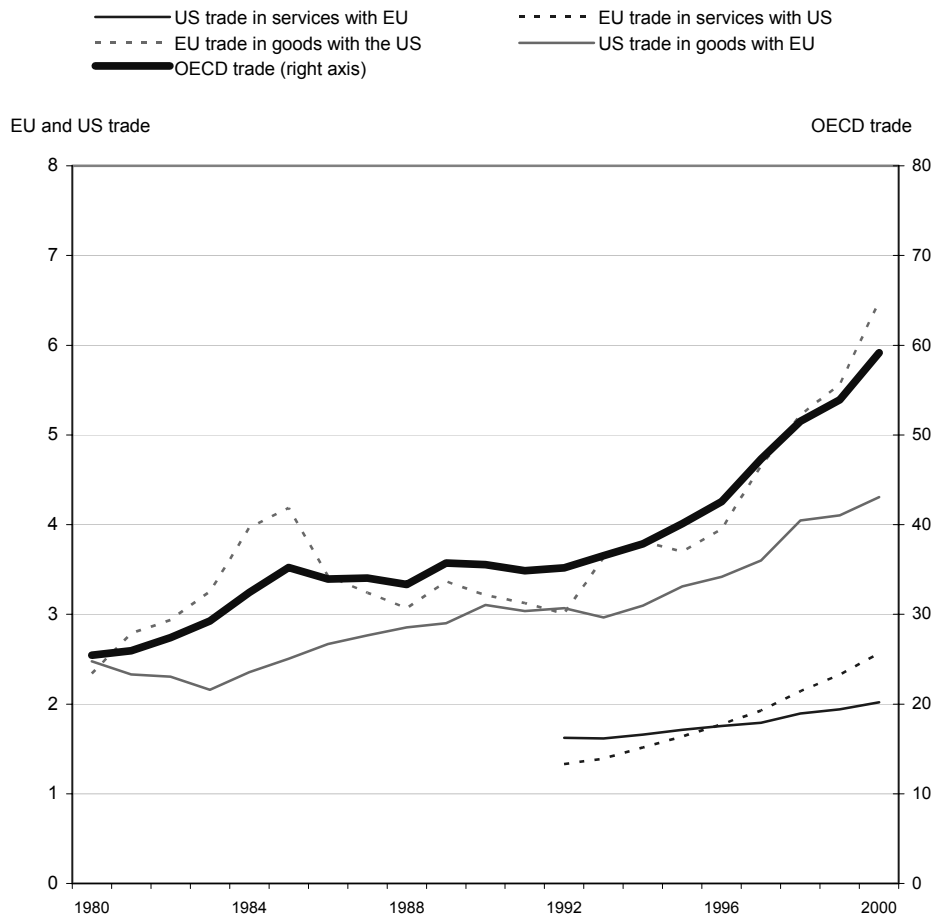
- International trade has risen (relative to GDP) across the OECD over the past two decades, and the bilateral EU-US trade flows broadly match this trend (Figure 2.1). However, the composition of trade remains tilted towards goods. Trade in services comprises only around a third of total trade flows, despite services accounting for around two-thirds or more of GDP in both areas and in the OECD more generally.⁴
- The stock of foreign direct investment in the OECD has also risen relative to GDP over the past two decades (Figure 2.2). In practice, most of the increasing FDI activity appears to have been driven by ownership changes in existing enterprises (for example, *via* mergers and acquisitions and privatisations), rather than so-called “green-field” investment (OECD, 2002).
- The activity of foreign affiliates in host countries has risen as the counterpart of FDI trends. Nonetheless, the presence of foreign affiliates in employment in the manufacturing and service sectors in OECD countries is generally quite limited (Figure 2.3).⁵

8. The broad increase in trade, FDI and foreign-affiliated activity in OECD economies over the past two decades points to stronger economic interdependence. This process has no doubt been assisted by successive multilateral trade and investment accords that have reduced many formal barriers to trade and FDI. However, national borders still remain barriers to enhanced integration.⁶ These barriers may reflect both explicit border barriers and domestic structural policy settings that curb competition and indirectly reduce the scope of international trade and investment (Box 1).

Box 1. Barriers to economic integration

Traditional tariff and non-tariff barriers and regulations that restrict foreign ownership of domestic assets, grant complete or near monopoly status to state-owned enterprises, involve significant regulatory hurdles for prospective FDI, or discriminate between domestic and foreign bidders for projects, are policies that would be expected directly to reduce economic integration across countries. In addition, domestic regulations that do not in principle discriminate between local and foreign firms may still distort cross-border integration by affecting the relative prices of different products, or the relative rates of return expected from investing in different locations. For example, differences in domestic regulation may affect relative production costs and the competitiveness of exporters in foreign markets. Moreover, a jointly negative influence on bilateral trade might be expected from cost-increasing or barrier-raising regulations that affect industries in which inputs from both countries are needed to produce the traded product. This is the case, for instance, of many traded services -- such as transportation, communications and business services -- in which capital and labour from both the exporting and importing country are used to supply the service. In these situations, it is the combination of regulations in the countries involved in the transaction that is likely to affect trade flows. Evidence of a negative correlation between anti-competitive service regulation and the intensity of service trade is provided in Golub (2003). In short, a quantification of both domestic and outward-focused regulation across countries is required to assess potential barriers to economic integration.

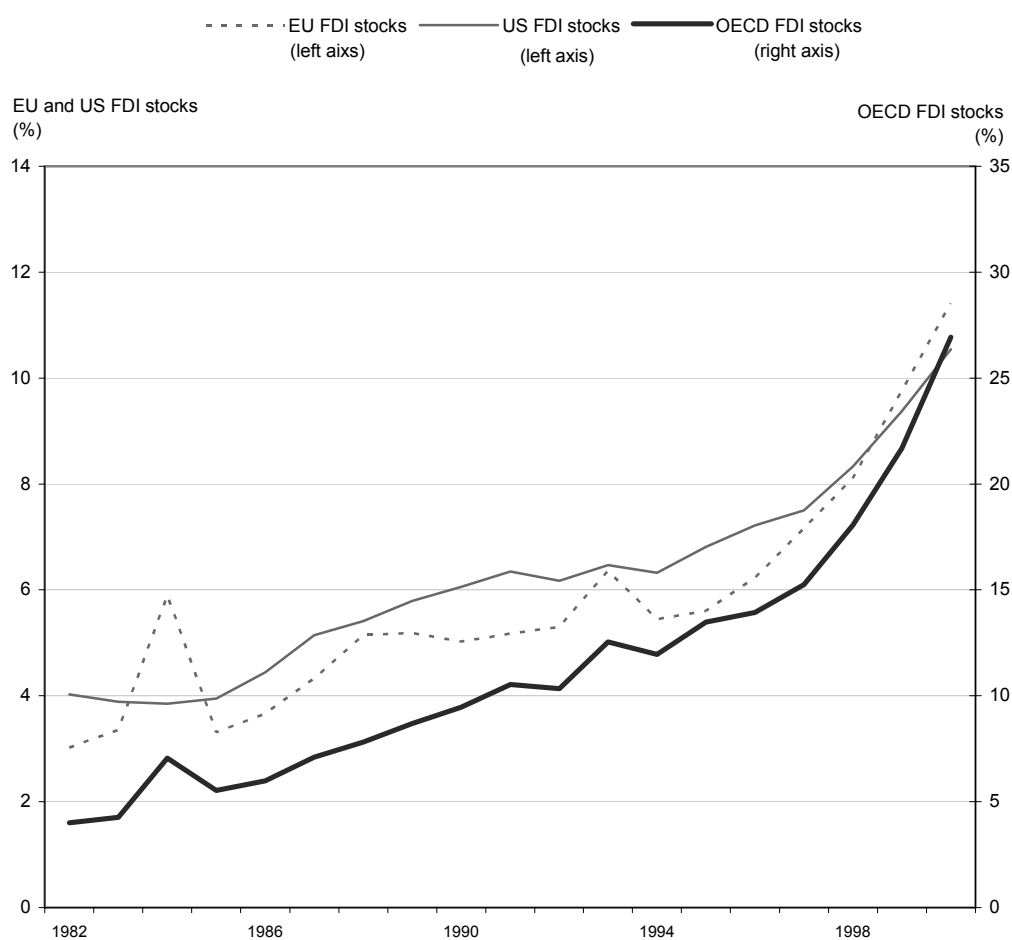
Figure 2.1. Developments in trade relative to GDP in the OECD¹



1. Trade is defined as the sum of exports and imports of goods realised between a reporting country and a partner country, as % of GDP of the reporting country. The diverging trends seen at times in the figure between European Union and United States trade is mainly due to exchange rate effects. Data for the OECD is a simple average of the ratio across OECD countries and due to data constraints bi-lateral EU-US trade in services is only shown since 1992.

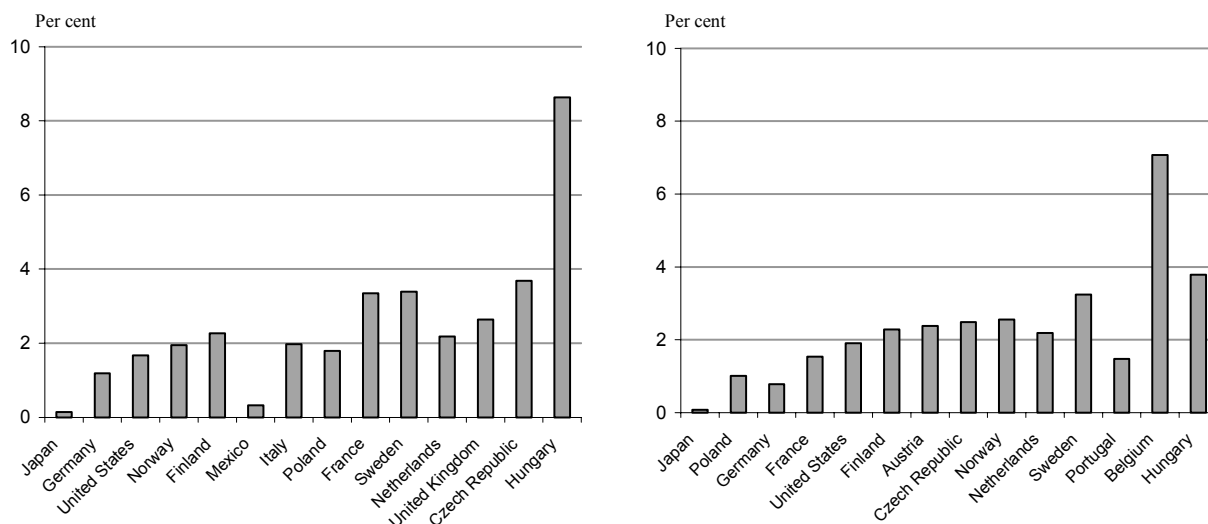
Source: OECD

Figure 2.2. Trends in foreign direct investment in the OECD – per cent of GDP¹



1. FDI stocks are the average of the inward and outward positions of FDI stocks between a reporting and a partner country. Data for the European Union exclude intra-EU FDI stocks. FDI for the OECD is calculated as a simple average of the ratio across OECD countries, and includes intra-EU FDI stock positions. The value for OECD stocks for the year 2000 is an OECD estimate.

Source: OECD

Figure 2.3. Employment in foreign affiliates in selected OECD countriesper cent of business sector employment,¹ 1990s

1. Activities of foreign affiliates are classified into industries according to the principal activity of the affiliate. Data are means over available years.

The country coverage in manufacturing and services is different.

2. Employment of foreign affiliates in manufacturing is an aggregate corresponding to Total Manufacturing (ISIC rev.3).

3. Employment of foreign affiliates in services is an aggregate corresponding to Total Services (ISIC rev.3).

Source: OECD.

3. Structural policies in the European Union and the United States

9. This section presents indicators of product market regulations, and barriers to foreign trade and investment, across all OECD countries in order to gauge both the relative levels of regulation between the European Union and the United States, and levels with respect to the broader OECD country set.

3.1 Overall product market restrictions

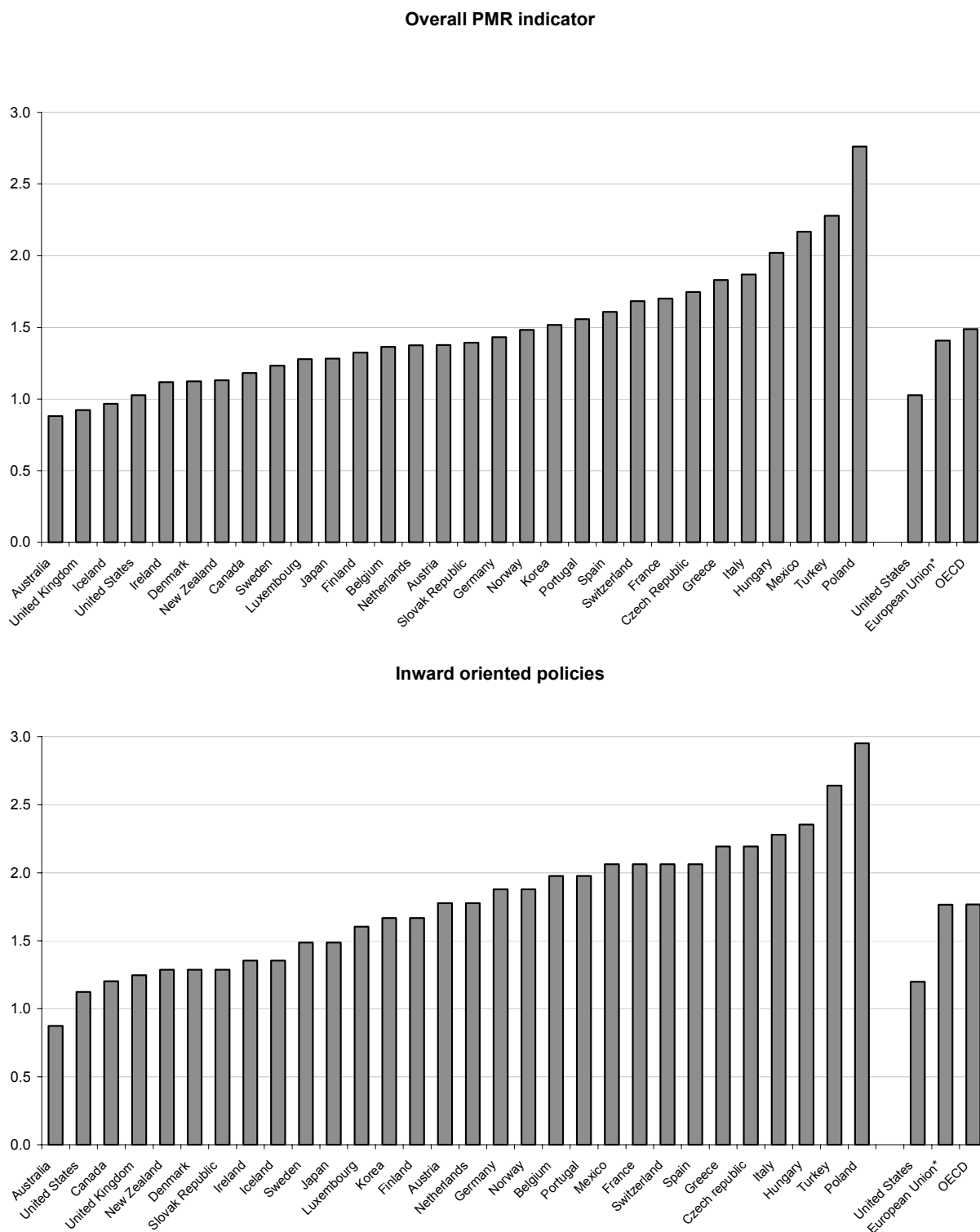
10. Recent work in the OECD has codified a comprehensive range of regulatory barriers to competition into indicators of the overall stance of product market regulation (PMR) as at the end of 2003, updating a comparable set of indicators of regulation in 1998.⁷ The overall indicators of PMR for OECD countries in 2003 are shown in Figure 3.1, along with high-level indicators of the regulatory burdens imposed from inward-oriented policies only. High PMR scores indicate that a country has a relatively restrictive set of product market regulations, while low PMR scores suggest that the regulatory environment is more conducive to competition. Importantly, low scores do not necessarily indicate that there is less regulation in the economy overall. For example, regulations that serve important and legitimate social objectives, such as those covering health and safety standards and the environment, are not included in the measures.

11. The overall indicator shows that regulations are more constraining for competition in the European Union than in the United States. Focussing on inward-oriented regulations, the differences are larger still. A decomposition of the inward-oriented regulations into those arising from restraints due to state control and those from barriers to entrepreneurship is shown in Figure 3.2. Restraint due to state control is noticeably higher in the European Union than the United States, and is driven by both higher

levels of public ownership (*i.e.* state or local government is represented in a broader range of market activities and own a larger fraction of the business sector) and higher levels of state involvement in business operations (*i.e.* greater use of command and control regulations, such as regulations of shop opening hours, and universal service requirements on air and rail networks).⁸ Barriers to entrepreneurship are also somewhat lower in the United States than in the European Union on average, reflecting less regulatory and administrative opacity, lighter administrative burdens on start-ups and lower barriers to competition.

12. The regulatory stance in some individual member states of the European Union matches, or is less restrictive, than that of the United States. For example, the overall strictness of inward-oriented regulations is broadly similar to that of the United States in the United Kingdom, Ireland and Denmark. And while public ownership is less extensive in the United States than in any of the EU member countries, a few of them have less constraining barriers to entrepreneurship (United Kingdom, Ireland, Sweden and Finland).

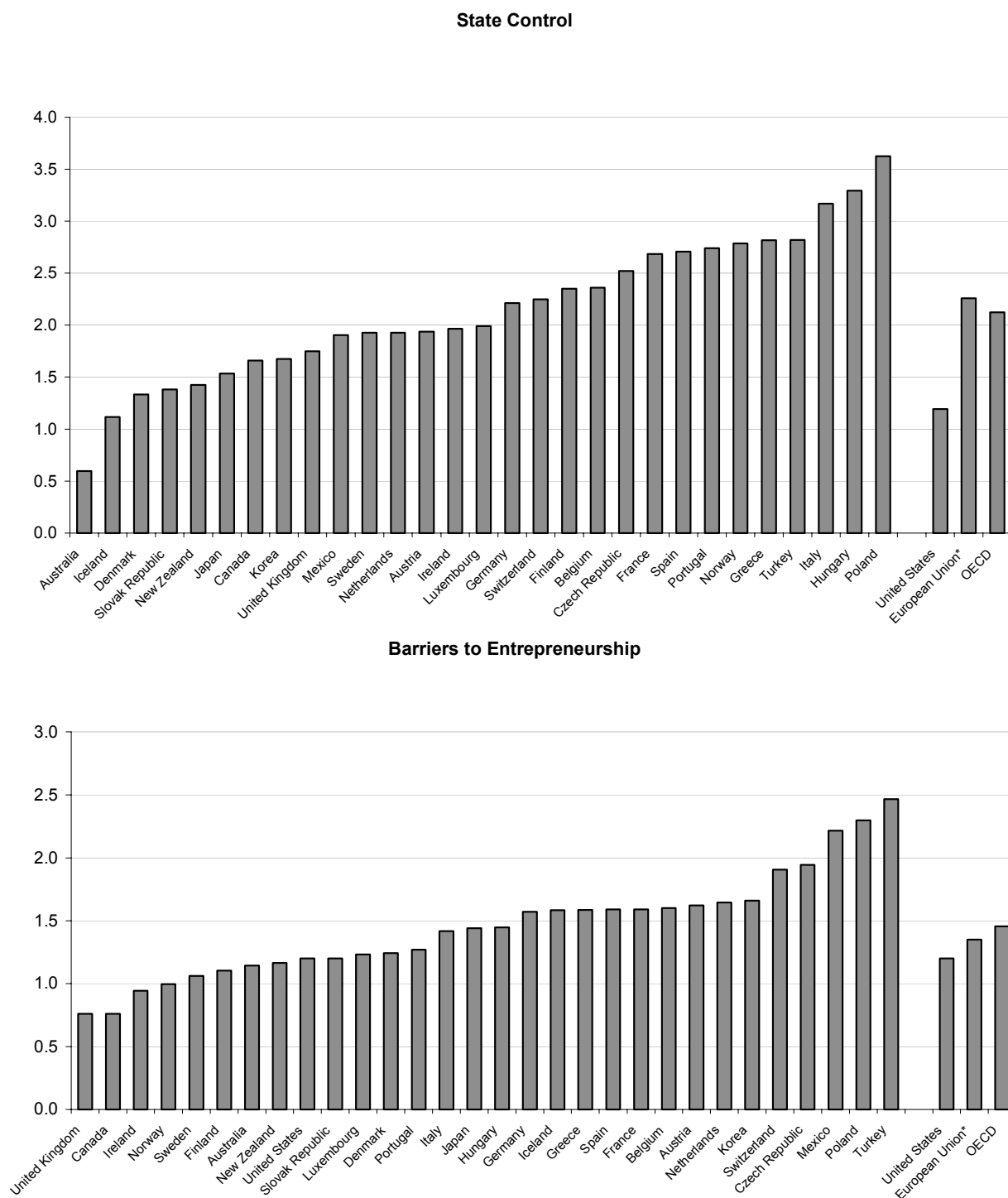
Figure 3.1. Product market regulation indicators in the OECD, 2003¹



1. The indicators range from 0 (least restrictive) to 6 (most restrictive).

* EU 15 (simple average)

Source: OECD, Conway et al. (2005)

Figure 3.2. Indicators of state control and barriers to entrepreneurship in the OECD, 2003¹

1. The indicators range from 0 (least restrictive) to 6 (most restrictive).

* EU 15 (simple average)

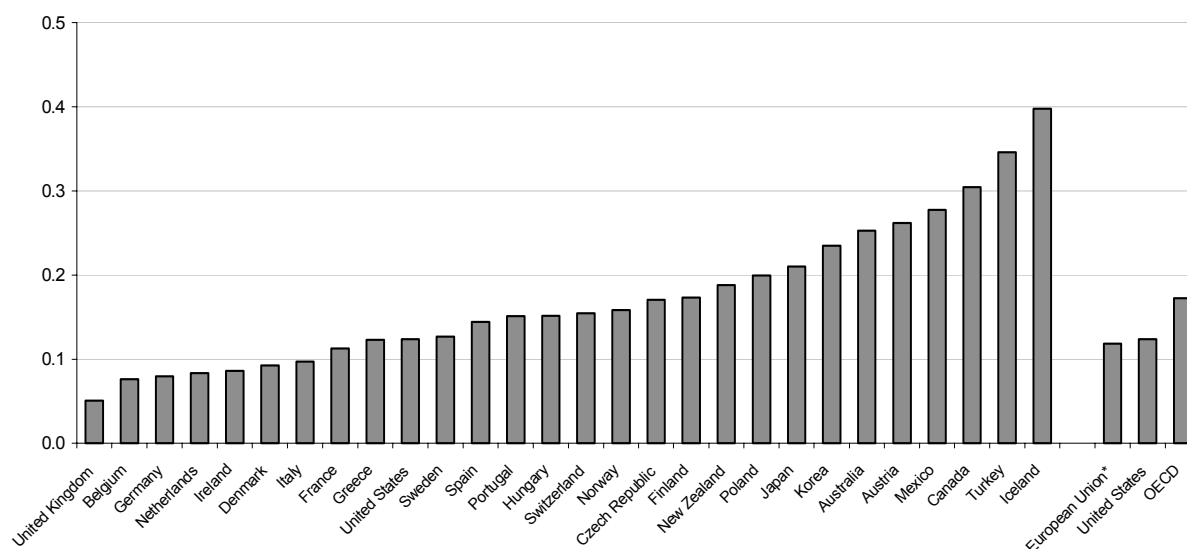
Source: OECD, Conway *et al.* (2005)

3.2 Overall FDI restrictions

13. Barriers to FDI can arise in several guises. The most obvious are foreign ownership barriers, which typically take the form of limiting controlling equity stakes by non-residents in domestic companies. Examples of these barriers include airlines in some member countries of the European Union and in North America, and shipping in the United States. Obligatory screening and approval procedures may also constrain FDI to the extent that they raise entry costs, although the impact of such procedures on FDI flows may be quite limited in practice. Other formal constraints on FDI include restrictions on the ability of foreign nationals to work in affiliates and regulations that nationals or residents must form a majority of the board of directors (for example, in insurance companies of some EU-member countries). In addition, FDI flows may be hampered by informal barriers such as opaque application of regulatory procedures.

14. Indicators of FDI restrictions that take into account these barriers suggest that, at the aggregate level, FDI barriers tend to be slightly lower in the European Union than in the United States (Figure 3.3).⁹ The low restrictions recorded for the European Union members, however, reflect largely the absence of barriers to intra-EU FDI and, only to a lesser extent, openness *vis-à-vis* non-EU countries. The United Kingdom has the lowest FDI barriers in the European Union and in the OECD, owing to a particularly permissive regime on foreign ownership of domestic assets.

Figure 3.3. OECD indicators of FDI restrictions, 2001¹



1. The indicators range from 0 (least restrictive) to 1 (most restrictive).

* EU 15 (simple average)

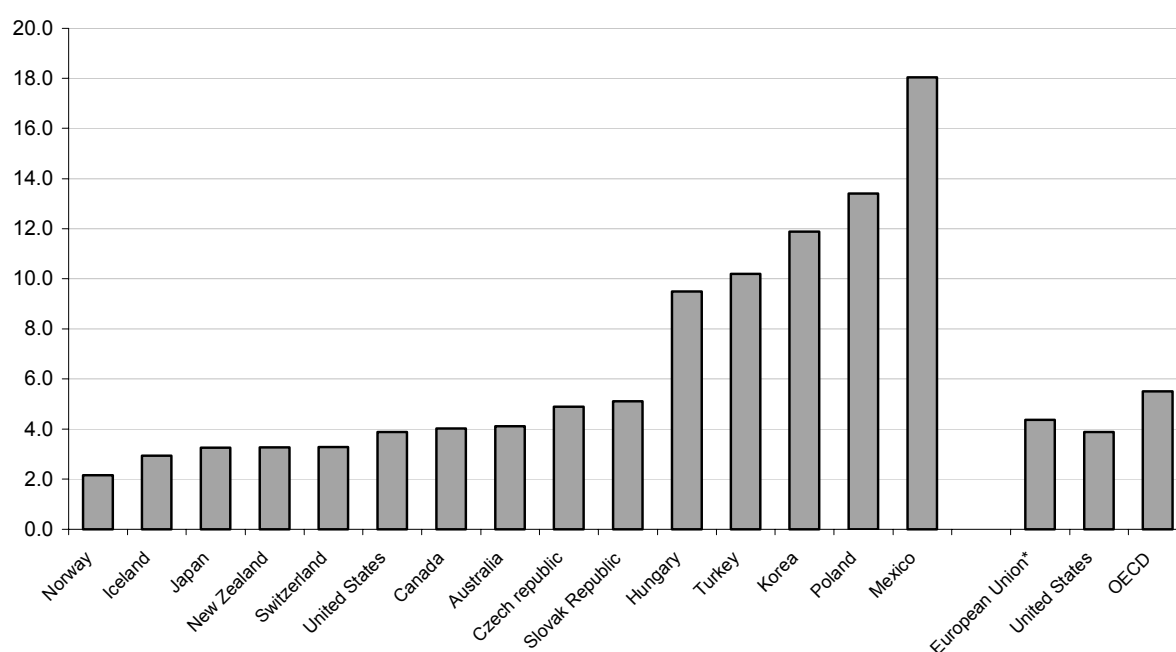
Source: OECD, Golub, S. (2003)

3.3 Overall tariff and non-tariff barriers

15. A snapshot of recent overall bilateral applied tariff levels for the European Union, the United States, and other OECD countries is reported in Figure 3.4. Average tariff levels in the European Union and the United States are relatively low. However, tariff levels in the European Union are more widely dispersed than those in the United States and in both areas simple average tariff rates mask

higher rates of protection on certain tariff lines and the impact of preferential trade agreements (Nicoletti *et al.*, 2003).¹⁰ To provide an indication of tariff variation in the European Union and the United States, trade-weighted *ad-valorem* equivalent measures of applied protection for agricultural and manufacturing products are presented in Table 3.1.¹¹ Tariff rates on textiles, wearing apparel and leather products are well above the average protection levels for total manufacturing both in the United States and in the European Union. In agricultural trade, a number of product categories have relatively high tariff protection levels, including rice and rice products, sugar, meat products and dairy products. Furthermore, for both agricultural and manufacturing products, average rates charged on EU-US trade tend to be higher than averages calculated for total imports (*i.e.* entering European and US markets from all destinations). This suggests that despite generally low tariff levels, EU-US trade is affected disproportionately.¹²

Figure 3.4. Applied tariff levels in the EU, US and other OECD countries, 2003



* EU 15

Source: OECD

Table 3.1. Ad-valorem equivalent measures of applied border protection in the United States and the European Union, 2001

	United States		European Union	
	On total imports	On imports from EU15	On total imports	On imports from US
Paddy rice	3.6	4.5	36.7	73.6
Wheat	0.2	2.5	0.2	1.3
Cereal grains	0.0	0.0	4.2	7.8
Vegetables, fruit, nuts	0.6	2.7	7.0	4.4
Oil seeds	2.9	6.5	0.0	0.0
Sugar cane, sugar beet	0.2	0.2	5.6	0.0
Other primary agriculture	1.7	1.9	1.1	8.9
Bovine cattle, sheep, goats, horses	0.0	0.0	3.5	0.7
Natural resources	0.0	0.0	0.0	0.0
Bovine cattle, sheep and goat meat products	2.8	1.4	13.5	19.8
Meat products	0.6	1.1	3.1	24.4
Vegetable oils and fats	1.0	1.2	4.0	5.2
Diary products	18.2	20.0	3.0	32.0
Processed rice	4.4	6.5	51.5	93.8
Sugar	25.4	23.4	62.9	23.2
Other food products	2.5	5.3	3.0	15.3
Beverages and tobacco products	1.4	1.5	1.4	8.3
Textiles	7.9	8.5	1.8	6.4
Wearing apparel	9.9	10.1	3.2	10.1
Leather products	12.2	7.4	2.8	4.5
Other manufacturing	1.0	1.6	0.5	1.7
Agriculture average ^a	1.1	2.8	2.8	13.1
Manufacturing average ^a	1.9	1.9	0.7	2.1

a. Denotes trade-weighted average

Source: GTAP (version 6.05)

16. In a similar vein to FDI restrictions, non-tariff measures (NTMs) come in many guises. “Traditional” non-tariff *border* measures, including quantitative and price control measures have been largely eliminated in successive rounds of multilateral trade negotiations. Non-tariff *behind-the-border* measures are domestically imposed regulations applied to achieve certain policy objectives. Some of these measures are increasingly recognised as relatively more trade restricting than remaining traditional non-tariff measures (see Box 2 for further discussion). For methodological and data availability reasons, accurate quantifications of both border and behind-the-border NTMs are still unreliable today, and are excluded from the analysis. However, to a significant extent, behind-the-border NTMs are captured by indicators of anti-competitive product market regulations, such as the “discriminatory procedures” indicator (Conway *et al.*, 2005).

Box 2. Barriers to trade from non-tariff measures

Traditionally, non-tariff measures (NTMs) were associated with a restricted number of barriers enforced at the border. Recent years have seen significant changes in the landscape of NTMs, encompassing both border and behind-the-border measures.

Non-tariff border measures

NTMs in the form of quantitative controls (e.g. quotas and voluntary export restraints) were mostly abolished at the time of the implementation of the Uruguay Round results. Within the European Union and the United States, price control NTMs mainly consist of trade remedies. Although these trade remedies are meant to be distortion-correcting rather than distortion-creating, at times NTMs may instead divert trade and protect local producers. Other remaining border NTMs are generally applied to protect morals, public health and security. In addition, in some cases customs procedures and rules of origin applied by the European Union and United States are perceived as unnecessarily trade restrictive.

Non-tariff behind-the-border measures

Frequent objections concerning behind-the-border measures encompass heterogeneity in broad regulatory measures, government procurement procedures, subsidies and other aids for production, domestic tax measures, competition policy, intellectual property rights, investment-related measures, and, to a lesser extent, state trading entities. Regulatory measures include national environmental, safety, health and administrative regulations, standards and technical regulations for industrial products as well as sanitary and phytosanitary measures (SPS).

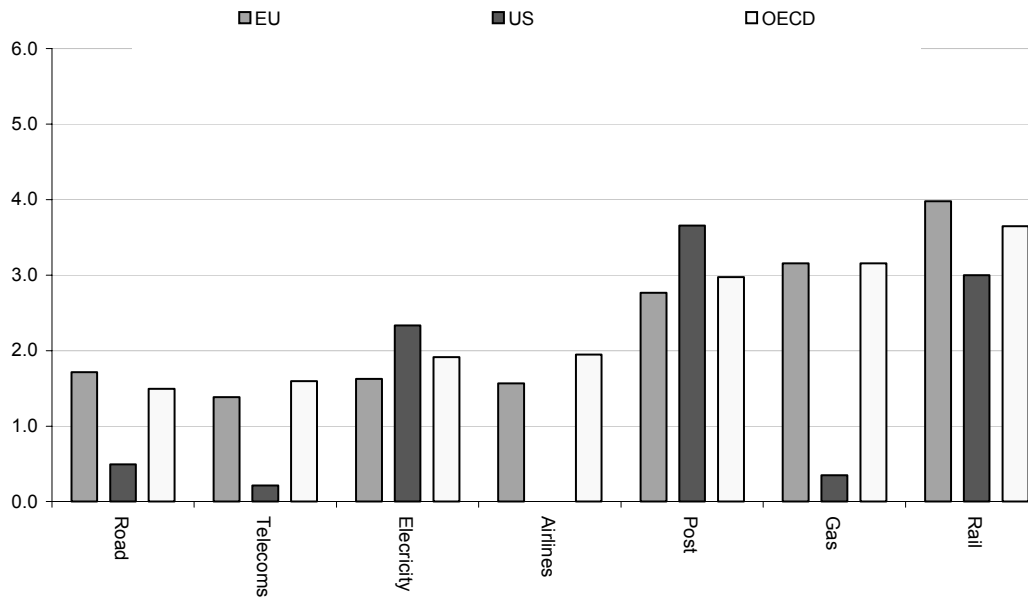
While many of the measures (e.g. technical barriers to trade, SPS) are *de facto* applied at the border and thus perceived as border NTMs, they are directly linked with the domestic policies applicable to both domestic and imported goods. Countries have the legitimate right to adopt measures they deem appropriate as long as they do not discriminate between domestic and foreign producers and obey WTO rules. Concerns on either side of the Atlantic comprise non-transparency; burdensome and costly testing, certification and inspections procedures; packaging and labeling requirements; and adoption of measures exceeding international recommendations.

For many of these NTMs, it is difficult to determine their degree of trade restrictiveness. However, policy makers can help prevent non-tariff trade measures from becoming non-tariff trade barriers by ensuring that NTMs are non-discriminatory, transparent, and applied with efficient administrative procedures.

3.4 Regulations and border barriers at the sectoral level

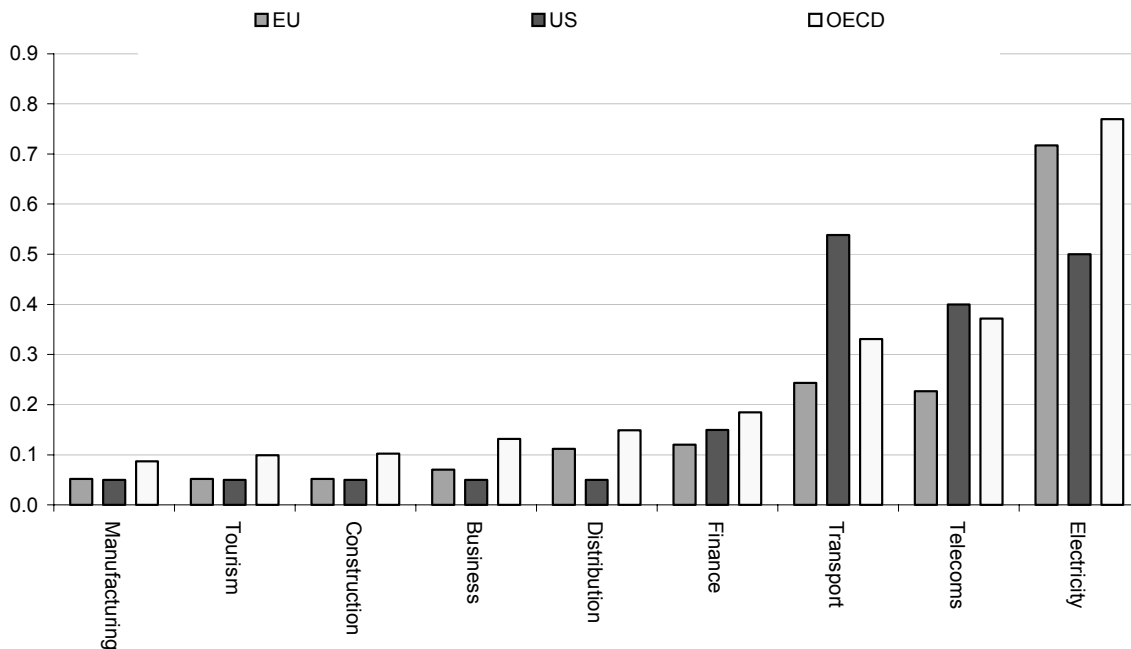
17. The barriers to international integration discussed above tend to be relatively concentrated in certain sectors of the economy. In particular, barriers in the manufacturing sector tend to be relatively low across the OECD, while barriers in the services and agricultural sectors are relatively high. This would suggest that the aggregate gains from liberalisation discussed in Section 5 would to a significant extent flow from increased exposure to competition in certain services sectors. To provide a snapshot of barriers at the sectoral level, Figure 3.5 presents indicators of anti-competitive regulation in selected services sectors, while Figure 3.6 presents more narrowly focused FDI controls across manufacturing and a range of service sectors.¹³

Figure 3.5 Product market regulations in services sectors in EU, US and OECD, 2003



The indicator ranges from 0 (least restrictive) to 6 (most restrictive)
 Source: OECD

Figure 3.6 Sectoral barriers to FDI in the EU, US and OECD, 2001¹



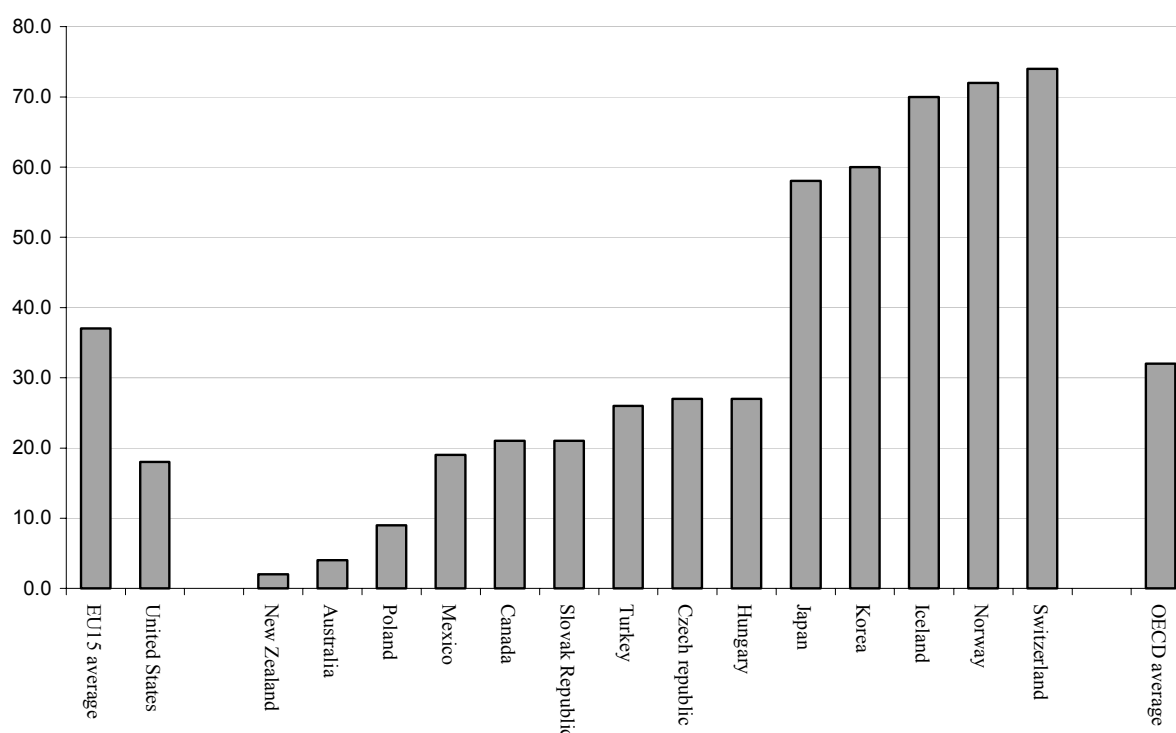
The indicator ranges from 0 (least restrictive) to 1 (most restrictive)
 Source: OECD, Golub S. (2003)

18. Competition-restraining regulations tend to be more extensive in the European Union than in the United States for six of the seven sectors depicted in Figure 3.5, postal services being the exception. The gap between the two areas is particularly wide in domestic air travel and telecommunication services, all of which are subject to very light regulation in the United States. Member countries of the European Union and the United States have significant limits on the extent of competition in rail transportation and in the electricity and gas sectors, even if they tend to be less constraining in the United States.

19. FDI controls on manufacturing appear quite low in both the United States and the European Union, with restrictions mainly confined to the service sectors (Figure 3.6). In Europe, sectoral barriers to FDI appear highest in transport services, telecommunications and especially electricity. In the United States, FDI restrictions on transport services and telecommunications are higher than in the average EU country, while restrictions on the electricity sector are high compared with most other sectors, but lower than the levels seen in most European countries.

20. As discussed above, average tariff levels in the United States and the European Union are higher in the agricultural sector than in manufacturing, with particularly high rates of protection in a few product lines such as rice, sugar and dairy products. In addition to these barriers to trade, the agricultural sector in the United States and the European Union is heavily subsidised relative to the “best practice” levels seen in New Zealand and Australia (Figure 3.7). As previously mentioned, estimating the impact of removing direct subsidies is outside the scope of the paper. The effects, however, are well known to distort world markets for the agricultural products concerned (OECD 2004).

Figure 3.7. Estimates of producer support on agriculture in the OECD, 2003



Producer support estimates are expressed as a percentage of the total value of agricultural production.

A single producer support value is estimated for the EU 15 countries.

Source: OECD, producer and consumer supports estimates database

4. The potential for reform

21. This section presents a structural reform package for the United States and EU countries based on the identification of gaps with best-practice in the OECD area. The approach followed is to simply adjust the levels of the relevant policy settings, as measured by the indicators discussed above, to those of the least restrictive OECD countries. The adjustments are applied to lower level indicators than the aggregate country indicators.¹⁴ As a consequence, the reform package considered is quite ambitious -- it would involve an easing of domestic product market regulation and reductions in barriers to external trade and investment to levels that are less restrictive than present policy settings in any OECD member country. However, significant progress has generally been made in reducing competition-restraining regulation in the OECD since 1998¹⁵ (Conway *et al.*, 2005), FDI restrictions have come down since 1990¹⁶ (Golub, 2003) and formal border barriers have been eased in successive trade rounds (Nicoletti *et al.*, 2003). In light of this, the overall reform package considered in this paper might better be thought of as a continuation of the trend to liberalise product markets and enhance international integration, as opposed to a radical shift in policy stances.

22. The benchmarking of best-practice inward-oriented product market regulation¹⁷ is based on the least restrictive policy stances for the two key components of this indicator:

- *State control.* The size and scope of the public enterprise sector were both estimated to be the least restrictive in Australia, which is therefore taken to be best practice in these areas. State control over business operations is also estimated to be the lowest in Australia.
- *Barriers to Entrepreneurship.* No OECD country ranks as the least restrictive in all of the areas covering this aspect of regulation. Denmark and Ireland are estimated to have the lowest administrative burdens on the start-up of a new business and are taken as benchmarks in this area. The indicator for regulatory and administrative opacity is the lowest in Canada. Finally, barriers to competition appear lowest in Ireland and the United Kingdom.

As noted above, movement to the overall best-practice level of inward-oriented regulation would involve substantial reform in both the United States and member countries of the European Union. However, the required reform effort would be particularly strong in the most heavily-regulated EU members, such as France, Greece, Italy and Portugal. As a consequence, the reform considered in the European Union overall is deeper than the reform in the United States in this area of regulation.

23. The required PMR reform intensity would also differ significantly across sectors. For the United States, reform efforts would have to cover rail transportation and electricity generation. For the European Union as a whole, reforms would be required in domestic air transportation, in electricity and gas sectors, and more significantly, in the rail transportation sector. However, as shown in Table 4.1, the required sectoral focus of reforms would have to differ across individual EU15 countries, depending on current regulatory stances in each sector *vis-à-vis* best practice.

Table 4.1. Required intensity of reforms by sectors to attain OECD best practices, 2003

Country, 2003	Airlines	Telecom	Electricity	Gas	Post	Rail	Road
US			XX			XX	
EU15	X		X	X		XX	
Austria			X	X		XX	
Belgium		X		X		XX	
Denmark				X		X	
Finland	X		X	XX		XX	
France	X	X	XX	XX		XX	
Germany			X			XX	
Greece	XX	X	XX	XX		XX	XX
Ireland	XX	X	XX	XX		XX	
Italy	X			X		X	XX
Netherlands				X		X	
Portugal	XX		X	XX		XX	
Spain				X		XX	
Sweden		X		X		XX	
United Kingdom							

Note: () means that regulation is close to OECD best practice. (X) and (XX) indicate the extent of the required efforts to move from current levels of regulation towards best practice levels according to OECD indicators, ranging respectively between 1.5 to 3.0 and 3.0 and more.

Source : OECD

24. The reform package implemented to move to best-practice levels in outward-orientated regulation covers two areas:

- *Restrictions on FDI.* In five of the sectors included in the OECD FDI restriction indicator, the United Kingdom is found to have the lowest level of regulation and these are taken as the benchmark. In the two remaining sectors (finance, and transport and distribution), Ireland and the Netherlands are estimated to have best-practice policy settings.
- *Tariff levels.* Tariff levels are set at, or close to, zero in the United States and the European Union, reflecting best practice in the OECD area.

25. Considerable reform in both the United States and European Union would be needed to reduce external barriers to trade and investment to the best-practice benchmarks. At the broad EU and US economy-wide level, the reductions in these barriers from present levels is fairly similar. At the sectoral level, however, differing degrees of reform would be required. In the European Union, easing of FDI restrictions in the electricity generation sector would be particularly extensive, while in the United States the reform would be largest in transport services. Reductions in tariff levels in the European Union to best practice would be concentrated on agricultural products, while in the United States tariff reductions to best-practice levels would imply relatively more adjustment to rates of protection on textiles, apparel and other manufactured goods.

5. Potential benefits of reform

26. The estimated benefits of the reform package outlined above are presented in this section. The discussion begins with an overview of the broad linkages between structural policy settings, growth and trade, and how a package of reforms would be expected to lift performance. It then turns to an empirical assessment of the impact of reforms, starting with the results for the United States and the European Union. The benefits accruing to other OECD countries and the world economy from EU and US reforms are then presented.¹⁸

5.1 *The impact of closer economic co-operation on economic performance: the key linkages*

5.1.1 *Gains from regulatory reform of domestic product markets*

27. Reform of domestic product markets in the European Union and the United States to best-practice levels would stimulate competitive pressures in these economies. Increased competition is associated with both one-off and on-going gains in output *via* an improvement in multi-factor productivity (MFP), *i.e.* the combined productivity of labour and capital. One-off efficiency improvements, otherwise known as static gains, arise from both better allocation of existing resources and from a take-up of slack in the usage of resources, given the enhanced pressures on businesses to perform. On-going or dynamic gains from domestic product market reform may arise from both greater efforts to innovate and optimise production, and from more rapid diffusion of new technologies. In practice, the distinction between static and dynamic efficiency gains is blurred because static gains do not occur instantaneously – it may take some time, for example, to re-allocate resources to where they can be more efficiently employed. As such, reform of domestic product market regulation might be associated with improved growth performance over many years, even if all the gains that arise can be best characterised as static.¹⁹

5.1.2 *Gains from international trade and investment*

28. Gains from international trade and investment potentially accrue through a number of channels. The most familiar channel is that trade increases the efficiency with which resources are deployed across countries through exploitation of comparative advantages. Given relatively similar factor endowments, technologies and consumer preferences between the European Union and the United States, the potential gains from further exploiting comparative advantages, *a priori*, are likely to be relatively modest. Trade and FDI liberalisation may also afford exploitation of increasing returns to scale as firms are able to expand production or service delivery for larger markets. The increased industry concentration that would result from such consolidations runs the risk of abuse of market power. However, offsetting the potential risks from concentration in local markets is the greater global competition that such firms would be exposed to. In practice, given that manufacturing production has already been substantively liberalised in both areas, gains from increasing returns to scale in the European Union and the United States are likely to be most important in certain service sectors, where markets are perhaps more fragmented.

29. Shifting resources to take into account comparative advantages and increasing returns to scale in theory has a long-run impact only on the level of output, although as with domestic product market reform it could take several years for the new long-run levels to be reached. In addition to these effects, liberalising trade and FDI flows would provide for greater competition pressures, and as such may have a more profound impact on a nations' longer-term output growth path for similar reasons as those discussed with reference to domestic product market reform.

5.2 *Estimating the benefits of reform*

30. The benefits of reforms are estimated using three different approaches (for further details see Box 3):

- The estimation of the impact of the reforms on overall trade exposures, and the associated derived effect on GDP per capita, using previous OECD econometric panel-data studies on the determinants of trade and economic growth.
- The estimation of the impact of reforms on output *via* productivity increases, using alternative econometric studies developed by the Secretariat on the link between product market regulations and productivity.
- Simulations of the GTAP general equilibrium model with two scenarios. Firstly, the static impact of tariff reductions on trade and GDP. Secondly, the additional effects when this scenario is supplemented by the productivity increases derived from the econometric approach mentioned above.

The direct impact of reforms on GDP per capita *via* induced stronger innovation activity is not taken into account in these approaches. OECD research indicates that stronger competition in product markets stimulates R&D spending which might have powerful effects on lifting the level of GDP per capita and even the growth rate (Box 4). However, the strength of these effects is subject to considerable uncertainty, and they have therefore been excluded in this study.

Box 3. Estimating the benefits of structural reform

The main tools that researchers have used to quantify the benefits of structural reforms can be classed into two distinct frameworks: general equilibrium (GE) model-based studies and single-equation econometric studies. In broad terms, the chief advantage of GE model studies is that the complex interactions between policy settings and economic outcomes are guided by economic theory and described within a well-defined framework designed to capture both the direct impact of any policy changes and the indirect “feedback effects” of such changes on economic activity and trade patterns.

In general, econometric studies are less able to capture the impact of any indirect changes in policy settings, such as trade diversion effects, changes in relative prices, and the feedback of changes in one country's growth potential onto growth in the rest of the world. Furthermore, given their “reduced form” nature they are also generally unable to disentangle what the transmission mechanisms behind change in policy settings and economic outcomes are. Despite these limitations, econometric approaches may better quantify the impacts of policy changes on economic outcomes given that the models are determined more by the historical data experience than any particular economic theory.¹ For example, much of the static gains from structural policy reform may derive from the take-up of slack in production (or x-inefficiencies) and these are generally not captured within traditional GE frameworks.

In this study, the two frameworks outlined are seen as complementary. Recent OECD econometric panel data studies and the well-known trade general equilibrium model GTAP are used to estimate the impact of structural policy changes in the United States and EU countries.

Under the econometric approach, two alternative panel-data study frameworks are utilised. The first framework considers the impact of structural policy settings on output *via* their influence on trade openness. In this framework, trade exposure impacts are estimated using the equations developed in Nicoletti *et al.* (2003). Inputs into these equations include the reductions in tariff levels, FDI restrictions and domestically-focused product market regulations needed to move policy settings in EU countries and the United States to best practice levels. The resulting changes in trade exposures are then fed into equations described in Bassanini *et al.*, 2001 to estimate the impact on output levels. The second panel-data study framework considers how domestically-focused product market regulations directly affect multi-factor productivity (MFP) levels (Nicoletti and Scarpetta, 2003). The impact of this on output depends upon the extent to which shifts in MFP are accompanied by changes in capital and labour employment.

Box 3. Estimating the benefits of structural reform (*continued*)

The GTAP model is utilised to provide an independent estimate of the impact of changes in tariff levels on OECD trade and output, and to provide an assessment of these policy changes on non-OECD countries.² In addition, the impact on MFP from a reduction in domestic product market regulation estimated using Nicoletti and Scarpetta (2003) is applied in GTAP to provide an estimate of both spill-over effects and impacts in non-OECD countries.

1. A common criticism of using models based on the historical data experience to quantify the impact of any future reform is that the estimated coefficients of the models themselves may change under reform, implying estimates of the benefits may be unreliable (Lucas, 1975). The OECD panel data studies used in this paper mitigate this concern. As the coefficients are estimated for an OECD country sample that incorporates a broad range of historical policy-settings, they are likely to be more robust to changes in policy regimes. That said, the returns to policy reform from reduced x-inefficiencies may well be declining in the OECD area, hence the coefficients may exaggerate the effectiveness of additional reform.
2. See Hertel (1997) for a complete description on the GTAP model. Recent analysis conducted using this model is seen in OECD (2003) and references therein.

Box 4. The links between reforms, innovations and growth

For many industries in countries that can be considered to be near the technological frontier, dynamic gains through greater innovative efforts may well be the most important long-term effects of any reductions in anti-competitive regulation. A key factor determining the rate at which the frontier is expanded is the intensity of research and development (R&D) and other innovative activities. Empirical evidence suggests that strict product market regulations can have a significantly detrimental impact on R&D in both the public and private sectors. Based on recent OECD empirical evidence, the average decline in the stringency of product market regulation considered in this study could permanently boost R&D expenditures (relative to GDP) by around 11%, and the total level of patents by around 5%, on average across the European Union and the United States. Since the reforms would be more extensive in the European Union, the derived increase in innovation activity would be greater in that area.

In theory, raising R&D intensities would be expected to lift long-term growth as productivity enhancing technologies are developed (Ahn, 2002). If the estimation results of the *Growth Study* are interpreted as imparting such permanent growth effects, the impact of GDP growth would be implausibly large at around 0.2 to 0.4 percentage points (Bassanini *et al.*, 2001). On the other hand, the estimation results can be interpreted as permanently raising GDP per capita levels. Under such a “conservative” interpretation of the estimation results, the increase in R&D intensity of 11% suggested above implies an increase in the level of GDP per capita of 2 per cent, indicating very strong multiplier effects. Given that there must be doubts about whether the linkages between R&D intensities on the one hand and GDP per capita levels or growth on the other are as strong as suggested by the estimation results in the *Growth Study*, the analysis in this paper abstracts from any reform-derived innovation effects on GDP per capita.

5.3 *The benefits for the United States and European Union*

5.3.1 *The estimated impact on GDP per capita via increased trade exposure*

31. The estimated impact of structural policy reform on EU and US trade in goods and services, using the models developed in Nicoletti *et al.* (2003), are reported in Table 5.1. Detailed results are provided in the annex. The overall impact of the reforms is to significantly boost trade levels, both between the European Union and the United States and with the rest of the OECD.²⁰ European Union exports to the OECD increase by around 30%, while exports levels of the United States are raised by around 20%.

Table 5.1. Impact of reforms on EU and US export levels using OECD panel data studies

% changes				
Country	Reduction in bilateral tariffs	Easing FDI restrictions	Reduction in domestic regulation	Total impact of reforms
Austria	0.6	1.5	29.0	31.0
Belgium	1.0	2.2	24.9	28.1
Denmark	0.8	3.1	21.3	25.3
Finland	1.4	2.1	24.7	28.2
France	1.2	2.3	28.5	32.0
Germany	1.6	2.4	25.4	29.3
Greece	0.6	6.5	35.0	42.1
Ireland	2.7	2.1	21.0	25.7
Italy	1.8	2.6	26.3	30.6
Netherlands	0.7	2.1	27.0	29.7
Portugal	0.8	2.7	25.9	29.4
Spain	0.8	2.7	26.4	29.8
Sweden	1.5	2.1	21.0	24.7
United Kingdom	2.1	2.8	23.7	28.6
United States	3.5	1.0	17.5	22.0
EU15 (excluding intra-EU trade)	4.7	2.9	23.0	30.7
EU15	1.4	2.4	25.6	29.4

Source: OECD

32. The largest driver by far of the increase in EU exports is the relatively large reduction in inward-oriented product market regulation in European Union member countries and the United States. Extra-EU trade and total EU trade are boosted by around a quarter by reductions in domestic PMR. This result highlights that reducing restrictive domestic product market regulations could significantly boost economic integration of the European Union *vis-à-vis* other OECD countries and further raise integration between EU member countries.²¹ In the United States, reductions in domestic product market regulation are estimated to increase US export levels to the OECD by around 17% (Table 5.2). As in the European Union, this is the policy shift that has the single largest impact on exports in the United States, accounting for around three-quarter of the gains in trade.

33. In assessing the large impact of the reform of inward-oriented regulations, the very substantial size of the implied policy change should be taken into account. In particular, some member countries of the European Union would move from a position of having the greatest constraints on product-market competition in the OECD, to a position of having an overall stance in this domain that would be more liberal than in any OECD country today. In the United States, although reductions in overall regulatory burdens would be less substantive, considerable adjustment in certain regulatory areas would still be required to reduce the overall stance to best-practice levels.²²

34. Despite relatively low external average tariff levels in the United States and the European Union, cuts in bilateral tariff rates to OECD best-practice levels also play a role in explaining the increase in trade flows. EU exports to the non-EU OECD increase around 5% by this measure, while US exports increase around 3.5%. However, the impact of tariff reductions on total EU exports (*i.e.* inclusive of intra-EU trade flows) is much smaller at around 1.5%. This smaller impact reflects the fact that intra-EU trade is a relatively large share of total EU trade, and that tariff barriers do not exist between EU member countries. Removal of FDI restrictions to best-practice levels is estimated to have only a small impact on raising exports.

35. The impact of the estimated increase in trade openness on GDP for the European Union and the United States, using the models developed in Bassanini *et al.* (2001), are reported in Table 5.2. Given that the policy reforms induce a larger expansion in trade in the European Union than the United States, the estimated EU output increase of 3.5% is moderately larger than the US gain of around 3%. Reflecting the results for trade, domestic regulatory reform is the key factor explaining this difference in economic performance. In the United States, reductions in anti-competitive domestic product market regulations are estimated to boost GDP levels by 1.7%, while in the European Union the gain is closer to 3%. The impact of easing FDI restrictions is similar in both areas, lifting GDP by around 0.4%. Reducing tariff barriers, in line with the results for trade, have a considerably smaller impact on GDP in the European Union (0.3%) than the United States (0.9%).

Table 5.2. Impact of reforms on GDP per capita levels using OECD panel data studies

<i>% increase in GDP per capita levels</i>				
Country	Reduction in bilateral tariffs	Easing FDI restrictions	Reduction in domestic regulation	Total impact of reforms
Austria	0.1	0.3	3.0	3.4
Belgium	0.1	0.1	0.8	1.0
Denmark	0.2	0.3	2.2	2.8
Finland	0.2	0.3	2.7	2.9
France	0.2	0.4	3.4	4.0
Germany	0.3	0.3	3.0	3.6
Greece	0.2	0.5	2.7	3.3
Ireland	0.1	0.0	0.6	0.7
Italy	0.2	0.3	2.8	3.3
Netherlands	0.1	0.2	1.7	2.0
Portugal	0.1	0.4	2.7	3.3
Spain	0.1	0.4	2.7	3.2
Sweden	0.2	0.3	2.1	2.5
United Kingdom	0.4	0.2	2.4	3.0
United States	0.9	0.4	1.7	3.1
EU15	0.3	0.3	2.8	3.5

Source: OECD

5.3.2 *The estimated impact on GDP per capita via increased productivity*

36. As discussed in Section 5.2, an alternative version of the econometric approach can be based on the link between product market regulations and multi-factor productivity levels (Nicoletti and Scarpetta, 2003.) This provides an additional sensitivity test of the impact of the reform package on output in the United States and the European Union, although it is more limited in scope given that reductions in external barriers to trade and investment are not part of the analysis. The overall impact is to lift MFP by around 2% in the European Union, with the largest gains in Greece, France and Italy reflecting higher levels of state control of the economy (Table 5.3). In the United States, in line with the smaller changes in the regulatory stance, the impact on MFP levels are more modest at slightly less than 1 per cent.

Table 5.3. Impact of inward-oriented product market reforms on MFP levels and GDP per capita

% changes				
Country	Effects of reducing state control [1]	Effects of easing entry barriers [2]	Combined impact on MFP levels [1] + [2]	Impact on output ¹
Austria	2.3	0.3	2.6	3.8
Belgium	2.0	0.2	2.2	3.1
Denmark	1.4	0.3	1.7	2.4
Finland	1.9	0.3	2.2	3.2
France	2.4	0.2	2.6	3.7
Germany	1.9	0.3	2.2	3.1
Greece	2.2	0.3	2.5	3.6
Italy	2.2	0.3	2.5	3.5
Netherlands	1.7	0.3	2.0	2.8
Portugal	1.3	0.3	1.6	2.3
Spain	1.5	0.3	1.8	2.5
Sweden	1.6	0.3	1.9	2.6
United Kingdom	1.0	0.3	1.3	1.9
United States	0.5	0.3	0.8	1.1
EU15	1.8	0.3	2.1	2.9

1. The impact on output is calculated from an assumed Cobb-Douglas production function. Labour's income share is set at 0.7 and capital increases such that the efficiency-augmented capital-to-labour ratio does not change.

Source: OECD

37. The translation of the impact on MFP levels to output depends upon the extent to which productivity improvements are accompanied by increases in the use of capital and labour. The most conservative assumption is that there is no additional use of these factors of production, in which case the impact on GDP is equivalent to the impact on MFP. However, perhaps a more realistic assumption is that the change in MFP will be accompanied by higher capital input as returns to investment improve. Under standard assumptions,²³ the MFP gains could result in increases in output shown in the last column of Table 5.3. Output in the United States could increase around 1%, while the gain in the European Union is around 3%.

38. The gains in output from domestic regulatory reform using the MFP equation are reasonably similar to the impacts using the trade-exposure approach reported above.²⁴ In evaluating these estimates, two additional factors are worth considering. Firstly, evidence suggests that reforms may speed-up the rate at which productivity levels in under-performing countries converge to the productivity levels of the best-performing OECD economies (Bassanini *et al.*, 2001). To the extent this is the case, there would be an additional, albeit temporary, boost to output in countries where productivity levels are relatively low. Secondly, there are good reasons to expect that increased product market competition would also have positive spillover effects on labour market outcomes, for example, through reducing rent-seeking behaviour and enhancing job-search efforts. Empirical support for this is provided in Nicoletti *et al.* (2001), where reducing PMR from relatively high to relatively low levels is estimated to boost employment rates by around 2%. Overall, the benefits of reforms to product markets may be greater than the estimates provided in this paper, although this conclusion should be tempered by the fact that some of the reforms required to move to best-practice levels may already have been undertaken in some OECD economies since the 2003 regulatory indicators were compiled.

5.3.3 Estimates using the GTAP model

39. To provide a partial cross-check on the results reported in Section 5.3.1, the impact of a broadly similar cut in tariff levels using the GTAP model is provided in Table 5.4. The increase in export volumes for the United States and the European Union is remarkably similar to those obtained using the OECD panel data study, with export levels increasing in the United States by some 4.4%, while the average response for the European Union is around 1.7%. However, despite the similar export volume response, the impacts on output using the two approaches differ. The result from the GTAP model suggest tariff cuts would have a slightly smaller impact on output in the European Union, and virtually no impact in the United States.

Table 5.4. Impact of tariff cuts on exports and GDP per capita using the GTAP model
% changes

Country	Export volumes	Real GDP
Austria	0.5	0.2
Belgium	0.8	0.2
Denmark	0.7	0.2
Finland	1.0	0.1
France	1.4	0.2
Germany	1.4	0.1
Greece	4.9	0.2
Ireland	0.9	0.5
Italy	1.9	0.2
Netherlands	1.3	0.1
Portugal	1.7	0.3
Spain	2.1	0.1
Sweden	0.7	0.2
United Kingdom	2.6	0.2
United States	4.4	0.0
EU15	1.7	0.2

Source: GTAP (version 6.05)

40. At a broad level, one reason for the smaller impact of tariff cuts on output under the GTAP model is that the gains purely derive from static improvements in allocative efficiencies. Given fairly low average starting tariff levels in the European Union and the United States, the potential gains of tariff cuts are not large.²⁵ In contrast, the models developed in Bassanini *et al.* (2001) implicitly embody not only these static allocative efficiency gains but also the impact of reform on the take-up of existing slack in the employment of inputs into production (or productive efficiency gains). The literature suggests these latter gains are a more important channel through which reductions in barriers to trade improve competition, and ultimately, productivity and output (Nicodeme and Sauner-Leroy, 2004).

41. The lack of productive efficiency gains in GTAP does not, however, explain why the increase in output in the United States is smaller than the European Union, despite the larger trade increase in the United States. Instead, this result occurs because the model estimates that the potential allocative efficiency gains in the European Union are larger than those available in the United States.²⁶ In other terms, the GTAP results suggest that the existing pattern of resource usage in the European Union is less optimal than the pattern in the United States. Hence, a reduction in tariff barriers has a larger impact on EU output, despite the smaller percentage increase in trade creation.

42. As a final cross-check on the benefits of reducing domestic product market barriers, the increase in MFP levels estimated in Section 5.3.2 above were plugged into the GTAP model and the de-tariffication scenario presented in Table 5.4 above was re-run. The results of this simulation suggest that output in the

European Union and the United States would expand by around the same amount as the productivity increase (Table 5.5).²⁷

Table 5.5. Impact of tariff cuts and productivity boost on exports and GDP using the GTAP model
% changes

Country	Export volumes	Real GDP
Austria	1.8	3.0
Belgium	2.4	2.3
Denmark	1.8	1.8
Finland	1.6	2.5
France	2.0	2.7
Germany	1.7	2.3
Greece	4.9	3.0
Ireland	1.3	0.5
Italy	2.0	2.6
Netherlands	2.2	2.3
Portugal	2.3	1.4
Spain	3.0	2.0
Sweden	1.5	2.2
United Kingdom	3.1	1.5
United States	5.3	0.8
EU15	2.2	2.2

Source: GTAP (version 6.05)

43. In summary, applying deep cuts to anti-competitive domestic product market regulations towards OECD best practice levels could substantially raise GDP per capita levels in the United States, and especially the European Union. Removal of remaining tariff barriers between the United States and the European Union and easing FDI restrictions could also boost output levels in these regions, and increase the level of economic integration.

5.4 The benefits for the OECD area as a whole and impacts on the rest of the world

44. The reform packages in the United States and the European Union would have beneficial effects in the rest of the OECD area and in the non-OECD area. This is because the bilateral reduction in the EU and US external barriers to trade and investment is assumed to be extended to the rest of the world. Furthermore, the rest of the world would also be expected to benefit from liberalisation of domestic product markets in the United States and EU countries.

45. Gains to OECD member countries other than the United States and the EU15, using trade and output panel data equations (Nicoletti *et al.*, 2003 and Bassanini *et al.*, 2001), are shown in Table 5.6. The overall impact is a substantial lift in OECD trade, with export and import levels increasing around 25%. Furthermore, the results suggest that the trade gains are not at all confined to EU15 and the United States. For example, as might be expected given existing trade patterns, exports in Canada and Mexico and neighbouring European countries swell by some 20-25% as the United States and the European Union increase in size, and as remaining barriers to trade with them are reduced. Gains in other OECD countries are less impressive but still fairly substantial. In Japan and Korea the export gains average around 18%. At the lower end of the spectrum, export levels in Australia and New Zealand, where Asian markets are relatively more important, increase by around 10%. These gains may well be understated, however, given likely positive spill over effects of the EU and US policy shifts onto the Asian region and the rest of the world more generally.

Table 5.6. Impact of reforms on GDP per capita levels and trade in the OECD area using OECD panel data studies

Panel A.

Contribution of policy reform in the EU15 and US to export levels in other OECD countries

Country	Reduction in bilateral tariffs	Easing FDI restrictions	Reduction in domestic regulation	Total impact of reforms
Australia	4.5	1.7	4.5	10.7
Canada	12.1	4.1	6.6	22.7
Czech Republic	13.2	2.1	6.7	22.0
Hungary	12.7	3.0	7.9	23.6
Iceland	12.9	1.8	5.7	20.5
Japan	10.7	3.1	6.2	20.0
Korea	8.6	2.7	5.1	16.4
Mexico	12.0	3.4	5.1	20.5
New Zealand	6.3	1.0	2.5	10.0
Norway	10.9	3.0	8.6	22.5
Poland	13.4	2.0	6.8	22.2
Switzerland	13.2	2.3	6.4	21.9
Turkey	12.9	2.2	6.8	21.9
United States	3.5	1.0	17.5	22.0
EU-Extra	4.7	2.9	23.0	30.7
EU15 (excluding intra-EU trade)	1.4	2.4	25.6	29.4
OECD	4.4	2.4	18.8	25.6

Panel B.

Contribution of policy reform in the EU15 and the US to GDP levels in other OECD countries

Country	Reduction in bilateral tariffs	Easing FDI restrictions	Reduction in domestic regulation	Total impact of reforms
Australia	0.3	0.1	0.7	1.1
Canada	1.2	0.4	0.9	2.5
Czech Republic	0.8	0.1	0.6	1.5
Hungary	0.7	0.2	0.6	1.4
Iceland	0.8	0.1	0.8	1.6
Japan	0.8	0.2	0.9	1.7
Korea	0.5	0.2	0.5	1.2
Mexico	1.1	0.3	1.0	2.3
New Zealand	0.3	0.1	0.4	0.8
Norway	1.2	0.3	1.2	2.7
Poland	0.7	0.1	1.1	1.9
Switzerland	0.9	0.2	1.2	2.2
Turkey	0.5	0.1	0.9	1.6
United States	0.9	0.4	1.7	3.1
EU15	0.3	0.3	2.8	3.5
OECD	0.6	0.3	1.8	2.8

Source: OECD

46. The GDP impacts in the rest of the OECD directly depend on the estimated level of trade creation, given that no policy reforms are envisaged in countries other than those in the EU15 and the United States. The impact on GDP levels in New Zealand and Australia are smallest at around 1% of current GDP, while gains elsewhere are larger, especially for trading partners already highly dependent on the European Union or the United States.

47. A summary of the output and trade gains using the GTAP model are shown in Table 5.7, while the annex provides information of the impact on alternative measures of welfare and sectoral effects. On balance, the GTAP results suggest a slightly less positive and more nuanced picture of the gains compared with the results reported above. Tariff reform generally boosts trade to a lesser degree according to the GTAP simulations, but overall welfare gains are substantial in some OECD countries (Australia, New Zealand and Turkey) due to positive terms-of-trade effects from increases in demand and the world price of their export bundles, which tend to be relatively concentrated in commodities and agricultural products. Similar welfare-enhancing terms-of-trade effects are seen in many regions of the rest of the world, including the Middle-East, Sub-Saharan Africa and Latin America. However, the general increase in world prices for commodities and agricultural goods leads to terms-of-trade losses in the European Union and the United States, and these reduce some of the benefits of increased productivity and trade.²⁸

Table 5.7. The global impact of reforms on GDP per capita and trade using the GTAP model

GTAP model		
<i>% changes</i>		
Country	Export volumes	Real GDP
Australia	1.0	0.0
Canada	0.1	0.0
Japan	3.0	0.0
Korea	1.0	0.1
Mexico	0.7	0.0
New Zealand	0.6	0.1
Switzerland	0.5	0.0
Turkey	0.7	0.0
Rest of EFTA	0.1	0.0
Rest of Europe	1.0	0.0
EU 10 New	6.2	0.4
China	1.8	0.2
North East Asia	0.8	0.1
South East Asia	0.1	0.0
India	2.3	0.1
Latin America	1.6	0.0
MENA	0.5	0.0
Sub-Saharan Africa	0.7	0.0
United States	5.3	0.8
EU15	2.2	2.2
OECD	2.9	0.9

6. Concluding Remarks

48. This study has sought to quantify the impact of a broad reduction in domestic and external product market regulations in the European Union and the United States. Although the reforms can be considered a continuation of past trends, large adjustments in certain relatively protected sectors, such as agriculture and selected services, would still be required. Results suggest that ambitious reform packages in the United States and in member countries of the European Union, such as that applied in this study, could significantly boost both bilateral trade between the regions, and trade integration *vis-à-vis* the rest of the world. In addition, the results suggest that such reforms are likely to be accompanied by increases in output in the European Union and the United States, and more globally.

49. Three approaches were used in estimating the benefits of reform: two based on previous OECD econometric panel-data studies and one using the general equilibrium model GTAP. The results of all approaches are subject to considerably uncertainty. The econometric results, for example, may over-estimate its impact, given that they are based on historical experiences and that future reforms may start facing declining returns. Furthermore, the reform package implemented may be too large given recent reform efforts undertaken in the European Union and the United States not captured by the OECD indicators of regulatory stances. On the other hand, results from the GTAP model may under-estimate impacts given that productive efficiency and potential scale-efficiencies are not built into the model. In addition, the estimated gains reported in the paper do not directly consider potentially powerful dynamic efficiency gains arising from a faster pace of innovation. Finally, the estimated benefits of reform to product markets presented in the paper could be enhanced by structural reform efforts in other areas, such as labour and financial markets.

NOTES

1. In this paper, the European Union refers to the 15 member countries prior to the 2004 enlargement. The second phase of the project on enhancing economic cooperation will consider in addition reforms to other EU countries and the rest of the OECD. Results of the analysis are reported at fairly broad macro economic levels. That is, although the reforms considered may well have differing sectoral implications these are not formally quantified in the paper.
2. Best practice policy refers to the least restrictive policy stances in the whole OECD area, and not just in the European Union or the United States.
3. Within Europe, some studies suggest that business compliance costs could be significantly reduced if tax and accounting systems were better co-ordinated (European Commission 2001 and 2004). More generally, tax systems may have significant impacts on innovation activities, but their overall impact appears comparatively small relative to the stance of anti-competitive product market regulation (Jaumotte and Pain 2005).
4. In part, the lower trade intensity of services reflects that data on services do not cover all traded service activities. In particular, the exchanges of services that take place through commercial presence (*i.e.* the activity of foreign affiliates) and movement of individuals (*i.e.* temporary presence of service suppliers) are excluded from balance-of-payments statistics. These omissions, however, are small relative to the gap between goods and services trade intensities (Nicoletti *et al.*, 2003). More importantly, trade in services may be lower than one for goods because of higher transport costs. For example, many personal services are not traded between regions within a country, let alone national borders. However, some of the most dynamic service sectors over the past two decades, such as communications, financial intermediation and business services, have lower transportation costs. Moreover, these costs are falling as information and communication technologies (ICT) spread and open up the possibility of trade in services that were traditionally non-tradeable, such as retail distribution (see, for instance, OECD 2001).
5. The statistics report the situation in the late 1990s and the selection of OECD countries presented is largely determined by data availability.
6. For example, see McCallum (1995) and Anderson and van Wincop (2001).
7. The PMR indicators are based on a broad survey of economy-wide and industry-specific structural policy settings. The methodology developed to summarise the broad information set involved in constructing the PMR indicators is first described in Nicoletti *et al.*, (1999). The update of the indicators to take into account regulation at the end of 2003 is discussed in Conway *et al.*, (2005). In general, the cross-country outcomes of the PMR indicators are largely in line with more 'subjective' surveys of regulation and the business environment (Nicoletti and Pryor, 2005).
8. Note that higher levels of state ownership in certain sectors of the economy might in itself constitute a barrier to foreign investment flows to the extent the State has effective equity controlling stakes. This is an issue, for example, in the electricity and telecommunications sectors in several European countries.
9. It is particularly difficult to account for screening and approval procedures in a numerical indicator of FDI restrictions. With an aggregate indicator that excludes screening requirements, the least and most open countries generally remain the same as in Figure 3.3, the main exceptions being New Zealand (that moves from above to below average restrictiveness) and Spain (that moves from average to below average restrictiveness). Australia also moves towards a less restrictiveness stance, though it remains above the OECD average.
10. The MFN tariff rates seen in Figure 3.4 are *ad valorem* and do not account for specific tariffs. The later are frequently used on agricultural and food products with effects that are both less transparent and often more

restrictive than *ad valorem* duties. MFN tariff rates also do not capture preferential tariffs, the importance of which has been growing in recent years with the expansion of regional trade agreements. The recent evolution of MFN tariff protection reflects reductions agreed in the Uruguay round, with some differentiation according to sectors, which a simple average may not accurately reflect.

11. Trade-weighted tariffs still understate the protection barriers as trade will tend to be lower for goods and services with high tariffs.
12. Differences between tariff levels for total imports and tariff levels on EU-US trade reflect both different levels of tariff protection as well as differing trade structures.
13. The indicators of restrictions in the services sector have been constructed from the 2003 PMR dataset described in Conway *et al.* (2003). FDI restrictions at the sectoral level are taken from Golub (2003).
14. The overall PMR indicator is constructed from aggregating a hierarchy of lower-level indicators. The lower the level of an indicator is within the hierarchy, the more narrowly-focused is the area of anti-competitive regulation measured.
15. In the EU15, on average, the indicator of the overall stance of PMR is estimated to have declined from around 2.1 to 1.4 over the period from 1998 to 2003, a cut of 0.7 points, while in the US the decline is from around 1.3 to 1.1. In this study the implied level of "best practice" overall PMR is around 0.7. For the European Union, movement to best practice would therefore imply a similar sized reform as that seen over the 1998-2003 period. In the United States, although the absolute size of reform required to move to best practice is smaller, the overall reforms is still slightly larger than what is estimated to have occurred since 1998
16. Restrictions on FDI have been significantly reduced since the 1990s (Golub, 2003). On average, across the OECD countries for which FDI restrictions are measured, the reduction in the level of the indicator of restrictions is around 40% over the period from 1990 to 2000. In this study, easing FDI restrictions to best-practice levels implies that levels are approximately halved in the United States and the European Union.
17. As noted in the annex, a more narrow indicator of product market regulations has been used in some parts of the analysis. The "best practice" for this indicator has been determined in a similar way as for the broad indicator.
18. Recent literature on the gains from reducing border barriers to trade in the European Union and the United States can be seen in Vaandenbussche *et al.* (2004) and London Economics (2002). In Bayoumi *et al.* (2004), estimates of reducing rigidities in labour and product markets in the European Union to those of US-levels are presented.
19. Reform of anti-competition product market regulation and a reduction of external barriers to trade and investment may also, of course, be associated with short-run regional or even national losses in output and employment to the extent that the resources released from sheltered industries are not quickly re-deployed. To mitigate these concerns, reform of product markets might preferably be complemented by structural policy reform in other spheres. For example, short-run employment costs could be mitigated by reform to labour markets that improve their flexibility, while financing requirements to replace inefficient capital could be assisted by reform of financial markets.
20. The exposition of results mainly considers exports, but imports also rise in the simulations by roughly the same magnitude in the United States and the EU-member countries. The modelling is based on the impacts of policy reforms on bilateral trade flows, and the impacts on both imports and exports are therefore available.
21. This result is especially important with respect to services exports.

22. In particular, indicator levels for anti-trust exemptions (exemptions of publicly-controlled firms from aspects of competition law) are relatively high in the United States compared with OECD levels, while indicator levels for administrative burdens on sole-proprietor firms, state licence and permit systems, the scope of the public enterprise sector in the economy, and legal barriers to entry in certain sectors are all some distance from OECD best-practice levels. See Conway *et al.* (2005) for details.
23. More specifically, it is assumed that capital is increased such that the ratio of capital to efficiency-augmented labour does not change. The estimated impact on GDP further assumes that aggregate output can be described by a Cobb-Douglas production function with labour's income share set at 0.7 and capital's income share at 0.3. Evidence that anti-competitive product market regulations may curb investment spending in OECD countries is reported in Alesina *et al.* (2003).
24. Of course, the similarity of the results is highly dependent on the assumed production function and increase in capital inputs.
25. As shown in Section 5.4, the spill over benefits of the tariff cuts to the rest of the world are, however, more substantive.
26. The results of the de-tariffication scenario are broadly consistent with a comparable GTAP simulation of tariff reform presented in Fernandez de Cordoba *et al.* (2005).
27. Simulation of the regulatory reforms is implemented through productivity increases that reduce the cost of production in the United States and individual EU countries, with no spillover effects to other countries and regions. Under this assumption, the rest of the world cannot make use of the productivity improvements that occur in the countries that implement regulatory reforms, hence there are no positive feedback effects onto to the United States and the European Union.
28. The terms of trade losses arising in the GTAP model from an improvement in productivity is a highly model dependent result. It is not obvious that countries experiencing rapid productivity improvements also see a deterioration in their terms of trade position.

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ANNEX SUPPORTING MATERIAL

50. This Annex presents detailed results of the policy simulations presented in Section 5 of the main text, along with more discussion of the empirical approaches. The Annex is organised into three sections corresponding to the approaches used to examine the benefits of reducing external and internal barriers to trade and investment. The first section presents detailed results using the panel-data studies that examine the impact of reforms from the perspective of their impact on trade openness. Section 2 discusses in more detail the empirical approach employed to estimate the impact of reform *via* its effect on multi-factor productivity. Finally, in Section A3 more detailed results from simulation of the GTAP model are presented.

A1 Impact of policy reforms on output *via* increased trade exposures

A1.1 Empirical approach

51. The empirical approach used to to examine the impacts of the policy reforms *via* trade openness relies on bilateral trade equations reported in Nicoletti *et al.* (2003).¹ To the extent possible, this empirical work aims to isolate the impact of policy variables from non-policy and country-specific factors. The *general* model considered is:

$$(1) \quad Y_{ijt} = \sum_x \beta_x X_{ijt} + \sum_c \beta_c C_{it} + \sum_p \beta_p P_{jt} + \alpha_i + \alpha_j + \alpha_t + \alpha_{it} + \alpha_{ij} + \alpha_{jt} + u_{ijt}$$

where Y_{ijt} is the logarithm of bilateral export of goods or export of services from country i to partner j at time t (with $i=1,2,\dots,I$; $j=1,2,\dots,J$; and $t=1,2,\dots,T$).² X_{ij} are variables that are specific to a given country-partner pair. They incorporate both non-policy-related factors (*e.g.*, geographic distance, transport costs and factor similarities) and specific policy measures (*e.g.* bilateral tariff levels and FDI restrictions); C_i are country-specific variables and P_j are partner-specific variables, which in general comprise the inward-oriented regulatory policy indicators. The α -type variables stand for specific effects and control for all combinations of unobserved factors.

52. As discussed in Nicoletti *et al.* (2003), estimation of the relevant policy and non-policy impacts (*i.e.*, the β_x , β_c and β_p parameters) in the form above is a non-trivial exercise and hence a “transformed least squares” (TLS) approach is employed to simplify the estimation. A summary of the estimated policy impacts as applied in this paper is provided in Table A1. below. These estimates show, for example, that a ten percentage point reduction in domestic regulation levels would boost goods and services exports by 2.5%, while a similar sized easing of FDI restrictions could lift services exports by 1.3% and goods exports by 0.4%.³ Reductions in trading partner regulations are also important, and along with reductions in bi-

1. In particular, the specification reported in column 2 of Table A20 was used to infer the impact of reform on goods exports while services exports were estimated using the equation reported in column 2 of Table A22.

2. In the bilateral specifications for goods and services exports, variables X , C and P are also expressed in logarithms.

3. Regulation in the exports of services equation is captured by an indicator of barriers in certain services sectors, as described in Nicoletti *et al.* (2003). In the original estimation of the exports of goods equation a time series indicator called “REGREF” was used to capture inward-oriented regulations. This indicator is also aggregated at the sectoral level and is based on various areas of regulation including public ownership, barriers to entry, price controls, vertical integration and market structures.

lateral tariff levels and FDI restrictions explain why countries that do not undertake any reforms in this exercise still have a significant boost in their trade levels.

53. As discussed in the main text, non-tariff border measures are not considered formally in the analysis given data issues and the reduction in formal non-tariff barriers over the past five years in OECD, although Nicoletti *et al.* (2003) estimates that historically these have been an important impediment to goods trade (italicised row, table A1). Moreover, to some extent, the product market regulation indicators already encapsulate behind-the-border non-tariff measures that exist today (Conway *et al.* 2005). For example, the lower-level indicator called “regulatory procedures” quantifies the extent to which countries' domestic regulatory procedures have engaged in mutual recognition agreements (MRAs) with other nations; whether specific provisions exist which require domestic regulators to consider the equivalence of regulatory measures or the results of conformity assessment performed in other countries; whether specific provision exist which require regulators to use internationally harmonised standards and procedures where available and appropriate; and whether there are specific procedures that require or encourage domestic regulatory procedures to avoid unnecessary trade restrictiveness.

Table A1. Summary impact of the policy variables on exports

Elasticity of exports with respect to a decrease in the policy indicators¹

	Exports of Goods	Exports of Services
Decrease in domestic regulation	0.25	0.25
Decrease in trading partner regulation	0.11	0.24
Decrease in bi-lateral tariff levels	0.15	..
Decrease in FDI restrictions	0.04	0.13
<i>Decrease in non-tariff barriers</i>	<i>0.08</i>	<i>..</i>

1) A reduction in the indicators of 1 percentage point would increase exports by the factors shown in the table

54. To examine the impact of policy reforms on exports from any country *i* to partner *j*, the changes in the relevant indicator variables are multiplied by the estimated coefficients of the bilateral export equation as summarised above. This is recorded as an increase in exports in country *i* and an increase in imports in county *j*. The total impact on exports for country *i* will be the summation of the increase in exports across all its trading partners. Similarly, the total impact on imports for any country will be the sum of the exports to that country. Given that an almost complete OECD country panel was utilised in the Nicoletti *et al.* (2003) study, a fairly comprehensive picture can be built up of how changes in the regulatory variables may influence trade flows *within* the OECD. However, a major limitation of this analysis is that the impact of reform on trade *vis-à-vis* non-OECD countries cannot be estimated. As such, the reforms may underestimate the trade gains, especially for OECD countries whose existing trade flows are relatively concentrated in the non-OECD area.

55. The estimated increases in exports and imports, according to the equations in Nicoletti *et al.* (2003), are used to calculate an increase in “trade openness” of each country, which is then fed into the output-growth equations estimated in Bassanini *et al.* (2001) to infer the impact of reform on GDP levels.⁴

4. Trade openness is calculated as: $X + (1-X)*M_p$, where *X* is the export to GDP ratio and *M_p* is the ratio of imports to apparent consumption (domestic production minus exports plus imports). Relative to the simple gross-trade to GDP

In brief, the generic specification of the growth equations are consistent with a standard neoclassical growth model, but the estimated forms are extended to involve human capital, research and development expenditures and a set of policy and institutional factors potentially affecting economic efficiency, including trade openness. In the econometric results, trade openness is found to be highly significant and robust to alternative model specifications, indicating its importance for the general growth process (see Table 5, Bassanini *et al.* (2001)). In this paper, the estimated elasticity of output with respect to trade openness is set at 0.2 (*i.e.* an increase in the level of trade openness by 10% will cause GDP per capita to rise by 2% all else equal) to reflect the most common impact estimated in the Bassanini *et al.* study.

A1.2 Detailed Results

56. Detailed trade and output results using the empirical approach outlined above are seen in Tables A2 to A4. In Tables A2 and A3 the impact of the reforms on goods and services exports respectively are shown. Table A4 presents an overall summary of the results for the United States and European member countries. Under each policy reform considered, the impacts on bilateral EU-US, overall trade openness and output per capita are shown.

57. One important point regarding the interpretation of the results is that it is the *percentage change* rather than the *percentage point* increase in trade exposures which affect output per capita. This distinction implies that for countries that already have a high level of trade exposures, the percentage change in trade exposures will tend to be smaller for a given sized policy shift, and consequently, so will the impact on output. Given that the European Union as a whole has a higher level of trade openness than the United States, a corollary is that a similar sized reform in the two areas will tend to have a smaller impact in the European Union. This is perhaps mostly clearly seen in the results from easing FDI restrictions, where a similar reduction in FDI barriers was applied in the analysis. The percentage point increase in exports (Tables A1 and A2) and overall trade exposure from easing FDI restrictions is higher in the European Union, but the percentage increases in trade exposures are smaller, and hence the gain in output in the European Union from reducing FDI barriers is estimated to be slightly smaller than the gain seen in the United States.

ratio, this measure of trade openness effectively reduces the impact of re-exporting activities, perhaps providing a better indicator of economic openness for countries engaged in re-exporting in the OECD area.

Table A2. Impact of reforms on goods exports levels using OECD panel data studies

% changes

Country	Reduction in bilateral tariffs	Easing FDI restrictions	Reduction in domestic regulation	Total impact of reforms
Australia	5.7	1.0	2.4	9.0
Austria	0.8	1.7	22.8	25.3
Belgium	1.0	2.2	24.9	28.1
Canada	13.6	3.3	5.1	22.0
Czech Republic	13.2	2.1	6.7	22.0
Denmark	1.0	2.0	18.5	21.5
Finland	1.5	2.0	22.3	25.9
France	1.5	2.1	25.1	28.7
Germany	1.9	2.3	23.3	27.5
Greece	1.4	2.0	25.4	28.8
Hungary	13.8	2.4	7.0	23.2
Iceland	12.9	1.8	5.7	20.5
Ireland	2.8	1.8	20.3	24.9
Italy	1.9	2.3	25.6	29.7
Japan	12.2	2.4	4.8	19.4
Korea	10.1	1.9	4.0	16.0
Mexico	12.0	3.4	5.1	20.5
Netherlands	0.8	2.0	23.7	26.6
New Zealand	6.3	1.0	2.5	9.9
Norway	13.6	1.9	6.1	21.6
Poland	13.4	2.0	6.8	22.2
Portugal	0.9	2.4	25.3	28.6
Spain	0.9	2.4	25.7	29.0
Sweden	1.6	1.9	20.1	23.7
Szwitzerland	13.2	2.3	6.4	21.9
Turkey	12.9	2.2	6.8	21.9
United Kingdom	2.8	2.4	18.4	23.6
United States	4.5	0.5	13.7	18.7
EU15 (excluding intra EU trade)¹	6.4	1.5	18.9	26.8
EU15¹	1.7	2.2	23.1	27.0
OECD²	5.3	2.0	16.3	23.6

1. Excludes Luxembourg. 2. Excludes Luxembourg and the Slovak Republic

Source: OECD

Table A3. Impact of reforms on services exports levels using OECD panel data studies

Country	% changes		
	Easing FDI restrictions	Reduction in domestic regulation	Total impact of reforms
Australia	4.5	12.0	16.6
Austria	1.0	42.2	43.2
Belgium	na	na	na
Canada	10.2	18.7	28.8
Czech Republic	na	na	na
Denmark	10.8	40.5	51.3
Finland	2.5	43.2	45.7
France	3.4	43.1	46.5
Germany	2.7	39.2	41.9
Greece	10.3	43.1	53.3
Hungary	9.9	na	27.4
Iceland	na	na	na
Ireland	9.5	na	50.7
Italy	6.2	35.0	41.2
Japan	8.2	16.5	24.8
Korea	7.0	na	18.3
Mexico	na	na	na
Netherlands	2.5	39.0	41.5
New Zealand	na	na	na
Norway	7.3	18.7	26.0
Poland	na	na	na
Portugal	6.6	35.4	41.9
Spain	5.7	32.5	38.2
Sweden	4.3	30.2	34.5
Szwitzerland	na	na	na
Turkey	na	na	na
United Kingdom	4.0	38.2	42.2
United States	2.4	31.3	33.8
EU15 (excluding intra EU trade)¹	7.1	34.6	41.7
EU15¹	3.7	39.4	43.1
OECD²	4.2	33.1	37.3

1. Excludes Luxembourg. 2. Excludes Luxembourg and the Slovak Republic

Source: OECD

Table A4. Summary impact of reforms in the United States and the European Union using OECD panel data studies

	EU-US bilateral exports of goods and services % changes	Total exports (including Intra-EU exports) % changes	Trade exposure, initial level	Trade exposure change % change	GDP per capita % changes
PMR reforms					
United States	34.1	17.5	23.3	9.9	1.7
EU15¹	28.7	25.6	55.7	15.3	2.8
Austria	31.6	29.0	68.1	16.4	3.0
Belgium	23.3	24.9	96.0	4.2	0.8
Germany	27.0	25.4	52.8	15.9	3.0
Denmark	34.9	21.3	63.1	11.4	2.2
Spain	32.9	26.4	50.0	14.2	2.7
Finland	26.4	24.7	60.7	14.5	2.7
France	32.4	28.5	45.9	19.1	3.5
United Kingdom	26.6	23.7	48.0	15.3	2.4
Greece	44.9	35.0	47.0	14.4	2.7
Ireland	22.9	21.0	99.4	3.0	0.5
Italy	29.7	26.3	45.6	14.8	2.8
Netherlands	32.0	27.0	86.1	9.7	1.9
Portugal	31.2	25.9	56.5	14.3	2.7
Sweden	25.4	21.0	67.0	11.9	2.4
FDI restriction reforms					
United States	2.9	1.0	23.3	1.9	0.4
EU15	6.5	2.4	55.7	1.5	0.3
Austria	7.3	1.5	68.1	1.7	0.3
Belgium	3.6	2.2	96.0	0.6	0.1
Germany	5.4	2.4	52.8	1.5	0.3
Denmark	9.6	3.1	63.1	1.6	0.3
Spain	7.6	2.7	50.0	1.9	0.4
Finland	5.4	2.1	60.7	1.8	0.3
France	7.0	2.3	45.9	1.9	0.4
United Kingdom	7.0	2.8	48.0	1.2	0.2
Greece	11.8	6.5	47.0	2.4	0.5
Ireland	4.7	2.1	99.4	0.2	0.0
Italy	5.8	2.6	45.6	1.5	0.3
Netherlands	8.0	2.1	86.1	0.9	0.2
Portugal	6.8	2.7	56.5	1.9	0.4
Sweden	5.6	2.1	67.0	1.5	0.3
Bilateral tariffs cuts					
United States	10.7	3.5	23.3	4.9	0.9
EU15	10.4	1.4	55.7	1.3	0.3
Austria	9.0	0.6	68.1	0.7	0.1
Belgium	15.3	1.0	96.0	0.3	0.1
Germany	12.2	1.6	52.8	1.6	0.3
Denmark	5.1	0.8	63.1	0.8	0.2
Spain	8.4	0.8	50.0	0.8	0.1
Finland	12.2	1.4	60.7	1.2	0.2
France	9.5	1.2	45.9	1.2	0.2
United Kingdom	9.4	2.1	48.0	1.9	0.4
Greece	1.3	0.6	47.0	0.8	0.2
Ireland	13.4	2.7	99.4	0.3	0.1
Italy	11.6	1.8	45.6	1.2	0.2
Netherlands	7.7	0.7	86.1	0.6	0.1
Portugal	9.8	0.8	56.5	0.7	0.1
Sweden	11.7	1.5	67.0	1.1	0.2
All policies					
United States	47.8	22.0	23.3	16.5	3.1
EU15	45.6	29.4	55.7	17.8	3.5
Austria	47.9	31.0	68.1	18.2	3.4
Belgium	42.2	28.1	96.0	4.2	1.0
Germany	44.5	29.3	52.8	18.7	3.6
Denmark	49.5	25.3	63.1	13.5	2.8
Spain	48.9	29.8	50.0	16.6	3.1
Finland	44.0	28.2	60.7	17.1	2.9
France	48.8	32.0	45.9	22.0	4.0
United Kingdom	43.1	28.6	48.0	18.2	3.0
Greece	58.0	42.1	47.0	17.4	3.3
Ireland	41.0	25.7	99.4	3.9	0.7
Italy	47.0	30.6	45.6	17.4	3.3
Netherlands	47.7	29.7	86.1	10.6	2.0
Portugal	47.8	29.4	56.5	16.5	3.3
Sweden	42.7	24.7	67.0	14.1	2.4

1. EU15 and OECD excludes Luxembourg
Source: OECD

A2 Impact of policy reforms on output *via* increased productivity

58. The main text of the paper provides the complete set of results obtained from simulating the impact of the policy reforms on multi-factor productivity and output. This section provides more detail on the estimation approach.

59. The empirical approach is based on the MFP equations estimated in Nicoletti and Scarpetta (2003).⁵ In this paper, the effect of policies on both the level of MFP, and the speed of its convergence to the technological frontier (*i.e.* the highest observed MFP levels at the sectoral levels considered) is estimated as follows:

$$(2) \quad \Delta \ln MFP_{ijt} = \beta_{2j} \Delta \ln MFP_{Ljt} - (1 - \beta_{1j}) RMFP_{ijt-1} + \omega_{ijt}$$

where MFP_{ij} is the level of MFP in country i and industry j ; MFP_{Lj} is the highest level of MFP seen in the OECD country sample for industry j ; $RMFP_{ij}$ is the gap between these two variables, and ω_{ijt} is an error term modelled as:

$$(3) \quad \omega_{ijt} = \sum_k \gamma_k V_{kijt-1} + f_i + g_j + d_t + \eta_{ijt}$$

where V_{ijt} is a vector of covariates comprising structural features (*e.g.* human capital) and regulatory policies potentially affecting the level of MFP; unobserved country and industry effects are represented by f_i and g_j , respectively; global macroeconomic shocks are given by d_t and η_{ijt} is a serially uncorrelated error term. In the estimations, the coefficient on MFP growth in the country leader (β_{2j}) and that on the speed of convergence ($1 - \beta_{1j}$) are constrained to vary only between the manufacturing and services sectors.

60. The specification of equation (2) implies that the regulatory variables as well as the country and industry fixed effects translate only into differences in MFP levels, and not into permanent differences in growth rates of MFP. However, policies may speed up the rate at which the frontier is reached. In this paper, the speed-up effects estimated in Nicoletti and Scarpetta (2003) were ignored given they do not, in principle, change the level of MFP a country achieves in the long-run. Instead, the impact of reforms is based on the estimated coefficients on two regulatory indicators that serve as a reasonable proxy for inward-oriented regulation: scope of the public enterprise sector and barriers to entry in the services sector.⁶

A3 Impact of policy reforms using the GTAP model

A3.1 Overview of the model and data

61. The analysis presented at the end of Section 5 of the main paper is conducted using a static, perfect competition, global general equilibrium model developed at the Global Trade Analysis Project (GTAP)⁷ centre and the most recent version of the GTAP database. The GTAP model and database

5. In particular, see the regression results in Table 8.

6. Data for the scope of the public enterprise sector are preliminary estimates from the 2003 PMR indicator project, in this version of the paper, barriers to entry in the services sector is an estimate derived from the change in the indicator of "legal barriers" between 1998 and 2003 in the PMR indicator database. Revised versions of the paper will incorporate an updated 2003 measures of both of these indicators.

7. The model is documented in Hertel, T. W. (1997).

incorporate detailed information on economic structures and economic policy instruments of all major world economies. The model allows for substitution between different sources of imports, between imports and domestic supplies and between different goods in production and demand. Primary factors of production (labour, land and capital) are given in fixed amounts and are assumed to be fully employed. Labour and capital move across all sectors of production and land moves across agricultural sectors.

62. In addition to whether perfect competition is assumed or not, results from all applied partial and general equilibrium models used for trade policy analysis depend crucially on trade elasticities McDaniel and Balistreri, (2002). Reflecting difficulties with their econometric estimation, the elasticities used in applied trade analysis are typically assumed to vary by sector but not across countries. The set of elasticities employed in GTAP also reflects this assumption. Hence, the country specificity in terms of responsiveness of trade volumes to trade prices is captured solely by countries' composition of imports (e.g. a given country's imports being concentrated in high or low import demand elasticity products).

63. The dataset used for the simulations is version 6.05 of the GTAP database, comprising data with a base year of 2001 and covering 57 broad economic sectors and 87 countries. The distinct advantage of data in GTAP 6.05 is that it fully integrates the information on bilateral *ad valorem* tariffs (both MFN and preferential), *ad valorem* equivalents of specific tariffs (MFN and preferential), as well as tariff rate quotas from CEPII/ITC Market Access Maps (MAcMaps) database.⁸ The resulting *ad valorem* equivalent measure of applied protection is thus a comprehensive measure of protection that is consistent across all bilateral trade flows. Border protection is specified bilaterally. Due to the level of data aggregation, each bilateral *ad valorem* equivalent measure of applied protection included in the database may combine the information on MFN and any preferential market access as well as the actual composition of trade within this product category. Thus, bilateral protection rates for a given product category vary from one country pair to another. These equivalent measures of applied protection are used in the tariff reduction simulations presented in the paper.

A3.2 Detailed Results

64. Detailed results of the overall tariff liberalisation and productivity boost simulation discussed in the main text are provided in Tables A5 and A6. In Table A5 the impact of the reforms on the volume of exports, the price of exports, and the terms of trade are seen. This shows that reforms boost export levels in all areas, although terms of trade effects can be negative. In Table A6 the impact of the reforms on welfare, per-capita welfare, and GDP are seen. The measure of change in welfare reported is the equivalent variation in income measured in millions of US 2001 dollars.⁹

8. The dataset is documented in detail in Bouët *et al.* (2002)

9. Equivalent variation in income is the money metric equivalent of the utility change brought about by the price change.

Table A5. Impact of tariff cuts and a boost in productivity on trade using the GTAP model

	Change in volume of exports				Price index of merchandise exports				Terms of trade			
	Total	attributed to: productivity increases	US tariff reduction	EU tariff reduction	Total	attributed to: Productivity increases	US tariff reduction	EU tariff reduction	Total	attributed to: Productivity increases	US tariff reduction	EU tariff reduction
<i>OECD Countries and groups</i>												
Australia	1.01	0.8	0.09	0.12	-0.17	-0.78	0.26	0.35	0.44	-0.06	0.11	0.39
Austria	1.76	1.23	0.09	0.43	-1.24	-0.68	0.23	-0.79	-0.17	-0.06	0.05	-0.16
Belgium	2.37	1.55	0.03	0.78	-1.66	-0.72	0.22	-1.16	-0.67	-0.08	0.05	-0.64
Canada	0.14	0.5	-0.43	0.07	-1.14	-0.71	-0.52	0.1	-0.16	0.03	-0.28	0.09
Denmark	1.77	1.03	0.03	0.7	-1.57	-0.68	0.22	-1.11	-0.54	-0.04	0.03	-0.54
Finland	1.61	0.57	0.01	1.03	-1.32	-0.61	0.18	-0.9	-0.39	0.04	-0.02	-0.42
France	1.99	0.59	0.04	1.36	-1.44	-0.6	0.21	-1.05	-0.39	0.04	0.03	-0.46
Germany	1.74	0.3	0.08	1.36	-1.25	-0.55	0.27	-0.97	-0.25	0.11	0.09	-0.45
Greece	4.88	0.05	0.05	4.79	-2.01	-0.51	0.26	-1.75	-1.1	0.14	0.06	-1.3
Ireland	1.29	0.22	0.2	0.87	-1.17	-0.54	0.37	-1	-0.12	0.12	0.23	-0.47
Italy	2.03	0.14	0.14	1.75	-1.3	-0.53	0.32	-1.09	-0.36	0.12	0.12	-0.6
Japan	2.95	2.33	0.17	0.45	-0.24	-1.02	0.39	0.39	0.25	-0.33	0.23	0.35
Korea	1.03	0.52	0.14	0.37	0.09	-0.76	0.44	0.41	0.61	-0.01	0.3	0.33
Luxembourg	0.24	0.29	0.04	-0.1	-1.12	-0.44	0.22	-0.9	0.15	0.22	0.05	-0.13
Mexico	0.74	0.75	-0.01	0	-1.58	-0.76	-0.89	0.07	-0.6	-0.01	-0.62	0.04
Netherlands	2.24	0.92	0.03	1.29	-1.84	-0.59	0.22	-1.47	-1	0.08	0.06	-1.14
New Zealand	0.63	0.36	0.07	0.2	2.21	-0.71	0.36	2.56	2.87	0.03	0.23	2.62
Portugal	2.29	0.62	0.07	1.6	-1.78	-0.54	0.29	-1.53	-0.63	0.09	0.09	-0.81
Spain	3.02	0.92	0.07	2.03	-1.75	-0.62	0.24	-1.37	-0.78	0.01	0.04	-0.83
Sweden	1.49	0.78	0.05	0.67	-1.18	-0.64	0.23	-0.77	-0.13	0	0.06	-0.19
Switzerland	0.47	0.43	0.02	0.02	-0.64	-0.56	0.23	-0.31	0.46	0.08	0.06	0.33
Turkey	0.68	0.52	0.03	0.14	0.29	-0.58	0.49	0.39	1.16	0.06	0.31	0.78
United Kingdom	3.1	0.53	0.09	2.49	-1.42	-0.59	0.21	-1.03	-0.5	0.07	0.06	-0.64
United States	5.27	0.91	3.84	0.52	-1.22	-0.78	-0.59	0.15	-0.59	-0.07	-0.69	0.17
EU10 New	6.23	0.52	0.02	5.69	-1.43	-0.52	0.21	-1.12	-0.39	0.1	-0.01	-0.49
Rest of EFTA	0.11	0.49	0.02	-0.4	-0.38	-0.58	0.2	0	0.67	0.08	0.02	0.57
<i>Non-OECD</i>												
China	1.77	0.61	0.46	0.7	0.29	-0.75	0.57	0.46	0.71	0	0.33	0.38
India	2.26	1.18	0.17	0.92	0.35	-0.8	0.31	0.84	0.93	-0.11	0.12	0.92
Latin America	1.61	0.95	0.32	0.34	0.99	-0.79	0.42	1.35	1.61	-0.06	0.37	1.3
Middle-East and Near Areas	0.51	0.45	0.04	0.03	-0.33	-0.65	0.12	0.2	0.45	0.04	-0.04	0.45
Non-OECD Europe	1.04	0.73	-0.02	0.32	-0.71	-0.59	0.33	-0.45	0.37	0.03	0.1	0.24
North-East Asia	0.78	0.28	0.21	0.29	0.11	-0.68	0.51	0.28	0.52	0.07	0.28	0.17
South-East Asia	0.05	0.21	-0.17	0	0.09	-0.69	0.45	0.33	0.54	0.05	0.23	0.26
Sub-Saharan Africa	0.69	0.5	0.08	0.11	-0.25	-0.64	0.18	0.2	0.51	0.04	0	0.46
Rest of World	1.21	0.62	0.04	0.55	-0.17	-0.68	0.21	0.31	0.56	-0.02	0.02	0.56

Table A6. Impact of tariff cuts and a boost in productivity on welfare using the GTAP model

	Welfare (equivalent variation)				Per capita welfare (% change)				Real GDP (% change)			
	Total	attributed to: productivity increases	US tariff reduction	EU tariff reduction	Total	attributed to: Productivity increases	US tariff reduction	EU tariff reduction	Total	attributed to: Productivity increases	US tariff reduction	EU tariff reduction
<i>OECD Countries and groups</i>												
Australia	313.8	-74.1	104.7	283.2	0.10	-0.02	0.03	0.09	-0.02	-0.01	-0.01	0.00
Austria	5446.8	5161.6	66.7	218.5	3.31	3.13	0.04	0.13	2.95	2.75	0.00	0.19
Belgium	3964.8	4614.5	116.4	-766.0	1.95	2.27	0.06	-0.38	2.31	2.10	0.00	0.21
Canada	-371.2	34.1	-654.8	249.5	-0.06	0.01	-0.10	0.04	-0.02	-0.01	-0.01	0.00
Denmark	2508.6	2663.1	27.4	-181.9	1.76	1.87	0.02	-0.13	1.78	1.69	-0.01	0.10
Finland	2858.9	2799.4	-7.3	66.7	2.70	2.64	-0.01	0.06	2.46	2.29	-0.02	0.19
France	34447.5	34496.8	222.1	-271.4	2.94	2.94	0.02	-0.02	2.70	2.60	0.00	0.10
Germany	40844.3	40851.1	830.7	-837.4	2.52	2.52	0.05	-0.05	2.27	2.17	0.00	0.09
Greece	2984.5	2749.5	14.8	220.2	2.91	2.68	0.01	0.21	2.96	2.31	-0.01	0.66
Ireland	426.0	100.1	231.1	94.7	0.46	0.11	0.25	0.10	0.48	0.01	0.02	0.45
Italy	27488.7	26954.9	408.8	125.1	2.87	2.81	0.04	0.01	2.61	2.45	0.00	0.16
Japan	1808.5	-1588.0	1608.5	1787.9	0.05	-0.04	0.04	0.05	0.00	-0.01	0.00	0.00
Korea	1421.8	-39.1	666.0	794.9	0.38	-0.01	0.18	0.21	0.07	0.00	0.02	0.05
Luxembourg	34.7	32.4	9.8	-7.5	0.20	0.19	0.06	-0.04	0.07	0.02	0.01	0.05
Mexico	-1226.7	-61.2	-1286.5	121.0	-0.22	-0.01	-0.23	0.02	-0.07	-0.01	-0.07	0.01
Netherlands	6869.2	7624.8	132.7	-888.2	2.03	2.26	0.04	-0.26	2.25	1.95	0.00	0.29
New Zealand	534.5	1.4	47.3	485.9	1.18	0.00	0.10	1.07	0.05	-0.01	0.00	0.06
Portugal	1222.0	1244.1	45.4	-67.4	1.25	1.27	0.05	-0.07	1.35	1.09	0.00	0.26
Spain	10236.7	10355.6	129.6	-248.6	1.98	2.00	0.03	-0.05	1.98	1.77	0.00	0.21
Sweden	4677.5	4370.7	83.6	223.1	2.40	2.24	0.04	0.11	2.17	2.00	0.00	0.17
Switzerland	135.8	71.9	155.6	-91.7	0.06	0.03	0.07	-0.04	-0.15	0.00	0.03	-0.17
Turkey	362.0	20.7	118.7	222.6	0.28	0.02	0.09	0.17	-0.11	-0.01	-0.02	-0.09
United Kingdom	20116.9	19481.7	271.7	363.6	1.56	1.51	0.02	0.03	1.54	1.34	0.00	0.20
United States	70204.5	74727.2	-6550.5	2027.7	0.76	0.81	-0.07	0.02	0.77	0.75	0.02	0.00
EU10 New	536.9	164.5	15.3	357.0	0.17	0.05	0.00	0.11	0.36	-0.01	0.00	0.37
Rest of EFTA	319.4	16.1	22.8	280.5	0.20	0.01	0.01	0.18	-0.06	-0.02	-0.01	-0.03
<i>Non-OECD</i>												
China	4480.1	126.0	1774.4	2579.8	0.43	0.01	0.17	0.25	0.16	0.01	0.04	0.12
India	978.1	-101.3	193.7	885.7	0.22	-0.02	0.04	0.20	0.07	-0.01	0.01	0.07
Latin America	4930.6	-370.8	1374.5	3926.9	0.40	-0.03	0.11	0.32	0.04	-0.02	0.02	0.04
Middle-East and Near Areas	1258.9	-1.3	-80.3	1340.5	0.16	0.00	-0.01	0.17	-0.01	-0.01	-0.01	0.01
Non-OECD Europe	203.6	9.5	57.3	136.9	0.25	0.01	0.07	0.16	0.04	0.00	0.02	0.03
North-East Asia	1580.7	179.4	753.1	648.3	0.37	0.04	0.17	0.15	0.05	0.00	0.00	0.05
Sub-Saharan Africa	547.5	14.5	3.6	529.3	0.19	0.01	0.00	0.19	-0.01	-0.01	-0.01	0.01
South-East Asia	2786.7	232.0	1136.5	1418.2	0.41	0.03	0.17	0.21	0.03	0.00	0.00	0.03
Rest of World	1113.7	-91.0	75.6	1129.2	0.30	-0.02	0.02	0.30	0.06	-0.02	0.00	0.07
Total	256046.1	236770.7	2118.8	17156.6								
OECD	212828.5	196763.0	938.9	15126.6								
non-OECD	43217.6	40007.7	1180.0	2030.0								

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