

ECONOMICS

BIS | Department for Business
Innovation & Skills

BIS ECONOMICS PAPER NO. 11

The economic consequences for
the UK and the EU of completing
the Single Market

FEBRUARY 2011

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for the UK and the EU of
completing the Single
Market**

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FEBRUARY 2011

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Acknowledgements

The authors would like to thank Arjan Lejour for useful comments on a preliminary version of this paper. The authors take however full responsibility for any inaccuracies that could remain.

Views expressed represent exclusively the opinions of the authors and do not necessarily correspond to those of the institutions of which they are members.

Foreword



The European Union faces a series of unprecedented challenges. These include ageing populations, competition from fast-growing emerging economies, extremely constrained fiscal environments, bank deleveraging, public and private debt reduction and structural imbalances. Yet against that backdrop, it also has at its disposal the tools to create long-term economic growth for all EU member states and their citizens.

Every European country has a strong self-interest in ensuring that the EU grows, not least since more than two-thirds of EU exports are intra-EU. But it is almost impossible for a country to export its way out of recession if key destination markets are stagnant. That makes the completion of the EU Single Market even more vital.

Current trade between the UK and other EU member states could be as much as 45 per cent below potential were it not for significant non-tariff trade barriers. Completion of the Single Market could translate into seven per cent additional income per capita per UK household and 14 per cent at EU level.

In the Single Market, the EU has at its disposal an unprecedented resource. It is one of the EU's greatest success stories that has enabled the EU to become the world's most important trading zone. This would not be possible without a framework that removes barriers to trade, opens economies and allows for the free movement of goods, services and people.

Given the need to find new sources of growth and dynamism in EU markets, the UK Government welcomes the recent programme of work by Mario Monti and the European Commission to 'relaunch' the Single Market.

With the Single Market Act we have an opportunity to direct efforts at those actions that will most quickly and effectively improve the functioning of the Single Market and encourage growth.

This is an opportunity that must not be missed.

A handwritten signature in dark ink, consisting of a large, sweeping curve that starts under the 'V' and ends under the 'e' of 'Cable'.

Vince Cable,
Secretary of State for Business, Innovation and Skills

Executive Summary

The objective of this study is to build on recent developments in economic theory and empirics to provide a refreshed view of the benefits attached to the completion of the Single Market, i.e. the elimination of the remaining obstacles to trade across Europe. In addition, the study assesses the consequences of hypothetical scenarios in which the United Kingdom would decide to opt out from further trade liberalisation in Europe. The economics of the EU have always been at the heart of the debate in the UK about the merits of its EU membership, and for this reason it is useful to re-examine and quantify the economic consequences of the various options that might be contemplated by UK policy makers. This debate has not been restricted to the UK, and therefore this analysis may be of interest to other countries.

Using a state-of-the-art economic model, a new database on obstacles to trade in services, new data regarding the structure of the European economy and the level of non-tariffs obstacle to trade in goods, the study assesses that the extreme and stylised scenario of a complete elimination of all remaining barriers to trade inside the European Union would trigger very strong positive benefits for all its members. These benefits are far larger than most other estimates. The reasons for this difference are explored below. After 10 years of implementation of a programme based on removal of all barriers, hence taking into account some of the dynamic gains of economic integration, the European Union's national income could be 14% higher than under a no-change scenario. It would translate in a volume of production 24% higher at constant prices. The difference between the two percentages corresponds to the fall in prices that would benefit EU consumers' purchase power and EU businesses' external competitiveness.

For its part, UK national income gains under this model would be around 7% of GDP. This is less in relative terms than the rest of the EU due to the combination of three different factors. Firstly, large countries retain fewer gains from trade agreements as they generally have relatively lower trade to GDP ratios than small countries, and the UK is no exception in this. Secondly, the UK has comparatively lower obstacles to trade in services than most other EU countries. It translates mechanically into fewer gains stemming from its own liberalisation, traditionally the main source of gains in trade agreements. Thirdly, the share of UK trade with the rest of the EU is also comparatively lower, around 50%, than for other Member States. In comparison, smaller Member States like the group of Benelux countries are more dependent on the EU market and would benefit disproportionately from further European trade integration.

Using another scenario, we show that these potential gains for the UK would not materialise if the rest of Europe undertook these reforms without the UK. The hypothetical scenario where the UK ties up with NAFTA countries would in that case only compensate very marginally, as non-tariff obstacles to trade are assumed to stay untouched in that scenario.

As measured in this study, European Union's benefits linked to the full completion of the Single Market are significantly greater than in previous studies. These gains are mostly due to modelling a very ambitious scenario which assumes the complete elimination of obstacles to trade across the Single Market, and to a most accurate measurement of obstacles to trade in goods and in services, particularly non-tariff barriers, based on indirect evidence (i.e. evidence on the actual impact of measures on trade flows).

As in similar complex experiments, interpreting these results requires some words of caution. Adjusting some of the assumptions set out in the paper can influence the results downward or upward, but they cannot be precisely quantified due to the limitations of currently available economic tools. For instance, obstacles to trade in goods and services are assumed in this work to represent deadweight losses for businesses (for example, costs of compliance with overly discriminatory regulations). Therefore, the elimination of their discriminatory impacts assumed here translates into important social benefits for the economy, accounting for around half of total gains measured in this study. Arguably, this share of the gains may be reduced under a different assumption. On the other hand, positive elements non-quantified here, like the liberalisation of foreign direct investments and the effects of trade integration on innovation and productivity, would rather increase the potential benefits in comparison to the present estimates. Last but not least, the magnitude of gains can be challenged using more conservative assumptions, but the relative gains of the various scenarios would not change. Hence, the bulk of the conclusions hold in a more conservative setting.

It is important to stress that the complete elimination of obstacles to trade across the Single Market is a stylised and probably unrealistic assumption. However, the magnitude of the gains is such that the main conclusion of the study stands robustly: any significant improvement in the Single Market, even much less radical than the one considered in this paper, has the potential to change substantially EU growth path for the years to come.

Introduction

The European Union has always relied first and foremost on a gradual economic integration process. Assessing the economic benefits of the European Union (EU) is therefore central to measuring the overall benefits it provides to its citizens and businesses.

At a time where EU countries are pulling together diplomatic resources in an attempt to better join up foreign policies, and after more than 50 years of peace between the members of the European Union, economic benefits can certainly not be seen as the only justification for a country to be part of the EU, but they remain a fundamental element of this choice.

An accurate assessment of the economics benefits of the Single Market therefore is central for a robust discussion of the merits of the EU membership. The purpose of this study is to contribute to this by focusing on the consequences for the European Union and the United Kingdom of completing the European Single Market. It also assesses the economic consequences for the UK not to take part in further steps of that process.

Section 1 presents the context and the objectives of the study. Section 2 reviews the impact of the Single Market as measured by previous studies. The third section presents the original methodology and databases used in the present paper, in particular a new database of obstacles to trade in services. The fourth section details the different scenario simulated using the general equilibrium model MIRAGE. The last section comments in detail on the results of the different scenarios for the EU and the UK economies.

1. Context and objectives

Since the Treaty of Rome in 1957, economic integration represents one of the core objectives of the European Economic Community which later became the European Union (EU). A lack of progress led the Community to consider a more thorough approach to the objective of removing trade barriers in the mid-1980s. This results in the Single Market Programme set out in the celebrated Commission White Paper of June 1985 and incorporated in the European Treaty by the 1986 Single European Act. Completed on 1st January 1992, the Single Market Programme aimed at removing the remaining obstacles to trade inside the EU to foster economic growth through the creation of a large integrated market for goods and services. Following two recent enlargements, the Single Market now includes 27 Member States and also applies to the three European Economic Area (EEA) countries - Norway, Iceland, and Liechtenstein - and to some extent, to Switzerland and Turkey. Nowadays, the EU is the world's most important trading area with a GDP of €11 800bn and a population of 500 million people.

In the late 1990s policy-makers in the EU became concerned that despite significant economic growth, Europe was experiencing high structural unemployment, had an underdeveloped services sector, and was witnessing a growing productivity gap with the US. In response, EU leaders meeting in Lisbon in 2000 agreed a broad 10-year strategic framework designed to make the EU “the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion”. The resulting reforms have advanced the Single Market in particular by starting to opening up network industries like telecommunications and energy sectors, as well as other services sectors.

Despite all the progress to date, the Single Market remains an unfinished project. This is the main reason why in October 2009, the European Commission President, Jose Manuel Barroso, asked Professor Mario Monti to prepare a report on the re-launch of the Single Market. Published on the 9th of May 2010, this report made a number of far-reaching recommendations to the incoming European Commission. The report argued strongly that a response is required to the perception by the business community that *de facto* trade integration lags far behind *de jure* integration. The actual evidence of deviation from expected trade patterns within the Single Market revealed by proper statistical analysis as set out in this paper gives an indication of the importance of the remaining non-tariff barriers to trade.

Agreed at the 2010 June European Council by the 27 Heads of State, the EU2020 Strategy, the successor to the EU's 2000-2010 Lisbon Strategy for Growth and Jobs, sets out a structural reform programme to boost EU's growth potential in a context of mounting economic and social challenges. In that respect, and given very constrained public finances in all Member States, micro-economic reforms and more specifically product market reforms to foster the Single Market will have a central role to play.

2. Review of the literature

Various studies have, ex-ante or ex-post, assessed the gains attached to the 1992 Single Market Programme.

The economic analysis underpinning the Commission White Paper of 1985 but published later in 1988, the Cecchini Report (Cecchini *et al.* 1988) estimated that, by making the allocation of resources more efficient, the Single Market programme would produce a 2.5-6.5% increase in the level of the European Community output. For his part, based on the Growth Theory, Baldwin (1989) estimated that the dynamic effects coming from the improved resource allocation leading to additional investments could raise annual European Community growth rate by 0.2 percentage points over a period of 15 years. These gains would come in addition of the efficiency gains as measured in the Cecchini report.

Ex post, a series of studies have aimed at assessing the degree of achievement of the Single Market and the gains attached to it. The work by Harrison *et al.* (1994) constitutes probably the most advanced estimate following the implementation date of the 1992 Single Market programme. Based on a general equilibrium model with imperfect competition, the authors estimated a gain for the EU of 2.6% of GDP.

However, all studies of that period worked without any reliable information regarding the real level of obstacles to trade across Europe and by sector. Therefore, like most studies of that period, Harrison *et al.* (1994) assumed a unique ad-valorem obstacle to trade of 2.5% across the board (equal in all sectors). Such figure would hardly match the perception of much higher intra-EU trade obstacles by the business community. Economists have recently gathered evidence that this is indeed a gross underestimation of the real level of obstacles to trade, even with the goods sector. For instance, intra-EU trade for manufacturing good is around 70% below intra-US states as a percentage of GDP¹ despite the fact that the EU population is much more concentrated (roughly twice the population on a territory half the size the US).

When taking into account language and geographic factors, trade in goods across European borders is found to be 4.2 lower than what would prevail if the EU were as economically integrated as the US.² It means that Europeans consumers and businesses purchase 4.2 times more from domestic producers than from equidistant foreign producers. The fact that trade across countries is lower than trade within countries, the so-called “border effect”, stems from various and complex factors like non-tariff measures, business, social and distribution networks, consumption habits and differences in regulation. There is therefore a fundamental difference between tariff and border effect: while a tariff can be entirely phased out, this is not the case for the border effect. Still, between the late 1970s and the late 1990s, this “border effect” has decreased by a third in Europe.³ It illustrates that progress has been

¹ Ilzkovitz *et al.*, 2007.

² Head & Mayer, 2002.

³ Fontagné *et al.*, 2005.

substantial in Europe over time, but also that a great margin of progress remains available.

Kee *et al.* (2009) measure the variation of the intensity of international trade across a panel of countries. In this manner, the authors assess the size of non-tariff obstacles to trade that can be more easily reduced than the rest of the border effects. When correcting their work to take into account the difference in intensity of the border effects inside and outside the Single Market, non-tariff obstacles to trade in goods amount in average to 45.0% of the value of production in Europe for those sectors for which there is data, and to 13.4% in average when assuming that sectors with missing values have no obstacles to trade. The value of 2.5% covering tariffs and non-tariff barriers to trade in goods used in the economic simulations in the 90s is therefore well below the reality of the segmentation of the Single Market.

Apart from the loose measurement of the obstacles to trade across the Single Market, the main limitation of early 1990's studies is that they do not consider any liberalisation in the services sector. The lack of economic tools and the lack of data prevented any serious analysis in this area. It means that until very recently the economic potential attached to a sector representing the largest part of the economy remained absent from economic studies of the Single Market. It is only with the recent development of good quality services trade statistics and of estimates of trade obstacles in services that economic assessments have started to be available.

One prominent work in this area is the Copenhagen Economics study (2005), which assesses the effects of an important piece of EU law, the Services Directive. To that aim, it estimates a very specific scenario, very carefully crafted in order to stick to the real design of this new piece of EU legislation⁴. Another important feature is the reliance of the Copenhagen Economic study on "trade-restrictiveness indexes" to measure obstacle to trade in services. This methodology presents the advantage to allow disentangling the different types of obstacles to trade, and therefore to allow reproducing a very detailed policy scenario. This may be at the price of underestimating the absolute level of obstacle to trade as revealed by more accurate measures of the effective distortion of trade flows ("gravity estimates" methodology).⁵

Kox and Lejour (2005, 2006) use a "gravity estimates" methodology but focusing exclusively on one type of extra-costs for businesses: the market-entry costs linked to the necessity to comply with a different set of regulations each time a firm wants to expand to a different EU market. They estimate the extent to which the Services Directive would reduce this heterogeneity in domestic regulations. The reduction of the regulatory divergence across Europe promoted by the Services Directive is shown to boost trade in commercial services by 30 to 62 percent. For their part, intra-EU direct investments in services could increase by 18 to 36 percent, and up to 130

⁴ The Services Directive does not cover the financial services and a large part of the transport services. Note also that the Copenhagen study evaluates the likely impact of the draft legislation proposed by the European Commission, not the legislation as finally adopted by the European Parliament and Member States.

⁵ For a detailed discussion of the merits of the two methodologies, see Francois & Hoekman, 2009.

percent if the heterogeneity in regulations is completely eliminated. The macro-economic consequences are estimated by De Bruijn *et al.* (2006) by incorporating the trade impacts (not the FDI effects) into a general equilibrium model. The estimated effects in terms of national income are modest, in the range of 0.3 to 0.7 percent of EU national income for the Services Directive scenarios. Like the Copenhagen Economic study, Kox and Lejour focus on a specific range of service sectors and on a partial liberalisation exercise to replicate the effects of the Services Directive.

In a recent work, Straathof *et al.* (2008) assess the economic gains attached to the integration in Europe toward the objective of a single market. They cover goods, services and investment. They specifically look backward at the integration steps already achieved, instead of trying to anticipate the effects of recent policy initiatives like the Services Directive or of future ones. They specifically take into account the potential diversion of trade with countries outside the Single Market that closer ties across the EU may have triggered. The study points to income gains of 3% for the EU as whole, and up to 10% in the very long-term. It is worth noting though that as illustrated by Richard Baldwin's domino theory, closer economic integration in Europe may have triggered further integration both in its neighbourhood and at a global level.⁶ It is therefore hard to define the right counterfactual to measure the net trade creation and diversion effects of the Single Market. Such counterfactual is crucial in measuring correctly the gains attached to the Single Market. Arguably, its effects cannot simply be measured by comparing trade of EU members and non-members in a context which is itself directly influenced by the European integration process. Such an assumption may very likely lead to an underestimation of the Single Market effects on trade and national income.

The approach developed in the present paper and exposed in the next section departs from previous studies in several respects. It intends to measure the economic consequences of a comprehensive reduction of the remaining obstacles to trade, covering the full extent of the European economy and the full range of obstacles to cross-border trade in services, as well as in goods. Such total removal is indeed a theoretical benchmark but it helps gauging the benefits of moving towards such a target.

⁶ See for instance Baldwin, 2006.

3. Methodology and databases

Quantifying a process of trade integration like the Single Market is an extremely difficult exercise as it covers multiple changes in policies in various fields, with wide and differentiated consequences on trade in almost all the countries and the sectors of the European economy. Consumers, workers and firms react and adapt to this new environment triggering complex linkages and large consequences on the structure of the EU economy.

For more than two centuries, many economists have dedicated their work to better describing and better understanding the underlying mechanisms behind the economic changes prompted by trade integration. Even if many aspects remain largely debated, our understanding of such mechanisms is now quite advanced. However, the quantification at the global and detailed levels, and for a wide variety of countries and sectors, of the consequences of such an agreement is still a very difficult exercise.

Computable general equilibrium (CGE) models are the most commonly used quantitative analytical techniques in this field. In essence, CGE trade models are computer-based simulations, which identify the sources of income gains or losses from further opening up to trade and show how these gains are distributed among countries or regions and what is the impact on the different categories of economic agents, and on the different sectors of the economy. Such models contain a network of linkages between industries, countries and markets. They can thus explicitly take into account that a change of one economic variable in a given country and sector affects a wide range of other economic variables in other sectors and countries.

The present work is based on the MIRAGE dynamic general equilibrium model developed by the CEPII (Decreux & Valin, 2007). This model builds on the GTAP database (Narayanan & Wamsley, 2008) for the input-output flows, international trade flows, capital stocks, labour force, saving and elasticities. It draws also upon the MacMaps database (Bouët *et al.*, 2008), which provides a very detailed measure of traditional trade barriers. The underlying dynamics of the world economy is built inter alia on UN and ILO information on the world demography.

After decades of economic integration, traditional trade barriers like tariffs and quotas have been entirely removed between the countries of the European Union. Therefore, since 1992, the Single Market programme has focused on reducing behind-the-border obstacles to trade, and in particular in the field of services trade. In this field, the study draws upon a newly developed database on obstacles to trade in services by Fontagné *et al.* (2009). With regards the crucially important non-tariff obstacles to trade in goods, the study relies on the best available database developed by Kee *et al.* (2008 and 2009). However, the study complements this work by differentiating between intra-EU and extra-EU regulatory discrimination against foreign competition. To that aim the study builds on the estimations of border effects by De Sousa *et al.* (2010). Border effects provide indirect evidence on trade obstacles based for each economy on the benchmark of economic integration provided by the domestic market, rather than the international market. For each of these areas, the details on the different sources of data and specifications of the model are given in annex.

4. Scenarios

Five scenarios are considered in the study, the details of which are explained below.

Scenario 1- Full liberalisation of the Single Market

The main scenario considered in this study is one of complete withdrawal of the remaining obstacles to trade across the EU. As discussed before, these obstacles take almost exclusively the form of non-tariff barriers on exchange of goods and discriminations against foreign competition in the field of trade in services. Scenario 1 is therefore a scenario of complete phasing-out of all remaining trade barriers within the European Union. It does not include any assumption regarding monetary or fiscal policies.

Scenario 2 – The rest of the EU removes all trade barriers, but the UK maintains the status quo with other EU countries

Norway and Switzerland are often referred as possible models for the UK in its relation with the EU.

Norway is a member of both the European Free Trade Area (EFTA) and the European Economic Area (EEA). As such, it is not subject to EU tariffs and quotas and can benefit from the free movement of goods, services, people and capital. Nonetheless, Norwegian exports to the EU are still subject to customs requirements and a certificate of origin is needed, adding to the cost of exporting. As a member of the EEA, Norway is still subject to “horizontal” EU policies, such as consumer or environmental legislation, but it is not represented in the Council of Ministers, in the European Parliament or in the European Commission, and therefore has no input into the making of EU legislation. Norway still has to contribute to the EU budget – for example as part of the EEA-Enlargement Agreement.

Switzerland is a member of EFTA, but not of the EEA. Like Norway, it is subject to customs checks, although not to EU tariffs and quotas in the manufacturing sector. Switzerland also contributes to the EU budget under the Enlargement Agreement. Trade with the Single Market is governed by bilateral agreements. However agreements – for example in the field of aviation – often demand in effect that Switzerland applies EU laws. When that is the case, it has in effect little say in negotiating them. In practice, Switzerland only has limited access to the Single Market in specific areas like services and agro-food products when it decides not to apply EU regulations and therefore not to be part of the Single Market.

Scenario 2 builds on scenario 1 but considers that the UK would opt for a similar type of economic relations with the rest of the EU as Norway or Switzerland. It would retain the possibility not to implement additional trade integration steps that EU countries may decide in certain areas. Scenario 2 therefore assumes that the UK may chose not to incorporate in its legislation the changes of domestic regulation that will be required if the rest of the EU decides to move toward the full completion of the Single Market. In this scenario, the UK is assumed not to renegotiate existing

agreements with the EU, the so-called “EU acquis”, merely not to take part in hypothetical future improvements to the Single Market. In other words, this scenario assesses the consequences of the EU 26 Member States suppressing the remaining obstacles to trade among them, while the UK retains and offers the same level of market access that is currently the case with the rest of the EU.

Scenario 3 – Introducing bilateral tariffs

In this scenario the model assumes that the UK would face the same level of tariff protection on goods with the rest of the EU that it is currently the case between the EU and the rest of the OECD (and conversely for the exports of the EU to the UK market). It would mean that the UK is outside the common European external tariff for the UK, therefore outside the Single Market. However, in that scenario it is assumed that the UK would retain its current level of access to the Single Market with regards non-tariff barriers and obstacles to trade in services. It continues to assume that the 26 EU countries would remove all their internal trade barriers.

Scenario 4 – Bilateral tariffs between the UK and the rest of the EU and UK in free trade agreement with NAFTA

Scenario 4 builds on scenario 2 but complements it by a free trade agreement between the UK and the three NAFTA countries, leading to the elimination of all tariffs between these countries. As tariffs between NAFTA and the rest of the EU would stay untouched, it would also imply restoring rules of origin between the UK and the EU. The latter would have an impact on the cost of trading across border between the UK and the rest of the EU but this is not factored in this work. The model also assumes that tariffs between the UK and the rest of the EU would not be renegotiated and would therefore stay equal to zero. Trade costs of non-tariff barriers between the UK and the rest of the EU would also stay at their current level, while the rest of the EU is assumed to get rid of these within the area. Given that NAFTA countries have little mechanism in place for a convergence in the regulatory field, this scenario also assumes that non-tariff obstacles to trade would stay untouched between the UK and NAFTA countries. It continues to assume that the baseline scenario that 26 EU countries would remove all their internal trade barriers.

Definition of scenarios

1	Full liberalisation of the Single Market	withdrawal of NTB and barriers in services within the EU
2	The rest of the EU removes all trade barriers, but the UK maintains status quo with other EU countries	withdrawal of NTB and barriers in services within the EU, excepting for the UK
3	Bilateral tariffs between the UK and the EU26	scenario 2 + implementation of tariffs between UK and the rest of the EU
4	Status quo between UK and EU complemented by UK-NAFTA FTA	scenario 2 + free trade agreement between UK and NAFTA

5. Economic consequences

1. Full liberalisation of the Single Market (scenario 1)

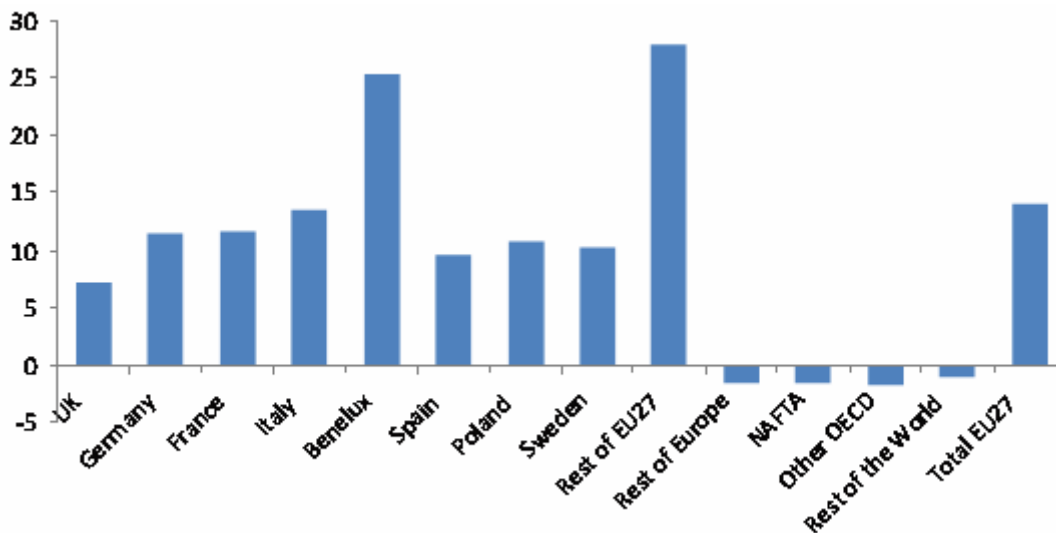
The withdrawal of all the remaining barriers to trade of goods and services inside the European Union – modelled here as deadweight losses – would have a strong positive impact on its members. After 10 years of implementation, EU national income would be 14.1% larger (Figure 1 and table 3 in annex). For its part, production would be 24.4% larger at constant price. The difference is explained by the fall in prices which would benefit consumers. Again, such benchmark is purely theoretical but gives an order of magnitude of the gains associated with a partial removal of these obstacles. Also, the assumption is made that this withdrawal is at no cost, which underestimates adjustment costs.

It would translate in 7.1% additional GDP in the case of the UK. Most of the smaller Member States would benefit disproportionately given their trade openness.

Figure 1. National income evolutions

Scenario 1, 2020

(% deviation from the baseline)



After the implementation period, UK production in volume would be bigger by 13.4% (Figure 2 and table 4). It would be 22.5% for Germany. UK exports would increase by 47.0% against 38.1% for its imports. Wages of skilled employees would increase in a range of 10.8% in the case of the UK to 37.4% in the “rest of EU27” region which comprises mainly central and East European countries (CEECs). Wages of unskilled labour would also increase, but to a lesser extent (7.2% in the UK).

The lower economic benefits for the UK compared to most of other European countries are easily explained by a combination of factors. Firstly, the UK has a smaller proportion of its trade with the rest of the EU. This proportion is close to 50% against much higher proportion for countries like Belgium, France or Italy. Secondly, the ratio of trade over GDP is smaller in relatively large economies like the UK. It means that the liberalization of trade will have relatively more economic impact in the latter. Thirdly, obstacles to trade in services are lower in the UK than in other EU countries, with the notable exception of the construction sector (see table 24 in annex). Trade liberalisation creates benefits first and foremost for the countries which open up to trade.

Figure 2. Changes in production in volume

Scenario 1, 2020

(% deviation from the baseline)

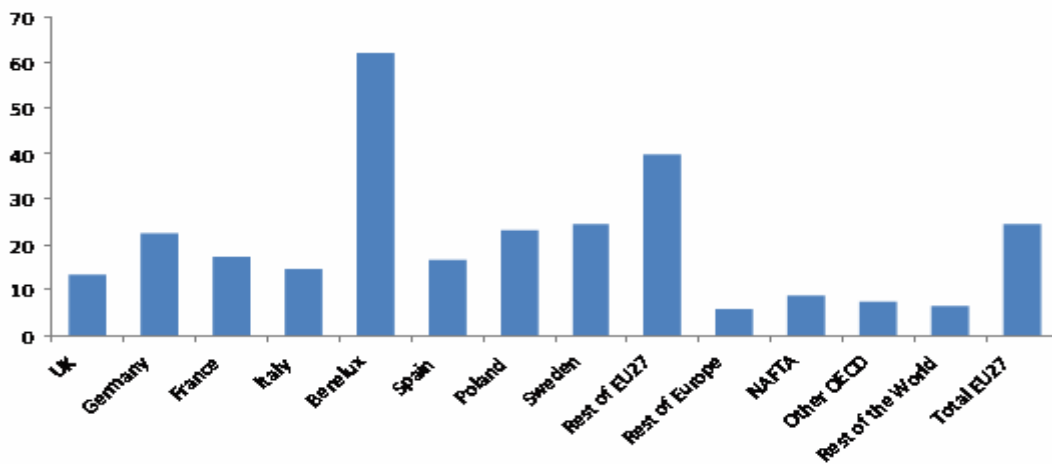


Figure 3. Changes in total exports

Scenario 1, 2020

(% deviation from the baseline)

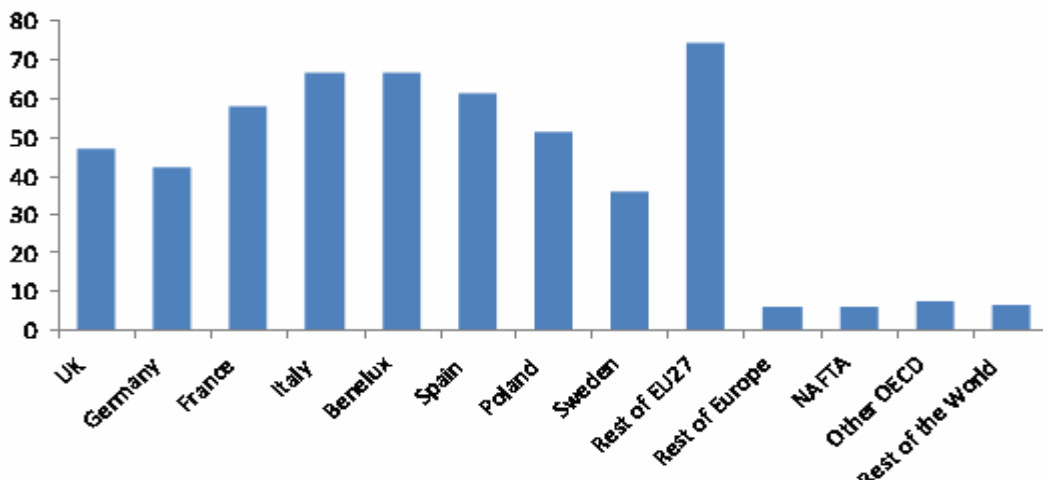
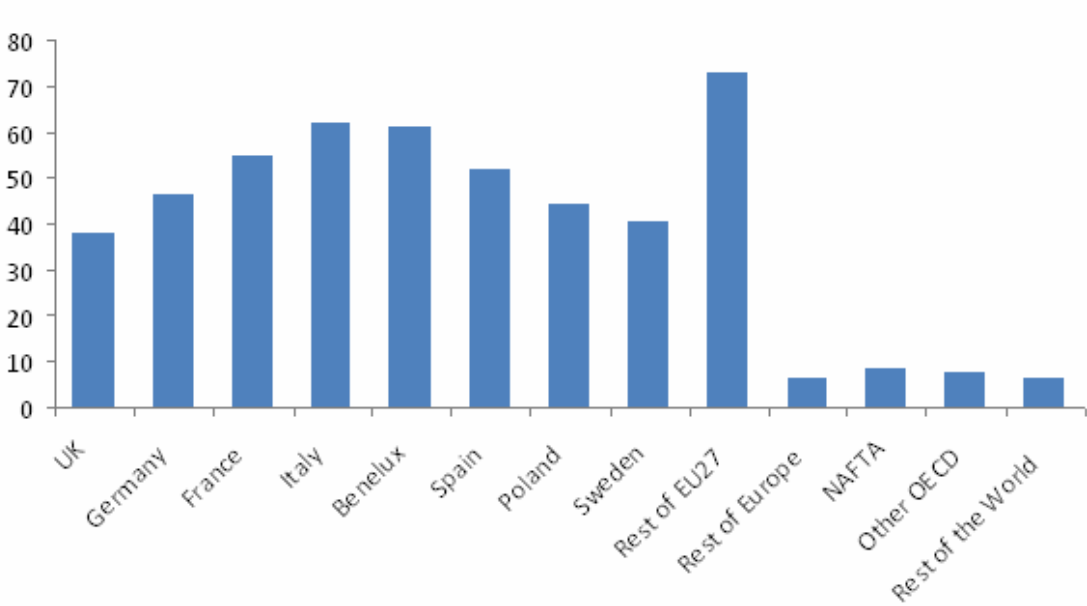


Figure 4. Changes in total imports

Scenario 1, 2020

(% deviation from the baseline)



Trade would be mostly impacted within EU borders. For instance, UK exports to the rest of the EU would almost double (Fig. 5). In turn, UK imports from the rest of the EU would increase by just under 80%. The main changes would take place with Italy, Spain and CECCs on the export side and with the same countries plus France on the import side (tables 9 to 12 in annex).

This increase of trade between UK and the rest of the EU27 would not be at the expense of trade with NAFTA and the rest of the world. Indeed, positive and negative evolutions with trade partners outside the EU stay always below the 10% grade.

Figure 5. Changes in UK exports by destination

Scenario 1, 2020

(% deviation from the baseline)

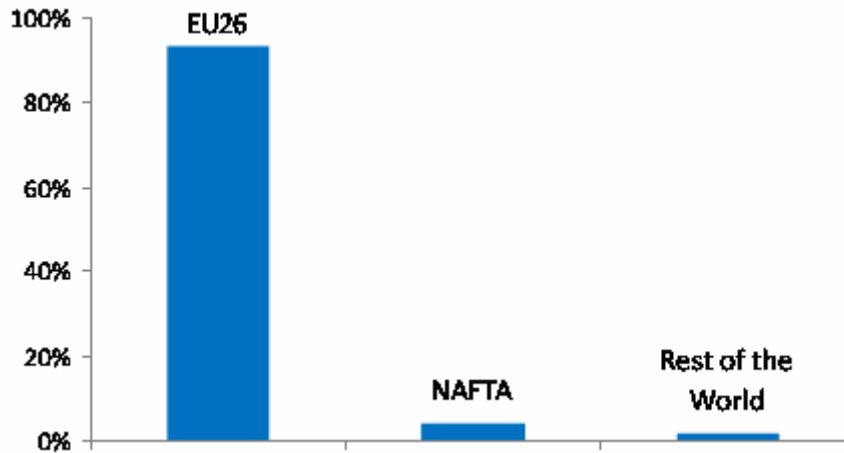
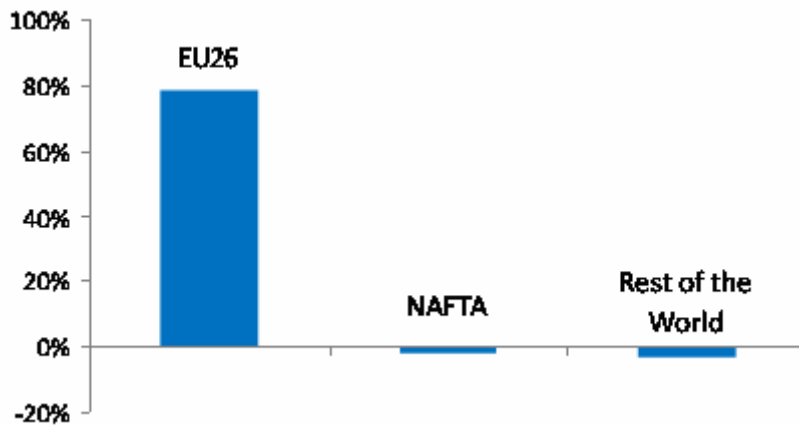


Figure 6. Changes in UK imports by origin

Scenario 1, 2020

(% deviation from the baseline)



To note that the cut of obstacles to trade in services alone would generate around 10% of trade impact and income gains of the full liberalization. This is due to the much smaller share that trade in services represents in total trade.

2. What would be the consequences of the UK being excluded from a better integrated single market? (Comparison of scenarios 1, 2 and 3)

Potential losses for the UK economy

The United Kingdom would suffer an economic loss if the rest of the EU liberalised its internal trade barriers but the UK did not. UK national income would be smaller by 7.4 percentage points under scenario 2 and 3 in comparison to scenario 1 (Figure 7). Impact on production in volume would be of the same order of magnitude (Figure 8).

Total UK exports would increase by 3.2% in scenario 2 and decrease by 1.2% in scenario 3 in comparison to the status quo, against a rise by 47% in scenario 1 (Figure 9). Low-skilled wages would stay flat in scenarios 2 and 3 against an increase of 7.2% in the case of further European trade integration.

Given the actual low level of EU external tariffs, the implementation of tariffs between UK and other EU members to the level of actual tariffs between the EU and the rest of the OECD (scenario 3) would have overall very similar consequences than scenario 2.

Impact on the rest of the EU

The non-participation of the UK in further trade liberalisation in Europe would significantly reduce the gains for the other Member States (Figures 7 to 10). In comparison to scenario 1, production would be reduced by 3.4 and 3.6 percentage points in the rest of the EU for scenario 2 and 3 respectively. For exports, it would be 5.6 and 6.2 percentage points respectively. France, CEECs and Benelux would be the most affected in terms of production (reduction between 3.5 p.p. and 7.1 p.p.).

Figure 7. National income evolutions

2020

(% deviation from the baseline)

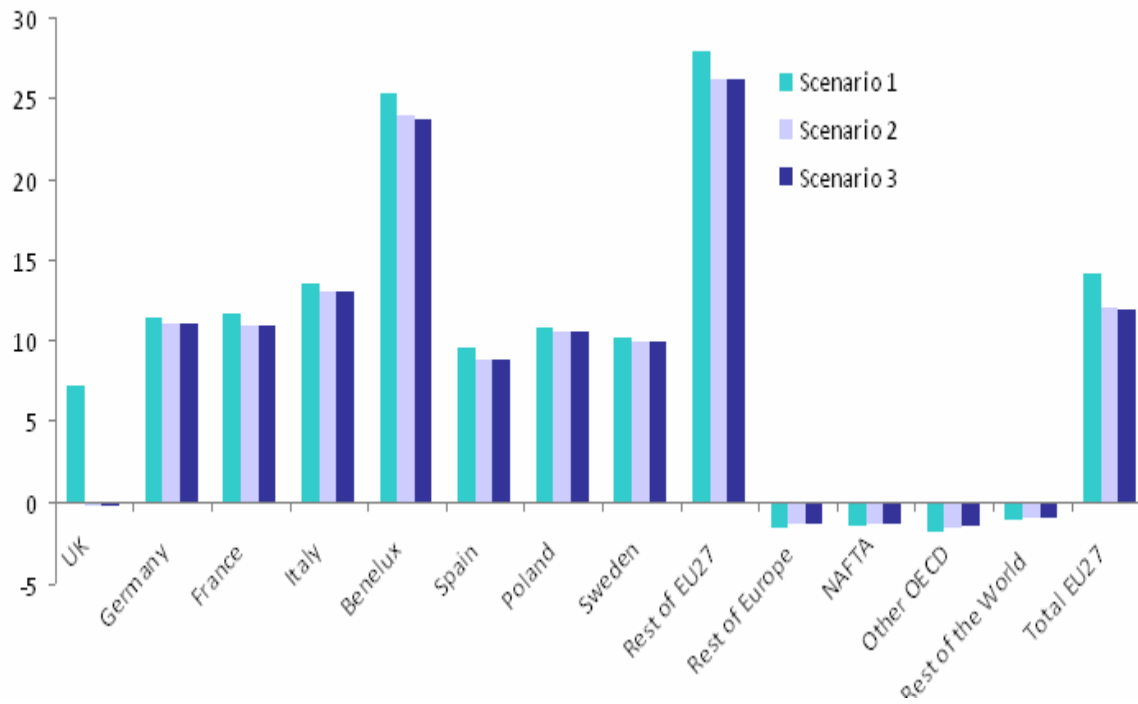


Figure 8. Variation of production in volume

2020

(% deviation from the baseline)

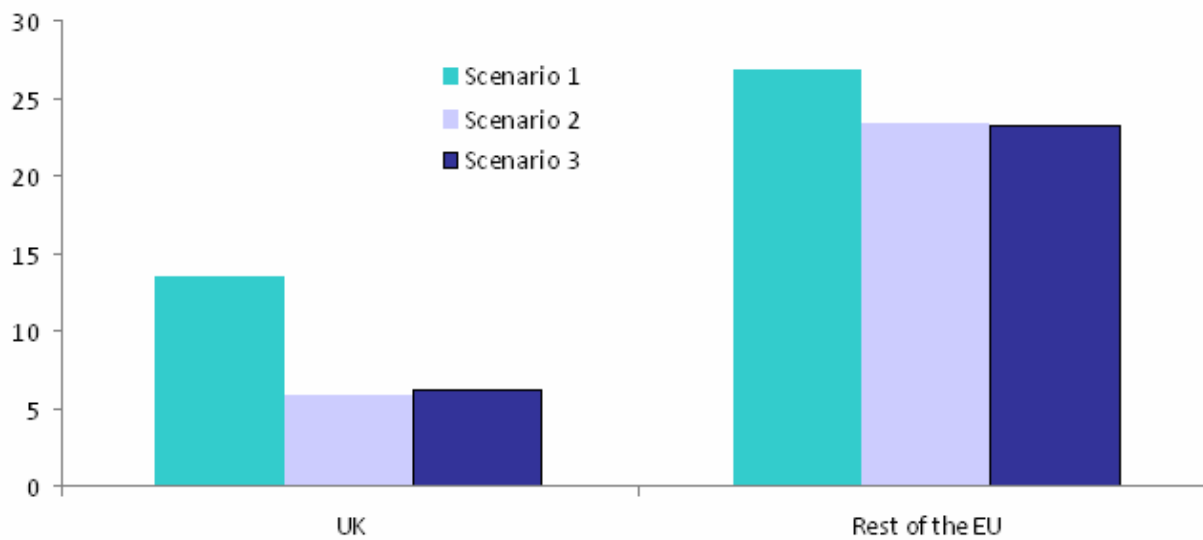


Figure 9. Variation of total exports

2020

(% deviation from the baseline)

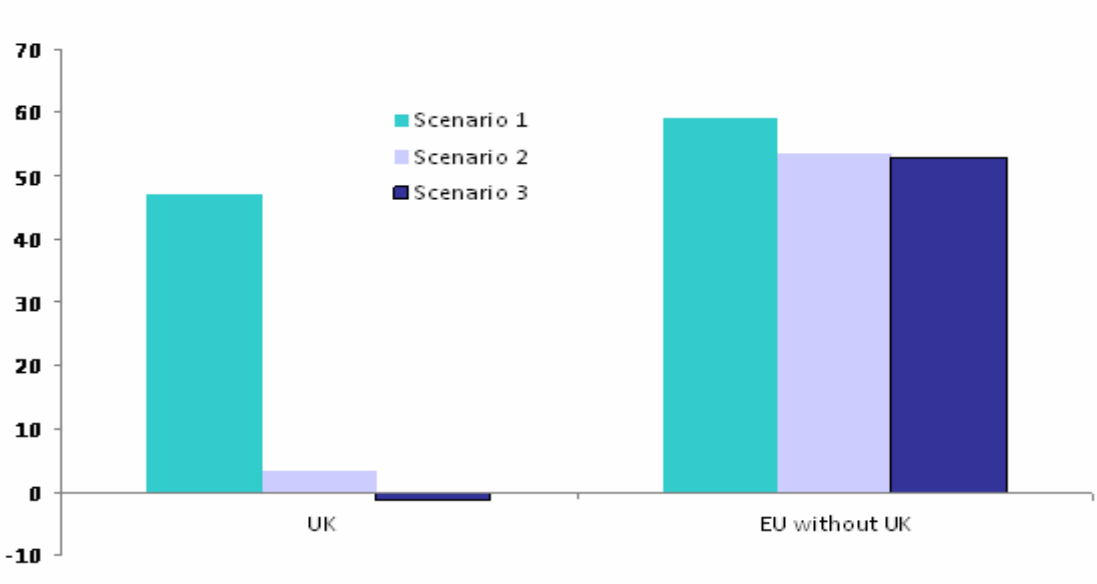
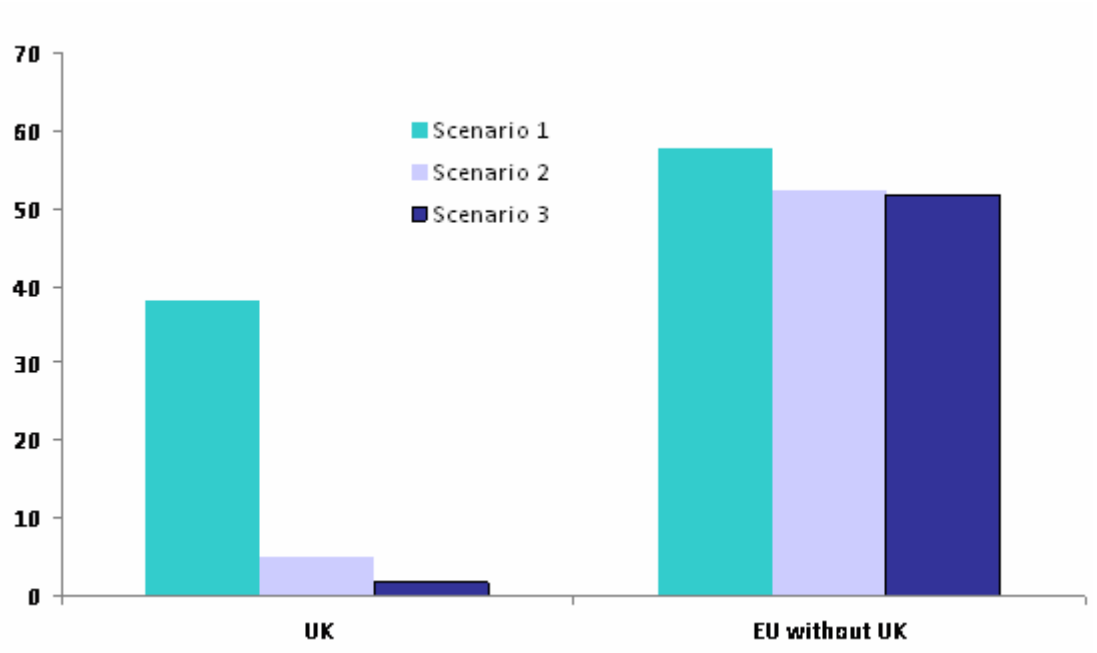


Figure 10. Variation of total imports

2020

(% deviation from the baseline)



In comparison to the status quo, exports from the UK to the rest of the EU27 would be reduced respectively by 2.9 and 10.9 percentage points in scenario 2 and 3 respectively (figure 11, and tables 9 in annex). Sweden, Germany and the Benelux would be the most affected by a reduction of their exports to the UK by 15.3%, 15.0% and 12.4% respectively in scenario 3 (table 10).

Figure 11. Variation of UK exports by destination

2020

(% deviation from the baseline)

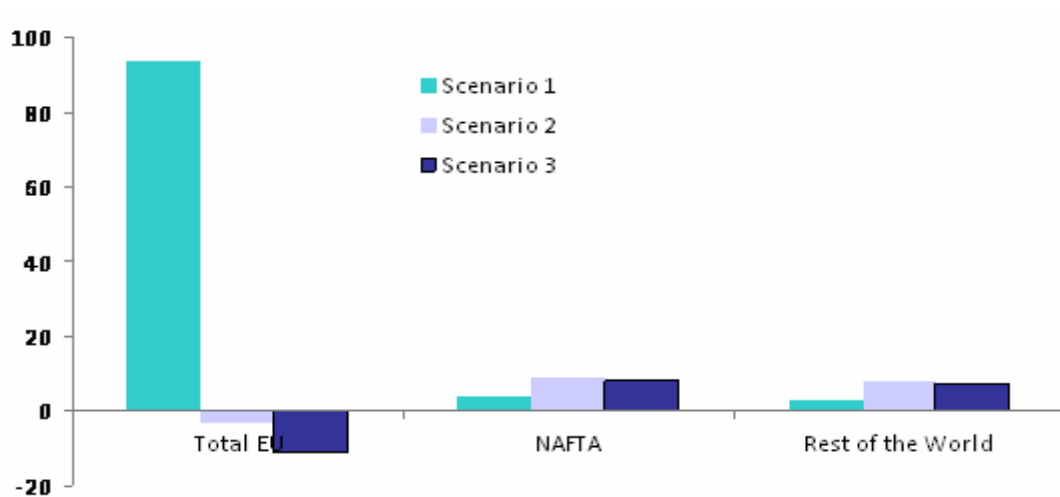
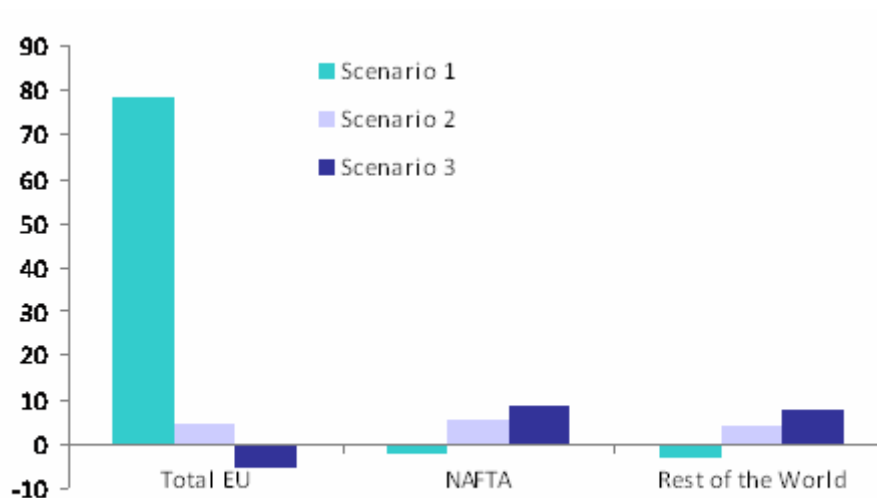


Figure 12. Variation of UK imports by origin

2020

(% deviation from the baseline)



3. Is trade liberalisation with NAFTA an economically sensible alternative? (Comparison of scenarios 1 and 4)

Closer trade integration with NAFTA would not completely compensate for looser UK ties with the EU. After the implementation period, UK national income would be 7.4% smaller if the UK were to tie up the links with NAFTA instead of taking part in further trade liberalisation steps with the EU (difference between the gains attached to scenario 1 and the losses generated by scenario 4). Under a NAFTA scenario (scenario 4), UK production in volume would increase by 5.9 percentage points, but that is 7.3 points below a scenario of further trade liberalisation with the EU (Figure. 14).

Changes in UK's national income and GDP in volume (difference with the baseline scenario)

in %	Scenario 1	Scenario 2	Scenario 3	Scenario 4
National income	7.1	-0.3	-0.2	-0.2
GDP in volume	13.4	5.9	6.3	6.0

Figure 13. Changes in national income

2020

(% deviation from the baseline)

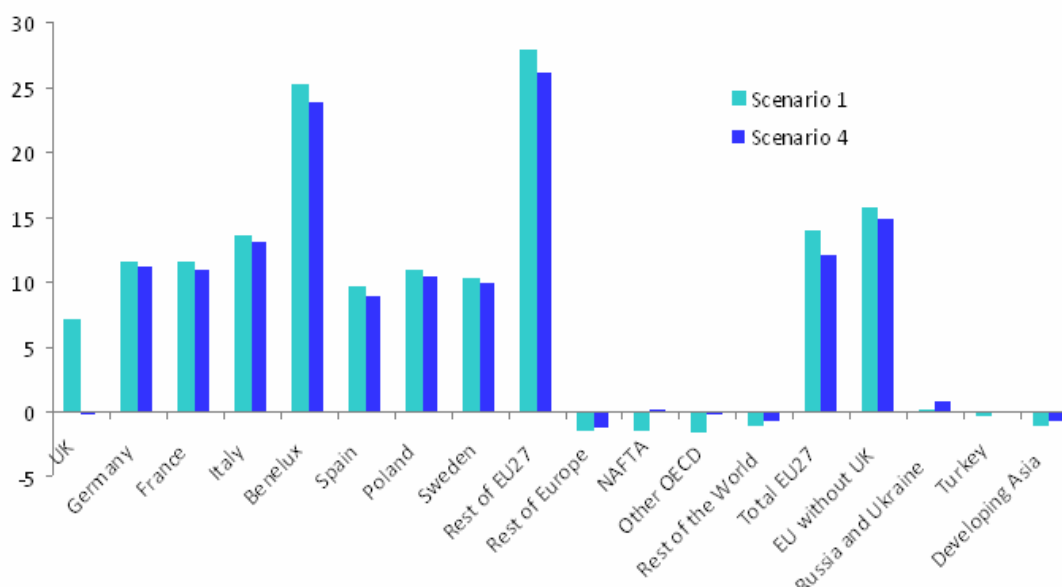


Figure 14. Change in production in volume

2020

(% deviation from the baseline)

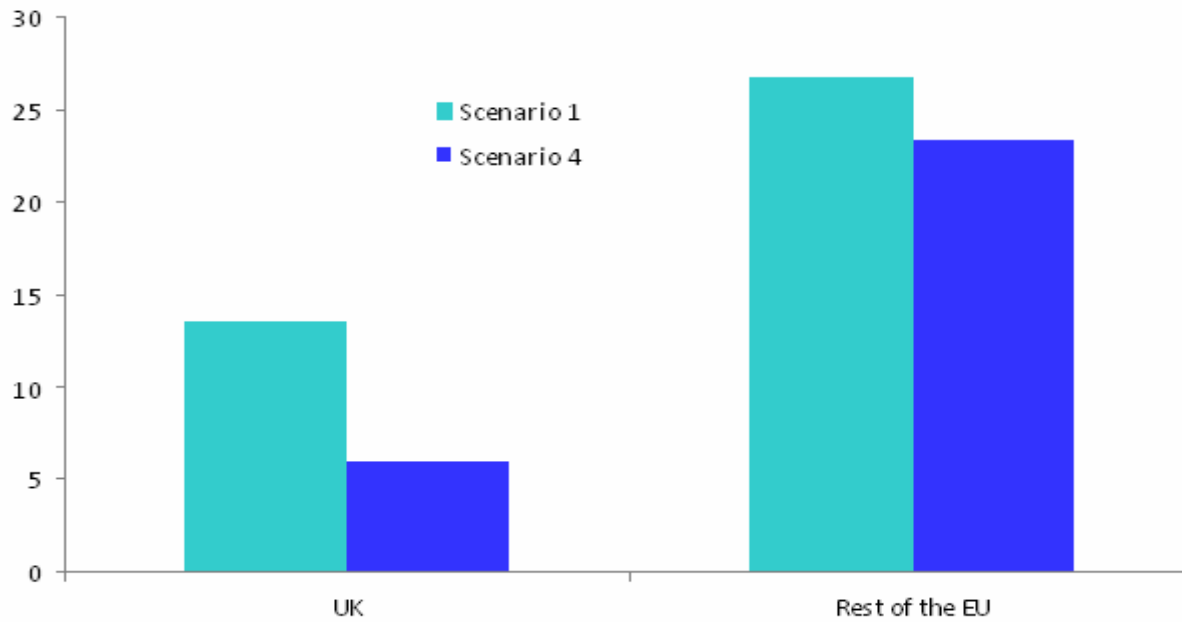


Figure 15. Changes in export

2020

(% deviation from the baseline)

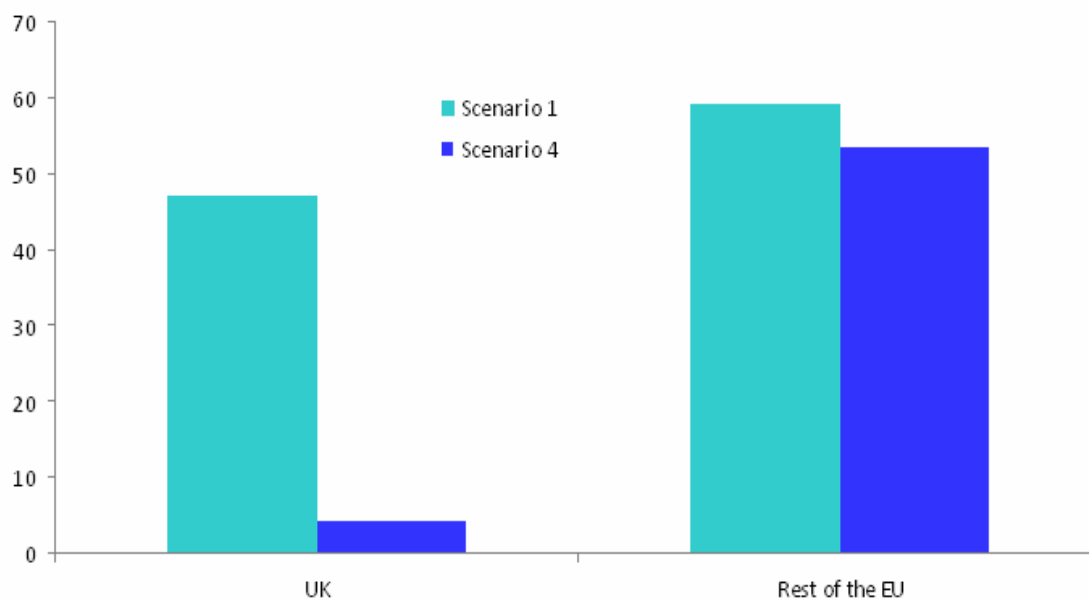
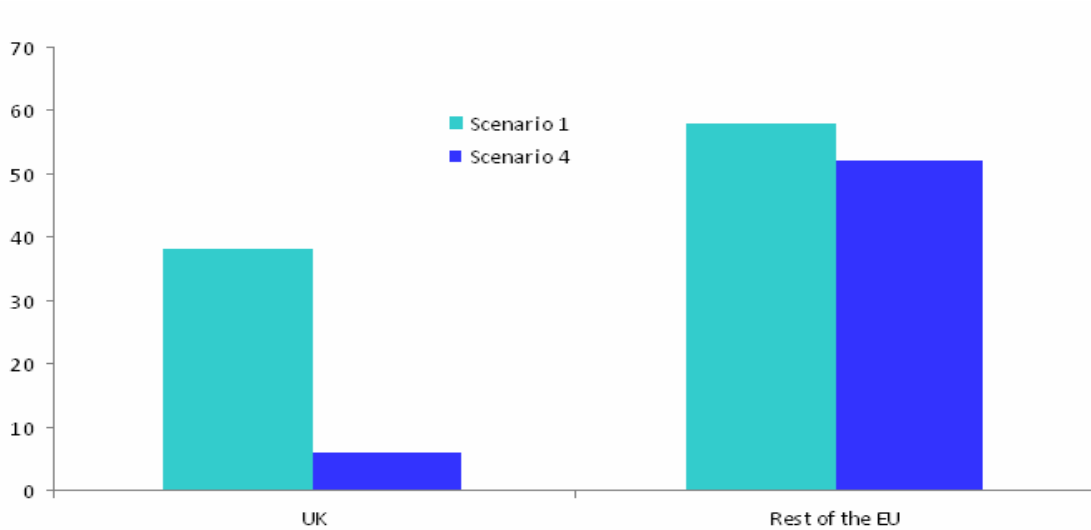


Figure 16. Changes in imports

2020

(% deviation from the baseline)



UK’s trade liberalisation with NAFTA would increase exports and imports with this region by 14% (Figures 17 and 18). By contrast, exports with the rest of the EU would be reduced by 3.1% while imports would increase by 4.4% in comparison to the status quo (Figures 17 and 18).

Figure 17. Changes in UK exports by destination

2020

(% deviation from the baseline)

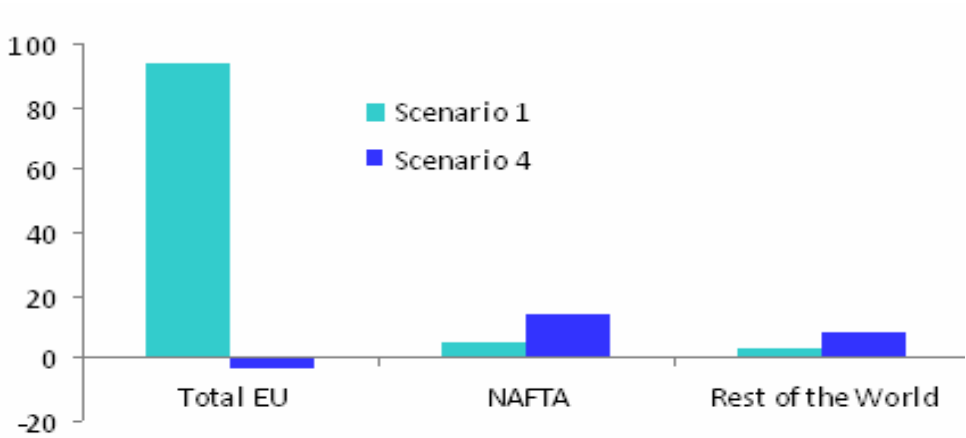
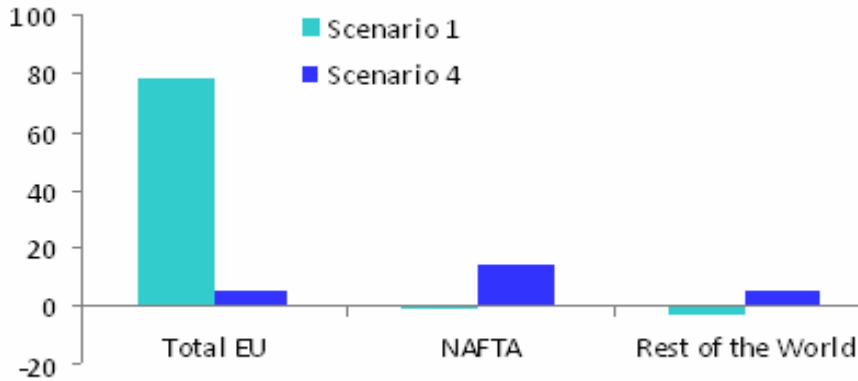


Figure 18. Changes in UK imports by origin

2020

(% deviation from the baseline)

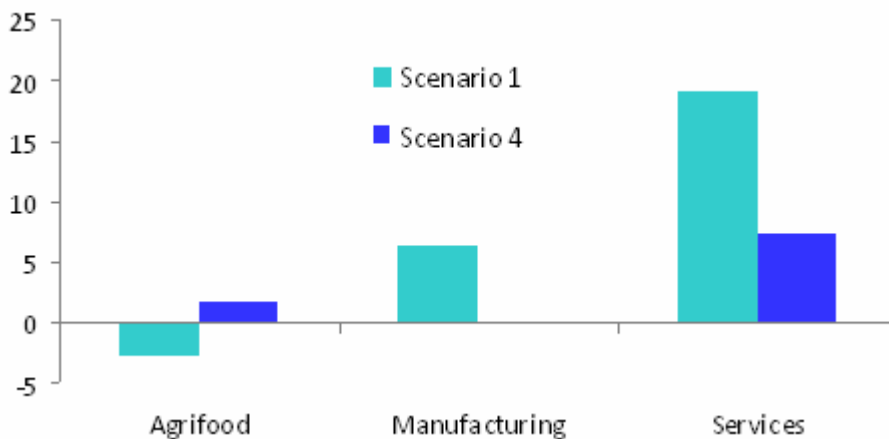


Agro-food sector value added would be only marginally affected (negatively in scenario 1 against positively in scenario 2). For its part, the manufacturing sector would experience a substantial change only in scenario 1, with an increase in value added of 6.1% (-0.1% in scenario 4). The increase in the value added of the services sector would be 19.1% in scenario 1 against 7.3% in scenario 4.

Figure 19. Changes in UK value added by sector

2020

(% deviation from the baseline)



Conclusion

As shown by this simulation, the economic gains for the European Union and each of its Member States of removing all Single Market barriers are potentially very substantial, and more so than previous studies have so far indicated. This is mainly due to a wider coverage of obstacles to trade across the Single Market, and a more ambitious liberalisation scenario in comparison to previous studies as explained in section 2. It is also due to new and more accurate data on obstacles to trade in goods and services across Europe. These new databases confirm that previous estimates were underestimating the extent of the discrimination against foreign competition both in manufacturing and services sector. They match better the perception of obstacles by the business community.

The study indicates that the United Kingdom would suffer an important economic loss if the rest of the EU liberalised its internal trade barriers but the UK did not. Moreover, closer trade liberalisation with NAFTA would not entirely compensate for looser UK ties with the EU.

What is the reality of these economic benefits?

In interpreting the reality of these gains, one has to keep in mind a number of caveats. Some limitations of the statistics and the tools used tend to overestimate the gains, some others do the reverse. Reaching the limits of economic analysis in this field, it is difficult to weigh precisely upward against downward factors.

On the downside, the most controversial point is linked to the way behind-the-border obstacles to trade in goods and services are factored in the model. They are assumed to represent deadweight losses for businesses (costs of compliance with stringent and overly cumbersome discriminatory regulations). Therefore, the elimination of their discriminatory bias assumed in this study translates into important social benefits for the economy. In the present study, they amount to half of the total gains that European economies would reap from the elimination of obstacles to trade. Arguably, discriminatory regulations also create some rents for domestic incumbents. It means that their elimination leads to a redistribution of benefits between producers and consumers, and between domestic and foreign companies. Overall, the economic literature considers that this aspect may somewhat reduce the economic benefits of the reduction of obstacles to trade. The experiences of the opening up of the telecom and air transport markets in Europe in the recent past show clearly however that the gains in terms of price reduction, increase in innovation, and increase in the size of the market far outweighed the losses in rents incurred by incumbent firms.

On the downside as well, the scenarios assessed in this study may appear overly ambitious as they assume the complete elimination of obstacle to trade inside the European Union over a period of 10 years. This is certainly an objective very difficult to achieve as illustrated by the difficult progress of trade integration over past decades, but the magnitude of the gains is such that the main conclusion of this work

remains solid: achieving only half or a quarter of that objective has the potential to change substantially EU growth path for the years to come.

On the upside, the scenarios assessed here consider only a reduction of obstacles to cross-border trade in services. A reduction of obstacles to trade regarding other modes of exchange of services, and especially with regards foreign direct investments, are generally considered as having an even more important economic potential than cross-border trade⁷. However, current economic modelling tools do not allow for an accurate measurement of the benefits attached to a reduction of discrimination against foreign investments.

Moreover, obstacles to trade measure only the discrimination that domestic regulations may exert against foreign competition. They largely miss out the reduction of the size of the market triggered by non-discriminatory but cost-increasing regulations, both for domestic and foreign companies. One should therefore keep in mind that the scenarios do not consider any reduction in the level of the costs that could be achieved by reducing the burden on domestic and foreign companies attached to an overly cumbersome regulatory environment, while maintaining the level of ambition of the regulations. These potentially very important costs reduce the size of the market, increase the price of goods and services, and therefore dampen the competitiveness of other sectors using them as inputs. It means that, if on top of the discrimination reduction, EU countries would achieve a reduction of the complexity of the rules and of the burden it creates for foreign and domestic producers (without reducing the social benefits attached to the regulation), the boost to EU growth would be even greater than the one estimated in this study.

Finally, like other general equilibrium models, the model used in the study considers only very partially the productivity enhancing impact of trade reforms, despite clear evidence from the recent empirical literature that these gains are substantial⁸. In particular, such models omit the benefits of open trade regimes for productivity that operate either through the selection of more efficient firms or through organisational innovations. Another important qualification of these tools is that they assume that the set of goods and services produced is constant and their quality stays the same. This ignores the potential benefits from increasing variety and quality of the goods exported due to additional trade. A consequence of these restrictive assumptions is that, in such models, export expansion by liberalising economies tends to drive down export prices, reducing the gains from reform, particularly to larger exporters. Economists have long acknowledged the positive effect that product market liberalisation exerts on productivity and innovation. Recent empirical works show that these effects are particularly important in the context of advanced economies of the like most EU countries, as they are close from the technology frontier (Aghion *et al.*, 2008). It is however still not possible to put such a positive relation in general equilibrium models other than in a very imperfect way. Models which have tempted to

⁷ See Fillat-Castejon *et al.* 2008 for an empirical investigation of the linkages between cross-border trade and FDI.

⁸ Ilskovitz *et al.* (2007) estimate that productivity gains triggered by a partial liberalisation scenario centred on the Single Market for goods have raised EU annual GDP by 2.2%.

do so obtain results of an order of magnitude several times those of classic general equilibrium models⁹. By ignoring those effects, the present study tends to largely underestimate the potential gains triggered by further trade integration.

In sum, it is not possible to weigh precisely downward factors against upward factors. Yet, empirical evidence and the economic literature would confirm the magnitude of the benefits estimated in this study.

⁹ See for instance National Board of Trade (2006).

References

- Aghion, P., P. Askenazy, R. Bourlés, G. Cette, and N. Dromel, 2008, Distance à la frontière technologique, rigidités de marché, éducation et croissance, *Economie et Statistique*, No 419-420, pp. 11-30.
- Baldwin, R., 1989, The Growth effect of 1992, *Economic Polic* No 9, pp.1-42.
- Baldwin, R., 2006, Multilateralising Regionalism: Spaghetti Bowls as Building Blocs on the Path to Global Free Trade, NBER Working Papers No 12545.
- Bouët, A., Y. Decreux, L. Fontagné, S. Jean and D. Laborde, 2008. Assessing applied protection across the world, *Review of International Economics*, 16(5): 850-863.
- Bruijn, de R., H. Kox and A. Lejour, 2006, The trade-induced effects of the Services Directive and the country-of-origin principle, Working Paper 44, ENEPRI, Brussels.
- Cechini, P., M. Catinat and A. Jacquemin, 1988. The European challenge, 1992: the benefits of a single market.
- Copenhagen Economics, 2005, Economic Assessment of the Barriers to the Internal Market in Services, commissioned by the European Commission, 92 p.
- Decreux, Y., and H. Valin, 2007, MIRAGE, Updated Version of the Model for Trade Policy Analysis: Focus on Agriculture and Dynamics. CEPII Working Paper, N°2007-15.
- Fillat-Castejon, C., J. Francois, and J. Woerz, 2008. Cross-Border Trade and FDI in Services, Working Paper No 0812, Johannes Kepler University of Linz, 48 p.
- Fontagné, L., T. Mayer and S. Zignago, 2005, Trade in the Triad: How Easy is the Access to Large Markets? *Canadian Journal of Economics*, 38(4): 1401-1430.
- Fontagné, L., A. Guillin, and C. Mitaritonna, 2009, Estimation of Tariff Equivalent for the service sectors, Mimeo CEPII.
- Francois, J.F., and B. Hoekman, 2009, Services Trade and Policy, Economics working papers 2009-03, Department of Economics, Johannes Kepler University Linz, Austria.
- Harrisson G., T. Rutherford, D. Tarr, 1994, Product Standards, Imperfect Competition, and Completion of the Market in the European Union, World Bank Policy Research Paper No 1293.
- Head, K., and T. Mayer, 2002, Non-Europe: The Magnitude and Causes of Market Fragmentation in the EU, *Review of World Economics*, Vol. 2, 136: 285-314.

Ilzkovitz, F., Dierx A., Kovacs V., and Sousa N., 2007, Steps towards a deeper economic integration: the Internal Market in the 21st century. A contribution to the Single Market Review, Ecfm Economic Paper No 271.

Kee, H., Nicita A., and Olarreaga, M., 2008, Import Demand Elasticities and Trade Distortions, *The Review of Economics and Statistics*, MIT Press, vol. 90(4), pp. 666-682.

Kee, H., Nicita A., and Olarreaga, M., 2009, Estimating Trade Restrictiveness Indices, *Economic Journal*, Royal Economic Society, vol. 119(534):172-199, 01

Kox, H., and A. Lejour, 2005, Regulatory heterogeneity as obstacle for international services trade, CPB Discussion Paper No 49, 46 p.

Kox, H., and A. Lejour, 2006, The Effect of the Services Directive on intra-EU trade and FDI, *Revue Economique*, vol. 57 (4), pp. 747-769.

Monti, M., 2010, A New Strategy for the Single Market at the Service of Europe's Economy and Society, 107 p.

Narayanan, B. G., and T.L. Walmsley, 2008, Global Trade, Assistance, and Production: The GTAP 7 Data Base, Center for Global Trade Analysis, Purdue University.

National Board of Trade, 2006, Economic Implications of the Doha Round, Stockholm, 113 p.

Sousa, de J., T. Mayer and S. Zignago, 2010, Market access in global and regional trade, Mimeo.

Straathof, B., G.-J. Linders, A. Lejour and J. Möhlmann, 2008, The Internal Market and the Dutch Economy, CPB Document No 168, 90 p.

Annex

Description of economic tools and databases

Obstacles to trade in services

Given the share of the service sectors in the economy, it is increasingly important to measure adequately the obstacles business operators are facing in these sectors when operating abroad. To that aim the study uses the most recent database available on obstacles to trade in services described in Fontagné *et al.* 2009. This database proposes tariff equivalents of barrier to trade in services, focusing on cross border trade (Mode I according to GATS definition). The authors follow the approach of Park (2002), improving the methodology and updating the data. The tariff equivalents are derived from a gravity equation, whereby importer fixed effects capture the average protection index, estimated at the sectoral level. This work builds on GTAP database which provides bilateral trade in services for services sectors for the year 2004. It provides tariff equivalents for nine different service sectors of the GTAP nomenclature (see list in Annex Table 1) and a larger set of countries (82) than what is available for instance in other service databases such as the OCDE one.¹⁰ It specifically addresses the systematic bias in the estimates due to the misspecification problem frequent in previous studies. This problem led previous studies to underestimate the actual level of trade barriers. Consequently, the level of obstacles to trade revealed by the distortions in trade flows is consistently higher than in previous estimates (see tables 19 and 20).

Non-tariff obstacles to international trade in goods

The model integrates data on Non Tariff Barriers (NTB) for goods from Kee *et al.* (2009). This study proposes an estimation of ad valorem equivalent of NTB for each country at the six-digit level of the harmonized nomenclature. To that aim, the authors first estimate a gravity equation including a dummy variable that indicates the presence of a core NTB coming from UNCTAD database of non-tariff obstacles to trade (TRAINS). The coefficients of these dummies correspond to the quantity-impact of NTB on imports. This impact is then transformed into price effects using import demand elasticities computed by the authors in Kee *et al.* (2008). The ad valorem equivalents of NTB cover a wide range of product and countries, but do not comprise a bilateral dimension. Using this dataset means therefore assuming that non-tariff barriers in a given country are the same whatever the country of origin of the imported products. If this type of assumption is reasonable in most cases, this is clearly not the case between European countries where a deep harmonization process of product regulations has been implemented since the late 80's. In most sectors, this process has led to a reduction of intra-EU in comparison to extra-EU obstacles to trade. The European Union is certainly the area of the world where most

¹⁰ The authors stress the shortcomings of using such a cross-sectional approach relying on a GTAP data. In absence of panel data for a sufficiently large set of countries, the associated estimates remain however the best information available.

progress has been made in this field. However, one may hardly consider that all the remaining barriers fall on third countries and nothing on other Member states' exporters. In order to take due account of this situation, the study differentiates for each EU country between ad-valorem equivalent (AVE) of NTBs with other European countries and with the rest of the world.

The differentiation chosen here builds on the deviation of actual trade flows from a (domestic sales) benchmark and is accordingly based on border effect estimation. It relies on De Sousa *et al.* (2010). It is assumed that for each country i member of the European Union, the ratio between ad valorem equivalent of non tariff barriers AVE is equal to the ratio between the ad valorem equivalent of the border effects BE^{11} :

$$\frac{BE_{EU-EU}}{BE_{EU-ROW}} = \frac{AVE_{i-EU}}{AVE_{i-ROW}}.$$

The AVE that the country i applies to the European Union members and to the Rest of the World can be inferred from this assumption and by considering that the average AVE Kee *et al.* estimated is a weighted average of AVE applied to the EU and to the Rest of the World:

$$AVE_i = \sum_j x_{ij} AVE_{ij} \text{ with } AVE_i \text{ average ad valorem equivalent of NTB estimated by}$$

Kee et al (2008), $j \in (EU, ROW)$ and x_{ij} bilateral trade between i and j .

For countries that do not belong to the EU, the average AVE estimated by Kee *et al* (2009) applies to all sources of imports.

When interpreting the results, one has to keep in mind the fundamental difference between a tariff and a border effect (which encompasses non tariff measures, the role of distribution networks, consumption habits and differences in regulation). While a tariff can be totally phased out, this is not the case for the border effect. Still, the European experience of integration has proved that integration has actually managed to reduce border effects between Member states over time.

Representing the EU and the world economy through a general equilibrium model: MIRAGE

In comparison to other computable general equilibrium models, the main characteristics of MIRAGE concern the assumptions made about products quality ranges, imperfect competition, and macro-economic closure. The demand side is modelled in each region through a representative agent¹². Domestic products are assumed to benefit from a specific status for consumers, making them less

¹¹ Border effect are transformed into ad valorem equivalent using MIRAGE elasticities for each sector

¹² The utility function is intra-temporal, with a fixed share of the regional income allocated to savings, the rest used to purchase final consumption. Below this first-tier Cobb-Douglas function, consumption trade-off across sectors is represented through a LES-CES function. Each sector sub-utility function is a nesting of CES functions, comparable to the standard nested Armington-Dixit-Stiglitz function, with two exceptions.

substitutable to foreign products than foreign products between each other. Secondly, products originating in developing countries and in developed countries are assumed to belong to different quality ranges. This is motivated by the fact that several empirical works have shown that unit value differences are able to reveal quality differences even at the most detailed level of products classification. This is likely to have direct consequences on the transmission of liberalisation scenarios since the elasticity of substitution is lower across different qualities than across products within a given quality. Hence, the competition between products of different qualities is less tough than between products of similar quality. In the absence of systematic information suitable for incorporation in a worldwide modeling exercise such as the one undertaken here, vertical differentiation is modeled in an *ad hoc* fashion: developed countries and developing countries are assumed to produce goods belonging to two different quality ranges; substitutability is assumed to be weaker across these two quality ranges, than between products belonging to the same quality range¹³.

As regards the supply side of the model, producers use five factors: capital, labour (skilled and unskilled), land and natural resources. The structure of value added is intended to take into account the well-documented skill-capital relative complementarity. These two factors are thus bundled separately, with a lower elasticity of substitution, while a higher substitutability is assumed between this bundle and other factors. The production function assumes perfect complementarity between value added and intermediate consumption. The sectoral composition of the intermediate consumption aggregate stems from a CES function. For each sector of origin, the nesting is the same as for final consumption, meaning that the sector bundle has the same structure for final and intermediate consumption. Constant returns to scale and perfect competition are assumed to prevail in agricultural sectors. In contrast, firms are assumed to face increasing returns to scale (through a constant marginal cost and a fixed cost, expressed in output units) in industry and services. In those sectors, competition is imperfect. This modelling authorizes to capture to some extent the pro-competitive effect of trade liberalisation.

As regards the markets clearing and the macroeconomic closure, capital good has the same composition whatever the sector, but it cannot change its sector affectation once it has been installed. It is accumulated every year as the results of investments in the most profitable sectors.

Natural resources are considered to be perfectly immobile and may not be accumulated. Both types of labour are assumed to be perfectly mobile across sectors, whereas imperfect land mobility is modelled with a constant elasticity of transformation function. Production factors are assumed to be fully employed. Accordingly, negative shocks are absorbed by changes in prices (factor rewards) rather than in quantities. All production factors are immobile internationally. With respect to macroeconomic closure, the current balance is assumed to be exogenous

¹³ Practically, this is modelled by introducing in the demand nesting a tier corresponding to the trade-off between the two quality ranges. This tier is the first one in the consumer choice within each sector, before any other choice in terms of geographical origin. CEPII, Working Paper No 2006-10 21.

(and equal to its initial value in real terms), while real exchange rates are endogenous.

A measure of trade protection for goods: MAcMaps

Based on a joint effort devoted by the International Trade Centre –ITC– (UNCTAD & WTO, Geneva) and the CEPII to systematically collect detailed and exhaustive information on the level of applied trade barriers, the MAcMap-HS6 database computes an exhaustive and consistent ad-valorem equivalent measure of applied protection across the world, at the six-digit level of the Harmonized System (HS-6 level, 5,111 products). 166 reporting countries are covered, with 208 partners, in 2004. In so doing, the main original contributions of MAcMap-HS6 are: (i) the exhaustive coverage of preferential trade arrangements across the world; (ii) the calculation of the AVE of specific duties, acknowledging the differentiated impact of such duties across exporters, depending on their export unit values; (iii) the incorporation of tariff-rate quotas both through the AVE of the resulting protection at the margin, and through the calculation of involved rents; (iv) an original aggregation methodology, using a weighting scheme based on reference groups of countries, and limiting the extent of the endogeneity bias inherent to the standard, import-weighted average protection.

A new version of the GTAP database

The study draws upon the last version of the GTAP database (version 7.1.). The particularity of this new version, which is of interest for our analysis, is the implementation of updated Input-Output table for the 27 EU countries. This version also proposes country-level information on different categories of payment for the EU agricultural domestic support, and revised estimates of production and domestic support for some sectors in the US.

Table1. sectors aggregation

Agrifood	Vegetal agriculture Animal agriculture Food industry and fishing Wood products
manufacturing industry	Paper Chemicals and Mineral products Oil and gas Petroleum products Metal products Other primary products Metals Textile Leather and Clothing Machinery and other equipment Cars and trucks Other transport equipment Electronic equipment Other manufactures
Services	Construction Maritime transport Transport Finance Insurance Business services Trade Communication services Public services Other services

Table 2. Country aggregation

UK
Germany
France
Italy
Benelux
Spain
Poland
Sweden
Other EU27
Rest of Europe
NAFTA
Other OECD
Russia and Ukraine
Turkey
Developing Asia
Other countries nec

Table 3. Change in national income in 2020 by area (%)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
UK	7.1	-0.3	-0.2	-0.23
Germany	11.5	11.1	11.0	11.09
France	11.6	10.9	10.9	10.90
Italy	13.6	13.0	13.0	12.99
Benelux	25.3	23.8	23.6	23.80
Spain	9.5	8.8	8.8	8.81
Poland	10.8	10.4	10.4	10.44
Sweden	10.2	9.9	9.9	9.91
Rest of EU27	27.9	26.1	26.0	26.08
Rest of Europe	-1.6	-1.4	-1.4	-1.35
NAFTA	-1.5	-1.4	-1.3	0.13
Other OECD	-1.8	-1.6	-1.5	-0.34
Rest of the World	-1.1	-0.9	-0.9	-0.70
Total EU27	14.1	12.	11.9	11.95
EU without UK	15.7	14.8	14.8	14.83

Table 4. Change in volume of production in 2020 by area (%)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
UK	13.4	5.9	6.3	6.0
Germany	22.5	19.8	19.6	19.8
France	17.5	14.0	13.8	14.0
Italy	14.7	11.9	11.8	11.9
Benelux	62.1	55.3	55.0	55.2
Spain	16.7	14.0	13.8	14.0
Poland	23.1	21.1	21.0	21.1
Sweden	24.4	22.1	21.9	22.0
Rest of EU27	40.0	36.0	35.8	36.0
Rest of Europe	6.0	4.5	4.5	4.5
NAFTA	8.7	6.9	6.9	6.9
Other OECD	7.5	5.8	5.9	5.8
Rest of the World	6.6	5.1	5.2	5.6
Total EU27	24.4	20.3	20.2	20.3
EU without UK	26.7	23.3	23.1	23.3

Table 5. Change in exports in 2020 (%)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
UK	47.0	3.2	-1.2	4.0
Germany	42.3	38.6	38.2	38.6
France	57.8	51.8	51.1	51.7
Italy	66.5	61.6	61.1	61.5
Benelux	66.5	59.5	58.6	59.3
Spain	61.4	55.0	54.0	54.9
Poland	51.3	47.2	47.1	47.2
Sweden	35.9	32.8	32.4	32.7
Rest of EU27	74.4	67.1	66.7	67.1
Rest of Europe	6.4	4.6	4.7	4.6
NAFTA	6.5	5.0	5.1	5.2
Other OECD	7.9	6.1	6.2	6.1
Rest of the World	6.8	5.3	5.4	6.0

Table 6. Change in imports in 2020 by area (%)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
UK	38.1	5.1	1.9	5.7
Germany	46.3	42.4	41.9	42.3
France	54.6	48.8	48.1	48.7
Italy	62.1	57.3	56.9	57.3
Benelux	61.0	54.4	53.7	54.3
Spain	51.7	46.1	45.3	46.1
Poland	44.1	40.3	40.2	40.3
Sweden	40.3	36.9	36.6	36.9
Rest of EU27	72.7	65.5	65.1	65.5
Rest of Europe	6.1	4.3	4.4	4.3
NAFTA	8.4	6.7	6.7	6.8
Other OECD	7.6	5.8	6.0	5.8
Rest of the World	6.4	4.9	5.0	5.6

Table 7. Change in the value of exports in 2020 by area

in billion \$	Initial level*	deviation from the baseline level			
		Scenario 1	Scenario 2	Scenario 3	Scenario 4
UK	455.6	290.6	20.0	-7.2	18
Germany	939.9	527.3	480.8	475.7	362
France	491.7	372.1	333.4	328.8	254
Italy	395.9	320.5	296.6	294.3	243
Benelux	535.3	462.2	413.4	407.6	318
Spain	249.0	215.4	193.0	189.5	137
Poland	76.2	65.0	59.8	59.6	36
Sweden	147.6	73.6	67.0	66.4	48
Rest of EU27	820.5	855.3	771.5	766.8	550
Rest of Europe	313.7	28.2	20.2	20.4	14
NAFTA	1627.5	152.2	117.7	119.3	85
Other OECD	1066.1	123.2	95.2	97.8	65
Rest of the World	3344.2	448.7	348.9	352.9	200

* Level at the start of the simulation

Table 8. Change in the value of imports in 2020 by area

in billion \$	Initial level*	deviation from the baseline level			
		Scenario 1	Scenario 2	Scenario 3	Scenario 4
UK	588.2	319.0	43.0	15.9	33.6
Germany	850.7	510.4	467.3	462.1	359.8
France	523.5	380.4	340.2	335.6	255.1
Italy	422.5	326.5	301.6	299.2	242.0
Benelux	585.1	475.5	424.5	418.6	317.8
Spain	303.9	228.0	203.3	199.8	140.0
Poland	95.1	69.7	63.6	63.5	38.3
Sweden	128.1	69.9	64.2	63.5	47.3
Rest of EU27	843.0	863.5	778.7	773.9	552.0
Rest of Europe	293.2	24.9	17.7	17.8	12.7
NAFTA	2231.5	281.6	222.9	224.5	152.2
Other OECD	971.4	107.2	82.6	85.1	56.3
Rest of the World	3005.9	385.5	298.6	302.6	167.1

* Level at the start of the simulation

Table 9. Change in UK exports by destination in 2020 (in %)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Germany	61.6	-2.6	-9.6	-2.8
France	81.7	-10.5	-19.1	-10.7
Italy	99.2	-14.2	-24.7	-14.3
Benelux	98.7	31.5	23.8	31.0
Spain	86.9	-5.3	-17.5	-5.4
Poland	79.0	-15.6	-23.2	-15.7
Sweden	51.8	7.3	-0.9	7.2
Rest of EU27	129.3	-21.9	-28.4	-22.0
Rest of Europe	3.1	9.1	7.5	8.9
NAFTA	4.3	9.5	8.4	14.3
Other OECD	4.2	7.9	7.1	7.8
Rest of the World	2.8	8.7	7.7	9.4
Total EU	93.5	-2.9	-10.9	-3.1

Table 10. Change in UK export values by destination in 2020

in billion \$	Initial level*	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Germany	56.3	34.7	-1.4	-5.4	-1.6
France	45.6	37.3	-4.8	-8.7	-4.9
Italy	19.8	19.6	-2.8	-4.9	-2.8
Benelux	58.0	57.2	18.3	13.8	18.0
Spain	27.6	24.0	-1.5	-4.8	-1.5
Poland	5.0	3.9	-0.8	-1.2	-0.8
Sweden	11.7	6.1	0.9	-0.1	0.8
Rest of EU27	74.7	96.6	-16.3	-21.2	-16.5
Rest of Europe	16.8	0.5	1.5	1.3	1.5
NAFTA	119.9	5.2	11.3	10.1	17.1
Other OECD	31.0	1.3	2.5	2.2	2.4
Rest of the World	61.0	1.7	5.3	4.7	5.7
Total EU	298.8	279.4	-8.5	-32.5	-9.2

* Level in 2020 under baseline scenario

Table 11. Change in UK imports by origin in 2020 (in %)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Germany	49.4	-6.4	-15.0	-7.0
France	81.3	9.4	-2.4	8.7
Italy	94.1	14.6	3.3	13.9
Benelux	102.4	-1.5	-12.4	-2.1
Spain	64.3	6.2	-3.3	5.6
Poland	58.4	4.4	-5.7	3.8
Sweden	39.3	-9.3	-15.3	-9.7
Rest of EU27	100.1	18.1	8.4	17.6
Rest of Europe	0.9	3.0	4.3	3.4
NAFTA	-1.7	6.0	9.1	14.0
Other OECD	4.5	7.6	17.5	7.0
Rest of the World	-4.1	4.6	7.1	6.2
EU	78.5	5.0	-5.0	4.4

Table 12. Change in UK import values by origin in 2020

in billion \$	Initial level*	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Germany	96.9	47.8	-6.2	-14.5	-6.7
France	63.8	51.9	6.0	-1.5	5.5
Italy	32.3	30.3	4.7	1.1	4.5
Benelux	67.5	69.2	-1.0	-8.4	-1.4
Spain	42.8	27.5	2.6	-1.4	2.4
Poland	6.9	4.0	0.3	-0.4	0.3
Sweden	15.4	6.1	-1.4	-2.4	-1.5
Rest of EU27	86.0	86.1	15.6	7.2	15.1
Rest of Europe	32.1	0.3	1.0	1.4	1.1
NAFTA	93.7	-1.6	5.6	8.6	13.2
Other OECD	45.3	2.0	3.5	7.9	3.2
Rest of the World	49.8	-2.0	2.3	3.6	3.1
EU	411.6	323.0	20.7	-20.4	18.2

* Level in 2020 under baseline scenario

Table 13. Change in UK exports by sector in 2020

in %	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Vegetal agriculture	174.9	-8.4	-38.1	4.4
Animal agriculture	47.3	4.3	1.1	21.2
Food industry and fishing	110.1	-28.8	-43.7	10.5
Forestry and wood products	39.9	0.7	-2.4	23.3
Oil and gas	12.6	17.0	17.0	7.5
Petroleum products	21.9	-17.7	-20.1	-8.3
Metals	8.3	9.2	6.0	37.5
Metal products	32.6	30.8	21.3	-25.3
Paper Chemicals and Mineral prod.	94.0	-58.4	-59.0	16.0
Other primary products	11.7	10.7	10.7	22.7
Textile Leather and Clothing	14.2	-62.2	-62.5	-2.7
Machinery and other equipment	27.8	21.1	14.6	32.7
Cars and trucks	15.3	5.0	-27.9	9.5
Other transport equipment	10.7	36.9	28.2	16.7
Electronic equipment	18.3	-8.2	-17.6	-12.0
Other manufactures	72.5	-12.8	-15.1	10.7
Construction	33.0	7.7	7.3	26.1
Maritime transport	28.2	-2.5	-2.8	36.4
Other Transport	25.5	10.6	10.2	-57.4
Distribution	37.9	6.6	6.2	-14.1
Finance	110.4	37.9	36.9	22.5
Insurance	34.0	16.2	15.9	-57.8
Business services	48.4	21.4	20.7	6.4
Communication services	53.8	23.5	22.9	10.5
Education, Health and Public Serv.	10.3	22.8	22.6	-7.1
Other services	16.6	26.4	25.8	0.8

Table 14. Change in UK export values in 2020

in \$ billion	Initial level*	Sc. 1	Sc. 2	Sc. 3	Sc. 4
Vegetal agriculture	2.3	3.9	-0.2	-0.9	0.1
Animal agriculture	1.9	0.9	0.1	0.0	0.4
Food industry and fishing	23.9	26.3	-6.9	-10.4	2.5
Forestry and wood products	2.7	1.1	0.0	-0.1	0.6
Oil and gas	36.7	4.6	6.2	6.2	2.8
Petroleum products	11.3	2.5	-2.0	-2.3	-0.9
Metals	17.2	1.4	1.6	1.0	6.5
Metal products	7.9	2.6	2.4	1.7	-2.0
Paper Chemicals and Mineral prod.	83.2	78.2	-48.6	-49.0	13.3
Other primary products	19.9	2.3	2.1	2.1	4.5
Textile Leather and Clothing	9.7	1.4	-6.1	-6.1	-0.3
Machinery and other equipment	62.5	17.3	13.2	9.1	20.4
Cars and trucks	33.9	5.2	1.7	-9.5	3.2
Other transport equipment	13.1	1.4	4.8	3.7	2.2
Electronic equipment	27.8	5.1	-2.3	-4.9	-3.3
Other manufactures	10.0	7.2	-1.3	-1.5	1.1
Construction	1.5	0.5	0.1	0.1	0.4
Maritime transport	5.3	1.5	-0.1	-0.1	1.9
Other Transport	30.7	7.8	3.2	3.1	-17.6
Distribution	12.9	4.9	0.9	0.8	-1.8
Finance	46.9	51.8	17.8	17.3	10.5
Insurance	25.4	8.6	4.1	4.1	-14.7
Business services	95.8	46.4	20.5	19.9	6.1
Communication services	7.4	4.0	1.7	1.7	0.8
Education, Health and Public Serv.	16.3	1.7	3.7	3.7	-1.1
Other services	11.9	2.0	3.2	3.1	0.1

* Level in 2020 under baseline scenario

Table 15. Change in UK imports by sector in 2020

in %	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Vegetal agriculture	18.4	0.4	-5.7	-2.9
Animal agriculture	0.1	-4.4	-6.3	-0.6
Food industry and fishing	129.1	6.1	-11.2	5.5
Forestry and wood products	5.3	0.5	-0.6	0.8
Oil and gas	11.3	-2.5	-2.7	5.6
Petroleum products	20.2	18.4	17.1	6.5
Metals	12.4	9.6	7.0	-6.4
Metal products	12.5	-4.5	-7.9	7.8
Paper Chemicals and Mineral prod.	94.6	15.7	13.1	-3.5
Other primary products	7.2	4.6	4.5	-0.8
Textile Leather and Clothing	44.9	12.4	6.0	5.5
Machinery and other equipment	13.4	-1.7	-2.8	-2.8
Cars and trucks	15.1	5.1	-4.8	10.5
Other transport equipment	16.7	-5.5	-5.9	-1.3
Electronic equipment	15.7	6.4	5.9	6.5
Other manufactures	99.2	5.7	5.8	4.7
Construction	112.1	5.4	6.0	0.9
Maritime transport	14.3	5.4	5.4	-4.2
Other Transport	16.9	2.6	2.9	16.4
Distribution	53.2	4.9	5.4	18.8
Finance	5.1	-6.7	-6.3	-2.5
Insurance	42.7	-3.8	-3.3	12.7
Business services	40.8	-0.8	-0.4	5.1
Communication services	26.5	0.6	0.9	2.7
Education, Health and Public Serv.	15.6	-2.7	-2.4	2.2
Other services	16.0	0.7	1.2	0.8

Table 16. Change in UK import values in 2020

in \$ billion	Initial level*	Sc. 1	Sc. 2	Sc. 3	Sc. 4
Vegetal agriculture	13.9	2.6	0.1	-0.8	-0.4
Animal agriculture	1.5	0.0	-0.1	-0.1	0.0
Food industry and fishing	37.9	49.0	2.3	-4.2	2.1
Forestry and wood products	17.9	0.9	0.1	-0.1	0.1
Oil and gas	15.5	1.8	-0.4	-0.4	0.9
Petroleum products	10.8	2.2	2.0	1.8	0.7
Metals	24.4	3.0	2.4	1.7	-1.6
Metal products	17.7	2.2	-0.8	-1.4	1.4
Paper Chemicals and Mineral prod.	123.3	116.7	19.4	16.2	-4.3
Other primary products	16.6	1.2	0.8	0.7	-0.1
Textile Leather and Clothing	57.3	25.7	7.1	3.4	3.1
Machinery and other equipment	99.2	13.2	-1.7	-2.8	-2.8
Cars and trucks	104.3	15.8	5.3	-5.1	10.9
Other transport equipment	14.1	2.4	-0.8	-0.8	-0.2
Electronic equipment	81.1	12.7	5.2	4.8	5.3
Other manufactures	21.0	20.8	1.2	1.2	1.0
Construction	0.8	0.9	0.0	0.1	0.0
Maritime transport	8.6	1.2	0.5	0.5	-0.4
Other Transport	47.6	8.1	1.2	1.4	7.8
Distribution	21.1	11.2	1.0	1.1	4.0
Finance	13.7	0.7	-0.9	-0.9	-0.3
Insurance	2.9	1.2	-0.1	-0.1	0.4
Business services	44.0	17.9	-0.4	-0.2	2.3
Communication services	8.6	2.3	0.0	0.1	0.2
Education, Health and Public Serv.	17.6	2.7	-0.5	-0.4	0.4
Other services	15.5	2.5	0.1	0.2	0.1

* Level in 2020 under baseline scenario

Table 17. Change in UK value added by sector in 2020

In %	Sc. 1	Sc. 2	Sc. 3	Sc. 4
Vegetal agriculture	11.5	8.5	9.7	7.0
Animal agriculture	-1.2	1.9	3.0	2.0
Food industry and fishing	-4.5	0.9	2.3	1.2
Wood products	12.1	9.0	9.0	8.9
Oil and gas	10.0	7.9	7.9	8.0
Petroleum products	14.7	-6.3	-6.4	-5.3
Metals	13.1	12.3	9.4	12.6
Metal products	18.0	13.7	12.2	13.9
Paper Chemicals and Mineral products	-9.8	-24.7	-23.8	-24.5
Other primary products	10.5	9.1	8.9	9.1
Textile Leather and Clothing	-44.5	-24.7	-16.5	-23.7
Machinery and other equipment	25.5	18.0	15.3	18.5
Cars and trucks	23.6	6.5	-0.2	9.0
Other transport equipment	14.8	20.4	17.8	20.0
Electronic equipment	18.5	-6.4	-14.1	-6.5
Other manufactures	-2.5	2.4	2.1	2.5
Construction	18.9	6.0	6.2	6.1
Maritime transport	16.2	7.1	6.9	7.1
Transport	15.1	6.5	6.5	6.6
Trade	17.5	6.0	6.2	6.1
Finance	55.2	19.7	19.2	19.6
Insurance	22.9	8.4	8.5	8.4
Business services	17.6	8.3	8.4	8.4
Communication services	19.5	8.7	8.8	8.8
Public services	19.5	6.3	6.5	6.4
Other services	15.2	6.2	6.4	6.3
Agrifood	-2.7	1.7	3.0	1.8
Manufacturing	6.4	-0.4	-1.3	-0.1
Services	19.1	7.2	7.4	7.3

Table 18. Change in UK value added by sector in 2020

In \$ billion	Initial level*	Sc. 1	Sc. 2	Sc. 3	Sc. 4
Vegetal agriculture	7.4	0.9	0.6	0.7	0.5
Animal agriculture	10.8	-0.1	0.2	0.3	0.2
Food industry and fishing	70.0	-3.1	0.6	1.6	0.8
Wood products	7.8	0.9	0.7	0.7	0.7
Oil and gas	60.3	6.0	4.8	4.7	4.8
Petroleum products	2.3	0.3	-0.1	-0.1	-0.1
Metals	9.7	1.3	1.2	0.9	1.2
Metal products	34.1	6.1	4.7	4.1	4.8
Paper Chemicals and Mineral products	114.2	-11.1	-28.2	-27.2	-27.9
Other primary products	11.1	1.2	1.0	1.0	1.0
Textile Leather and Clothing	17.7	-7.9	-4.4	-2.9	-4.2
Machinery and other equipment	72.1	18.4	13.0	11.0	13.3
Cars and trucks	25.2	5.9	1.6	0.0	2.3
Other transport equipment	21.3	3.2	4.3	3.8	4.3
Electronic equipment	13.7	2.5	-0.9	-1.9	-0.9
Other manufactures	23.2	-0.6	0.6	0.5	0.6
Construction	167.4	31.6	10.1	10.3	10.3
Maritime transport	15.0	2.4	1.1	1.0	1.1
Transport	110.6	16.7	7.2	7.2	7.3
Trade	411.6	72.1	24.7	25.5	25.0
Finance	60.8	33.6	12.0	11.6	11.9
Insurance	40.7	9.3	3.4	3.4	3.4
Business services	638.4	112.5	53.1	53.5	53.3
Communication services	76.5	14.9	6.7	6.7	6.7
Public services	659.7	128.6	41.3	42.6	42.0
Other services	144.2	21.9	9.0	9.2	9.0
Agrifood	88.2	-2.4	1.5	2.6	1.6
Manufacturing	412.7	26.3	-1.7	-5.5	-0.2
Services	2324.8	443.5	168.4	171.2	170.1

* Level in 2020 under baseline scenario in \$bn

Table 19. Tariff equivalents of obstacles to trade applied on imports from the rest of the EU

Sectors	Benelux	France	Germany	Italy	Other EU27	Poland	Spain	Sweden	UK
Vegetal agriculture	34.6	39.3	41.1	42.3	38.8	42.2	41.8	38.8	39.0
Animal agriculture	20.6	21.2	26.2	25.7	23.1	24.8	22.9	25.2	25.3
Food industry and fishing	48.4	63.8	63.7	65.0	63.6	63.8	64.7	62.4	64.2
Wood products	1.9	3.0	8.4	5.4	5.5	5.5	8.3	9.3	14.7
Petroleum products	0.9	2.3	10.4	6.6	11.1	14.5	6.4	7.2	8.9
Paper Chemicals and Mineral prod.	63.4	78.6	76.6	78.9	77.7	76.7	81.8	76.9	80.7
Metals	1.6	1.4	4.7	5.2	4.3	6.7	4.7	5.3	3.4
Metal products	1.8	2.3	5.5	3.9	4.3	4.3	4.6	7.2	6.3
Textile Leather and Clothing	39.9	44.6	44.0	45.0	45.7	45.9	46.3	44.7	46.3
Cars and trucks	1.5	2.2	3.7	3.1	2.5	2.0	2.1	3.4	2.4
Electronic equipment	3.9	5.6	8.8	9.2	5.4	4.6	10.5	13.8	8.7
Machinery and other equipment	4.2	4.8	9.6	7.5	6.1	5.3	7.9	10.3	7.9
Other Transport equipments	3.3	2.3	3.6	5.4	13.4	2.6	6.5	9.0	2.5
Other manufactures	40.1	58.2	55.4	57.0	55.5	54.9	56.6	50.6	54.0
Construction	24.9	20.4	35.3	27.3	24.6	27.5	26.0	31.0	27.6
Trade	27.8	25.6	32.6	30.1	26.8	27.3	26.2	32.2	31.4
Maritime transport	37.2	38.7	38.8	41.7	35.2	37.9	34.4	40.6	39.9
Other Transports	13.6	14.2	17.7	15.6	13.3	13.6	11.5	16.4	18.9
Finance	25.5	20.4	25.4	24.8	24.7	24.5	24.4	25.5	29.4
Insurance	42.4	38.6	42.8	43.8	42.2	42.2	42.6	42.9	44.0
Business services	20.7	19.1	24.9	24.0	20.0	21.4	21.8	23.7	20.2
Communication	20.9	18.8	23.0	23.5	20.9	21.0	21.5	24.8	22.6
Health, education and Public Serv.	22.2	22.1	24.4	24.2	22.8	22.8	20.9	22.4	28.7

Table 20. Tariff equivalents of obstacles to trade faced on exports to the rest of the EU

Sectors	Benelux	France	Germany	Italy	Other EU27	Poland	Spain	Sweden	UK
Vegetal agriculture	36.1	48.9	43.9	28.0	-	22.6	31.9	34.4	38.1
Animal agriculture	23.5	18.1	32.0	18.4	27.9	23.5	21.2	14.9	16.0
Food industry and fishing	39.7	71.5	66.0	63.6	60.7	52.2	64.9	59.4	63.4
Wood products	-	-	-	-	34.5	-	-	-	-
Petroleum products	-	-	-	-	25.7	14.4	-	-	-
Paper Chemicals and Mineral prod.	62.2	109.5	84.6	107.2	61.8	16.1	83.3	58.2	77.0
Metals	-	-	-	-	22.7	-	-	-	-
Metal products	-	-	-	-	18.7	-	-	-	-
Textile Leather and Clothing	37.7	49.4	44.6	51.8	47.9	17.2	44.5	41.2	41.3
Cars and trucks	-	-	-	-	16.5	14.9	-	-	-
Electronic equipment	-	-	-	-	34.4	-	-	-	-
Machinery and other equipment	-	-	-	-	33.1	26.7	-	-	-
Other Transport equipments	-	-	-	-	30.5	24.8	-	-	-
Other manufactures	42.0	63.0	54.5	57.0	46.8	11.8	63.7	51.3	66.4
Construction	22.5	29.0	12.1	26.9	43.0	34.8	68.3	32.0	65.7
Trade	22.4	33.4	15.2	23.4	40.9	66.4	46.4	29.6	27.6
Maritime transport	53.7	32.5	30.4	34.6	46.7	50.3	61.5	36.5	30.3
Other Transports	15.9	16.4	8.8	19.7	26.6	35.7	27.3	15.1	5.0
Finance	11.2	40.1	24.4	51.0	44.9	50.6	37.9	30.2	15.8
Insurance	29.9	61.7	39.3	39.9	46.5	27.6	41.2	40.6	36.0
Business services	11.4	28.4	13.5	26.1	35.2	38.2	23.4	10.8	24.7
Communication	12.3	30.0	18.0	18.2	33.7	27.4	31.2	18.2	18.5
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