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The economic benefits of the EU Single Market in goods and services

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Abstract

This paper examines the macro-economic benefits of the Single Market in goods and services by simulating a counterfactual scenario in which tariffs and non-tariff barriers are reintroduced. In this counterfactual scenario, intra-EU trade flows are significantly reduced. Lower trade openness also means reduced market size and less competition. Using empirical evidence on the effect of the Single Market on firms' mark-ups over marginal costs, we add these competition effects and arrive at a total estimate of around 9% higher GDP on average for the EU, but with a strong degree of heterogeneity across EU countries.

JEL classifications: F13; F14; F15; F17

Keywords: Trade integration; European Union; Single Market; General equilibrium

1. Introduction

The European Single Market is one of the EU's greatest achievements. It has created one territory, with more than 500 million inhabitants, without any internal borders or other regulatory obstacles to the free movement of goods and services. The EU is the most integrated of the main trading blocs in the world as two-thirds of EU countries' trade is with other Member States. The EU accounts for 21% of global economic output, second only to the US, which gives European

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countries a large domestic market to fall back on in the event of trade disruptions and provides the EU with significant weight in trade negotiations. With the current multilateral trading system under great pressure from US tariffs and the Brexit process, the European Single Market stands out as an important achievement. It has stimulated trade and competition in the EU, and improved efficiency, fuelling economic growth and making everyday life of European businesses and consumers easier.

When the Single Market was established in 1993, an ex-ante analysis estimated that it could raise overall GDP by 4¼–6½% in the long run (Cecchini, Catina, & Jacquemin, 1988; Emerson, Aujean, Catinat, Goybet, & Jacquemin, 1988). Now, at the twenty-five years anniversary, there has been a renewed interest in the macroeconomic benefits the Single Market has brought the Member States. Mayer, Vicard, and Zignago (2019) and Felbermayr, Groschl, and Heiland (2018) use gravity trade models to quantify the trade effects of European integration and calculate counterfactual scenarios which represent the costs of a non-Europe going backwards. This paper follows a different approach and uses a structural macroeconomic model to build a counterfactual scenario by raising tariffs and non-tariff barriers to intra-EU trade that would arguably apply if trade would revert back to WTO rules. We quantify the macroeconomic benefits of the Single Market in goods and services by the reductions in bilateral trade and GDP in such a counterfactual scenario and find output effects of around 9% on average for the EU but with a strong degree of heterogeneity across EU countries.

The model used in this exercise is a multi-country version of the QUEST model. QUEST is a structural macroeconomic model, derived from micro-principals of dynamic intertemporal optimisation. It distinguishes between a tradable and non-tradable sector, both importing intermediate goods, and models bilateral trade flows in the traded good. Although it lacks the sectoral details found in typical trade computable general equilibrium (CGE) models, and can therefore not assess the impact on specific sectors, the modelling of trade in intermediate inputs captures linkages through cross-border value chains. This is important, as trade in intermediates amplifies the effects of trade barriers. The model can also assess the wider macroeconomic consequences of trade barriers on the major EU economies, on output and its components. The model version used here includes each of the 28 EU Member States as well as the United States and a block representing the rest of the world. Aggregates are also reported for the EU and the euro area (EA).

For the counterfactual scenario of WTO-rules based intra-EU trade, assumptions have to be made on tariffs and non-tariff barriers (NTBs) that would apply. We calculate country-specific sector-weighted averages of Most-Favored Nation (MFN) tariffs and assume these would hold in this counterfactual scenario. For NTBs we base our assumptions on estimates of the tariff-equivalents of NTBs between the EU and US, derived from TTIP studies (Berden & Francois, 2015). Our model simulations then show how the reintroduction of tariffs on goods and higher non-tariff barriers on goods and services lead to significantly lower trade flows between the Member States. Intra-EU imports fall by 20–30% in this scenario, while output is 6½–7% lower on average for the EU. Lower trade openness also means reduced market size and less competition. Using empirical evidence on the effect of the Single Market on firms' mark-ups over marginal costs, we add these effects to the direct trade effects to arrive at a total estimate of the macroeconomic benefits of the Single Market of 8–9% on average. This EU average hides a large heterogeneity across Member States, with the largest effects for smaller and more open economies.

Our estimates can be directly compared to those of Mayer et al. (2019) and Felbermayr et al. (2018), who use gravity trade models to estimate the trade and welfare effects from European integration. Mayer et al. (2019) report large trade effects and welfare losses for the EU of up to 5½%. Felbermayr et al. (2018) report income per capita effects for their Single Market disintegration scenario that are on average around 4% for the EU as a whole. While the country ranking

in these two studies show strong similarities to ours, their welfare or income per capita effects appear somewhat lower than our GDP effects, and only part of this difference can be attributed to the competition effects that are included in our results, but not in these two studies. On the other hand, our trade effects, derived from bottom-up estimates of trade barriers, are somewhat smaller than the impact on bilateral trade flows found in these gravity studies. It is not clear what can explain these differences, but it suggests more destabilising effects in our macroeconomic model from e.g. employment responses and investment, leading to a sharper drop in domestic demand. In our scenarios there is a strong decline in investment and the fall in GDP is mainly driven by the decline in the capital stock, as employment effects are cushioned by the decline in wages.

Our assessment of the impact of the Single Market is restricted to trade in goods and services, while the Single Market involves four freedoms – the free movement of goods, services, capital and people. Our focus on goods and services can be justified as this was the emphasis of the Single Market Programme (SMP) in 1992, but it must be stressed that the Single Market is not complete yet and further initiatives have focused on deepening the Single Market. For instance additional legislation has been introduced to strengthen the Single Market in services, transport and the Digital Single Market. It should also be noted that this analysis excludes the effects of membership of the customs union (Free-Trade Agreements (FTAs) with third countries), euro membership, and Schengen. The implicit assumption in the counterfactual is no Single Market in goods and services, but e.g. continued membership of the euro, this to identify the macroeconomic benefits of the Single Market alone.[1]

There are two other caveats to be mentioned. Firstly, the counterfactual scenarios simulated here are stylised in the sense that new trading conditions are introduced as a sudden shock. This is why we only report long run effects of a reintroduction of trade barriers on the economies of the Member States. Secondly, the focus here is on the 28 Member States of the EU, while 31 countries participate in the Single Market, including Norway, Iceland and Lichtenstein. By not including these three members, the results may underestimate the impact for some close trading partners of these countries.

The paper is structured as follows. The next section gives a brief overview of earlier studies of the impact of the Single Market. This is followed by a section discussing our methodology, the counterfactual shocks on tariffs and NTBs. Section 4 then describes the results of the counterfactual secenarios, and Section 5 give a comparison of the results with those in the literature. Section 6 concludes.

2. Literature overview

The four freedoms – the free movement of goods, services, people and capital – were enshrined in the Treaty of Rome signed in 1953, but proved more difficult to implement in practice. Internal tariffs on industrial and agricultural goods were phased out and a common external tariff against the outside world was established when the Customs Union was completed in 1968, but divergence in product standards and regulatory measures continued to act as a barrier to trade. In 1985, the Delors Commision presented a white paper 'Completing the Internal Market', listing 300 measures to be undertaken to transform the Common Market into a Single Market (The Single

[1] Mayer et al. (2019) and Felbermayr et al. (2018) use gravity equations with dummies for Schengen, euro membership etc to separately identify the effects of other stages of integration.

Market Programme).[2] The 'Single European Act' was signed in 1986, and the measures were to be implemented by the end of 1992.

The ex-ante analysis in the Cecchini report (Cecchini et al., 1988) estimated that the potential gains of the Single Market could raise overall GDP by 4¼–6½ % in the long run. This analysis distinguishes two channels, the gains from removal of barriers affecting trade and production, and the gains from market integration, exploiting economies of scale more fully and intensified competition. It is the latter channel that Smith and Venables (1988) emphasise. They argue that the largest effects come from the elimination of the possibility for oligopolistic firms to price-discriminate between different countries, and this would give larger gains than policies that only remove barriers to international trade. The aim for competition policy should be to remove the sources of price differences between countries. Baldwin (1989) argues that the Single Market Programme boosts efficiency which means more output out of the same amount of labour and capital, but as a second medium-term growth effect also boosts savings and investment which raises the capital stock and therefore output, and the size of this effect depends on the importance of scale economies. But these static effects may underestimate the total economic impact, as dynamic growth effects may be larger. Based on a Romer growth model, Baldwin argues the Single Market programme could boost growth rates by between one-quarter and three-quarters of one percentage points. In that case the 2.5–6.5% range in the Cecchini Report would increase to 13–33%. Winters (1992) warns it would be premature to take these dynamic effects are certain as some research shows encouraging precompetitive research joint ventures may actually reduce innovation relative to competitors, and could thus reduce welfare.

Allen, Gasiorek, Smith, Flam, and Sørensen (1998) explore in more detail the gains from competition and find that the Single Market Programme has indeed had a substantial pro-competitive effect in European markets, and led to significant reductions in price-cost margins. They report large welfare gains, especially for the smaller countries, through the greater pro-competitive impact of the reduction in barriers. Their welfare estimates range from 0.5 to 3.0% for segmented market to 0.7–17% for integrated markets.

Specific studies have focussed on indivual country effects and particular aspects like the liberalisation of services. Baja-Rubio and Gomez-Plana (2005) look at the impact of services and public procurement for the case of Spain, while Hagemejer, Michalek, and Michałek (2014) give a Polish perspective on the economic implications of the service directive. De Bruijn, Kox, and Lejour (2008) apply a general equilibrium model to assess the economic benefits of the Services Directive, and find that European GDP and consumption could rise substantially and that most of the new accession countries will experience larger than average gains.

More recently, two papers have been published that quantify the benefits of the Single Market by simulating trade models of a non-Europe going backwards, reverting back to WTO rules. Our own estimates can be directly compared to these and in Section 5 we discuss the differences in more detail. Mayer et al. (2019) use a gravity model to estimate the trade creation effects from different stages of European integration, ranging from free trade agreements to the Single Market, and also from membership of the Schengen agreement and the euro. They then apply those to counterfactual exercises where the EU returns to a 'normal', shallowtype regional agreement, or reverts to WTO rules. They find large trade effects and welfare losses for the EU of up to 5½ % in case of a reversion to WTO rules. In a comparable study, Felbermayr et al. (2018) use a sectoral gravity models to estimate the effects of various steps of European product market integration on

[2] See e.g. Kommerskollegium (2015) for a historical overview of the empirical literature of the Single Market.

trade flows for the period 2000–14. They report income per capita effects for their Single Market disintegration scenario that are on average around 4% for the EU as a whole, but also document a strong degree of heterogeneity across EU countries, ranging from 2.2 to 19.7%. In Section 5 we discuss these studies in more detail and contrast their results to ours.

3. Methodology

The analysis uses the European Commission's QUEST model.[3] QUEST is a global macroeconomic model developed for macroeconomic policy analysis and research. A member of the class of New-Keynesian Dynamic Stochastic General Equilibrium (DSGE) models, QUEST has rigorous microeconomic foundations derived from utility and profit optimisation and includes frictions in goods, labour and financial markets. With empirically plausible estimation and calibration they are able to fit the main features of the macroeconomic time series. The model distinguishes a tradable and a non-tradable sector, where the latter represents mainly public administration, health and education services. Trade flows are modelled bilaterally. Trade barriers lead to higher import prices, including on intermediate inputs, and so raise costs for investment and reduce output in the medium term. While the model lacks the sectoral details found in typical trade CGE models, and can therefore not assess the impact on specific manufacturing sectors and services, the inclusion of trade in intermediate inputs, for both the tradable and non-tradable sectors, captures linkages through cross-border value chains.[4] This is important, as this trade in intermediates amplifies the effects of trade barriers. It can assess the wider macroeconomic consequences on output and its components, incorporating endogenous monetary and fiscal policy responses, and in particular captures the negative impact of higher import costs on capital accumulation, which is the most important channel through which tariffs and non-tariff barriers impact the economy.

The country aggregation used for this exercise consists of a model for each of 28 EU Member States as well the United States and an aggregate block representing the rest of world. Aggregates for EU28 and the Euro Area (EA) are computed and reported separately.

3.1. Trade barriers

In order to quantify the economic benefits from the Single Market, we need an estimate of the reduction in trade costs that the Single Market has established. We assume a counterfactual in which trade reverts to WTO-rules, and apply Most Favoured Nation (MFN) rates as tariffs on goods. For NTBs we rely on estimates of non-tariff barriers as calculated for trade between the EU and the US. We discuss each of these below.

MFN rates vary per sector and are highest for 'textiles' and 'transport equipment', and lowest for 'paper and pulp' and 'mining' (see Table 1). In aggregate, these tariffs amount to approximately 3½% for goods. For individual countries tariffs are weighted by sector import shares. Trade in goods amount to approximately 70% of all trade in goods and services, and in the model the tariff shock is adjusted accordingly.

[3] The modelling assumptions for this exercise are described in more detail in the discussion paper version (in 't Veld, 2019).

[4] The calibration is based on the latest World Input-Output Database 2014 database (Timmer et al., 2015).

Table 1
MFN tariffs.

Goods	MFN tariff
Transport equipment	8.09
Chemicals and chemical products	2.71
Electrical and optical equipment	1.97
Food, beverages and tobacco	7.26
Coke, rened petroleum and nuclear fuel	2.69
Basic metals and fabricated metal	2.05
Machinery, Nec	2.05
Mining and quarrying	0.00
Textiles and textile products; leather, leather and footwear	9.58
Rubber and plastics	5.35
Manufacturing, Nec; recycling	1.71
Pulp, paper, paper, printing and publishing	0.04
Agriculture, hunting, forestry and fishing	5.90
Other non-metallic mineral	3.78
Wood and products of wood and cork	2.35
EU sector weighted average MFN tariff	3.5

Source: Berden and Francois (2015), Dhingra et al. (2017), own calculations based on WIOD (Timmer, Dietzenbacher, Los, Stehrer, & de Vries, 2015).

Non-tariff barriers (NTBs), such as differences between regulatory regimes or product standards, represent a greater impediment to trade than tariffs. [5] Following the elimination of tariffs on good and services, much of the work on strengthening the Single Market has been related to reducing remaining NTBs, particularly for trade in services. For our counterfactual we base our shocks on available estimates of NTBs that apply to trade between the EU and the US, as published in studies assessing the potentail impact of TTIP (Berden, Francois, Tamminen, Thelle, & Wymenga, 2009, Berden & Francois, 2015). By using these estimates we assume that trade between EU Member States without a Single Market would be subject to similar conditions as now apply between the EU and the US.

The authors calculate detailed tariff equivalents of NTBs, using econometric techniques and business surveys. These are estimated to be highest for 'food, beverages and tobacco', and lowest for 'construction' and other services (Table 2). Not all NTBs are 'actionable' or 'reducible' by trade agreements or other policy actions (e.g 110/240 voltage differences between the US and the EU, or translation costs for manuals, cannot be eliminated by a trade agreement). A 'reducible' share is therefore also estimated by sector and taken into account when calculating the change in the tariff-equivalent of NTBs that would apply with or without a trade agreement. Conversely, when simulating a reversal of the Single Market, we also take the reducible share of NTBs and use this to calculate individual country NTBs (weighted by import sector shares). On average the tariff equivalent cost of NTBs amount to 10.3 percentage points (GDP weighted EU average).

In the model, the costs of NTBs come on top of the MFN tariff and add to the overall increase in trade costs. Tariffs and NTBs are applied to trade in final goods and to trade in intermediate inputs. NTBs are more distortive than MFN tariffs, and unlike tariffs, which are a revenue for the

[5] Winchester (2009) illustrates the importance of accounting for NTBs in a case study for New Zealand. For a discussion on the technical challenges tackling NTBs in general equilibrium models, see Fugazza and Maur (2008).

Table 2
Non-tariff barriers (NTBs) used in counterfactual.

Sector	NTB cost EU/USA (tariff equivalent)	Reducible share of NTB
Transport equipment	22.1	0.53
Chemicals and chemical products	23.9	0.63
Post and telecommunications	11.7	0.70
Electrical and optical equipment	6.5	0.41
Financial intermediation	11.3	0.49
Food, beverages and tobacco	56.8	0.53
Construction	4.6	0.38
Renting of machinery & equip. and other business activities	14.9	0.51
Services Nec (*)	4.4	0.37
Basic metals and fabricated metal	11.9	0.62
Textiles and textile products; leather, leather and footwear	19.2	0.50
Wood and products of wood and cork	11.3	0.60
Reducible sector weighted average	10.3	

Source: Berden and Francois (2015), Dhingra et al. (2017), Timmer et al. (2015).

government and which can be recycled by reducing other distortionary taxes, NTBs are a 'waste' in economic terms.

4. Counterfactual scenarios

4.1. Effects of trade barriers

Adding the MFN tariffs and NTBs as additional costs to the bilateral trade between EU Member States, we can simulate a counterfactual scenario with the model. The results are reported in Table 3. The increase in trade costs of around 13% on average reduces intra-EU trade, replacing it by internal domestic trade and diverts some trade to non-EU countries (increase in extra-EU trade). Intra-EU imports decline by about 20–30% in the long run, while total imports fall by about 20% on average. The fall in imports is larger than that in exports as there is a large decline in domestic demand in the EU.

The increase in tariffs and NTBs not only affects trade flows, but also has a direct impact on the domestic economy and thereby on GDP. As imported intermediate inputs become more expensive, it raises the cost of output. It also deters investment because of the increase in investment prices, and reduces capital accumulation. Higher consumer prices put upward pressure on wages and lead to a further increase in wage costs for firms and reduces employment. Government spending, both government consumption and (productive) government investment, is kept constant in real terms in this scenario, to avoid additional fiscal contraction effects (see discussion below). Government finances deteriorate as prices rise for imported government spending, and as lower domestic demand reduces tax revenues and raises social expenditure. This more than offsets the extra revenue coming in from tariffs and the increase in the government deficit forces an increase in taxes. Higher taxes have a further negative impact on consumption.

Overall GDP is about 6% lower in Germany and Spain, 5% lower in France and 4½% lower in Italy. The effects are larger in some smaller and more open Member States, with a more than 13% decline in the Netherlands and over 15% in Belgium. On average, GDP is 6.8% lower in

Table 3
Long run macroeconomic impact of trade barriers.

	GDP	Consumption	Investment	Gov. Cons.	Gov. Invest.	Exports	Imports	Imports Intra-EU	Capital	Employment
BE	−15.4	−29.5	−28.1	0.0	0.0	−19.3	−26.8	−29.2	−23.1	−3.0
DE	−5.8	−12.3	−12.2	0.0	0.0	−10.5	−18.8	−21.3	−9.4	−0.9
EE	−12.6	−24.4	−23.3	0.0	0.0	−16.2	−22.6	−25.1	−18.8	−2.1
IE	−10.5	−21.5	−20.0	0.0	0.0	−14.0	−20.1	−22.2	−16.4	−1.8
EL	−4.4	−8.7	−10.2	0.0	0.0	−7.8	−15.2	−21.8	−7.6	−0.6
ES	−6.2	−11.7	−12.3	0.0	0.0	−10.7	−19.0	−23.9	−9.3	−0.9
FR	−5.0	−9.7	−10.9	0.0	0.0	−9.8	−17.9	−21.0	−8.2	−0.7
IT	−4.5	−9.0	−9.6	0.0	0.0	−9.4	−17.7	−22.2	−7.3	−0.7
CY	−7.8	−14.7	−16.6	0.0	0.0	−11.6	−19.7	−25.8	−13.0	−1.1
LV	−11.1	−21.5	−20.0	0.0	0.0	−14.8	−22.5	−28.6	−15.9	−1.5
LT	−9.6	−20.5	−19.5	0.0	0.0	−12.2	−19.1	−25.2	−15.7	−1.6
LU	−18.3	−33.6	−32.7	0.0	0.0	−20.9	−25.6	−25.9	−27.3	−3.4
MT	−12.1	−22.3	−24.1	0.0	0.0	−13.4	−19.1	−20.0	−20.1	−1.7
NL	−13.6	−27.8	−24.4	0.0	0.0	−16.7	−25.6	−30.3	−20.3	−2.2
AT	−9.5	−18.9	−18.8	0.0	0.0	−14.1	−22.7	−24.0	−14.8	−1.3
PT	−8.1	−15.4	−16.8	0.0	0.0	−13.1	−22.3	−25.8	−13.1	−1.2
SI	−12.8	−26.0	−23.6	0.0	0.0	−17.1	−26.1	−28.0	−19.1	−2.0
SK	−16.2	−30.3	−28.9	0.0	0.0	−20.7	−27.5	−28.6	−23.7	−3.4
FI	−5.6	−11.0	−11.6	0.0	0.0	−9.5	−16.1	−18.4	−8.8	−0.8
EA19	−6.8	−13.6	−13.7	0.0	0.0	−12.5	−20.5		−10.7	−1.0
BG	−10.2	−20.6	−18.4	0.0	0.0	−13.7	−20.6	−23.6	−14.8	−1.7
CZ	−14.9	−29.1	−25.5	0.0	0.0	−20.2	−28.7	−29.1	−20.5	−3.0
DK	−7.2	−14.5	−14.6	0.0	0.0	−11.1	−18.6	−22.2	−11.5	−1.0
HR	−7.1	−14.8	−14.2	0.0	0.0	−11.4	−20.7	−23.0	−11.0	−0.9
HU	−13.7	−26.9	−25.3	0.0	0.0	−18.1	−25.2	−25.6	−20.7	−2.8
PL	−8.0	−16.4	−15.6	0.0	0.0	−13.3	−22.2	−24.2	−12.3	−1.3
RO	−6.8	−14.9	−12.9	0.0	0.0	−11.9	−21.3	−23.1	−10.0	−0.9
SE	−5.7	−11.9	−11.8	0.0	0.0	−10.0	−17.8	−20.1	−9.0	−0.7
UK	−4.3	−8.5	−8.7	0.0	0.0	−7.8	−14.3	−19.6	−6.6	−0.4
EU28	−6.6	−13.2	−13.1	0.0	0.0	−12.1	−19.9		−10.2	−1.0
US	0.2	0.4	0.4	0.0	0.0	0.3	0.8		0.4	0.1
RoW	0.7	2.8	1.3	0.0	0.0	−6.3	5.1		1.3	0.3

the euro area and 6.6% lower in the EU28. Greece and the UK are relatively less integrated with the rest of the EU, but even there GDP is more than 4% lower in the long run.[6] There are small positive effects in the US and the rest of the world due to some trade diversion effects.

Lower GDP in the counterfactual is mostly a productivity effect, which is largely the result of lower investment. Employment falls by 1% on average in the EU, much less than the more than 6% decline in GDP, while the capital stock falls by 10%. Note that the decline in productivity is mostly the direct result of the model hypothesis that links wages to productivity, which in this case leads to a decline in wage growth that stabilises employment, up to the decline due to the terms of trade effect described above.

The scenario described here assumes real government consumption and investment remain fixed. If fiscal expenditure was instead kept constant as a share of GDP, real spending would decline in line with GDP and have additional negative output effects. A sensitivity analysis shows this in Supplementary Table A.1 in the Annex. When (nominal) government consumption and investment fall in line with (nominal) GDP, there is a smaller deterioration in the government budget position. As a result the tax increase needed to stabilise the debt-to-GDP ratio is smaller, which leads to a less negative impact on private consumption and a smaller negative employment effect. But as government investment is productivity enhancing, the overall GDP effect is more negative in this scenario, which now includes the additional effects of a reduction in productive government spending, with a total decline in EU28 GDP of more than 7%.

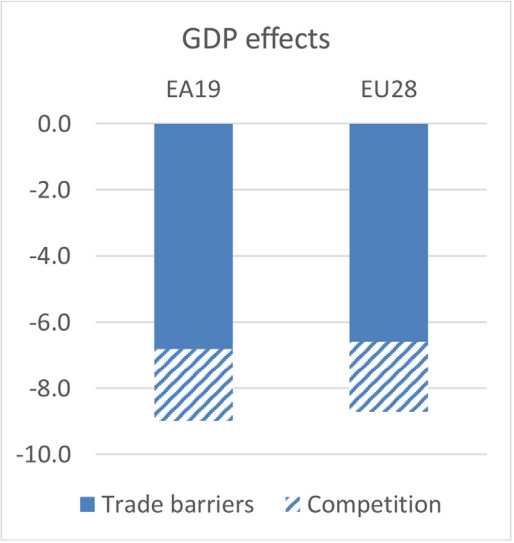
A second sensitivity analysis shown in Supplementary Table A.2 in the Annex shows the sensitivity with respect to the trade elasticity. There is some uncertainty about the value of this elasticity of substitution between imported goods (σ_1), with trade models typically using a larger elasiticty. For example the preferred value reported in Head and Mayer (2014) is around −5. The macro studies on which macromodels base their trade elasticities find generally much lower values, as these also capture a (lower) sensitivity to exchange rate changes. In the simulations used here, we have set the trade elasticity already higher than the standard setting, at −3. When we raise the elastictity in the model to −5, the trade effects become significantly larger, with lower imports and exports, and intra-EU imports falling by between 25–35%. The magnitude of the real GDP effects is slightly lower, by up to a tenth, when substitution is higher.

4.2. *Effects of lower competition*

The scenario described above, based on higher trade barriers in the EU, shows a significant negative effect on productivity. But it does not capture the impact the Single Market has had on competition. Greater trade openness has increased competition and lowered prices, and the re-establishment of trade barriers is likely to reduce competitive pressures. This would allow firms to raise the mark-ups of their prices over their marginal costs, and have a negative impact on output.

One study that examines the impact of the Single Market on mark-ups is Badinger (2007). This paper uses a panel approach, covering 10 EU Member States over the period 1981–99, to test whether the EU's Single Market Programme has led to a reduction in firms' mark-ups over marginal costs. Mark-up reductions are found for aggregate manufacturing, but mark-ups have

[6] The scenarios described here are not equivalent to a Brexit WTO scenario, as here trade barriers are re-established between all EU MS, not just between the UK and the EU27. The present scenario includes negative spillovers from lower demand in the EU27, but lacks negative trade diversion effects associated with Brexit WTO trade barriers. Mayer et al. (2019) include a separate discussion of the Single Market impact with and without Brexit. For an overview of estimates of the impact of Brexit, see e.g. Emerson, Busse, Salvo, Gros, Pelkmans (2017).



Graph 1. Trade and competitiveness effects on long run GDP.

gone up in most service industries since the early 1990s, which confirms in his view the weak state of the Single Market for services and suggests that anti-competitive defence strategies have emerged in EU service industries. The relative reduction in mark-ups reported in this paper in manufacturing is 26%.

We apply this in our model to the mark-up in the manufacturing share of the tradable goods sector. In our view the observed increase in mark-ups in service industries is more difficult to link directly to the Single Market, and there is some evidence that there too mark-ups have come down in more recent years. In the second counterfactual simulation we assume only a change in mark-ups in manufacturing and no change in the services sector.

Table 4 reporst the results for this scenario. An increase in mark-ups in manufacturing leads to a reduction in GDP of about 2% on average. It lowers profits and has a negative impact on demand for capital and reduces investment. It also lowers consumption. Note that there is also a further reduction in trade, with intra-EU trade flows falling by about 5%.

4.3. Total effects of the Single Market

In order to come to a total estimate of the effects of the Single Market we combine the two counterfactual scenarios described above and simulate the combined impact of higher trade barriers and higher mark-ups. Graph 1 shows the total impact on GDP for the euro area and EU aggregates, Table 5 shows macroeconomic effects for individual countries. Overall the impact is roughly linear and the sum of the two scenarios described above.

The increase in trade costs and lower competition raises prices and reduces economic activity. Lower demand for labour reduces real wages, while lower investment leads to lower capital accumulation. This reduces output. Intra-EU trade flows fall by between 25% and 35%, as a direct result of higher trade barriers and indirectly due to less competition. Overall trade openness is also strongly reduced, with exports falling by 15% and imports by 22%, more due to the additional impact of lower domestic demand.

Table 4
Long run macroeconomic impact of less competition.

	GDP	Consumption	Investment	Gov. Cons.	Gov. Invest.	Exports	Imports	Imports Intra-EU	Capital	Employment
BE	−2.5	−2.2	−5.3	0.0	0.0	−4.2	−3.7	−5.0	−3.7	0.0
DE	−2.1	−2.1	−4.6	0.0	0.0	−3.4	−3.0	−4.5	−3.3	0.0
EE	−2.3	−2.0	−4.9	0.0	0.0	−3.9	−3.4	−4.6	−3.4	0.0
IE	−2.2	−1.6	−4.6	0.0	0.0	−3.6	−3.0	−4.7	−3.3	0.0
EL	−1.6	−1.3	−3.9	0.0	0.0	−3.0	−2.3	−4.5	−2.6	0.0
ES	−2.3	−2.2	−4.8	0.0	0.0	−3.8	−3.0	−4.9	−3.3	0.0
FR	−2.1	−2.0	−4.8	0.0	0.0	−3.7	−3.0	−4.5	−3.3	0.0
IT	−2.3	−2.2	−5.1	0.0	0.0	−3.8	−3.0	−4.8	−3.6	0.0
CY	−1.7	−1.5	−4.1	0.0	0.0	−3.3	−2.7	−4.6	−2.7	0.0
LV	−2.2	−1.9	−4.6	0.0	0.0	−3.7	−3.0	−4.7	−3.1	0.0
LT	−1.7	−1.2	−3.8	0.0	0.0	−3.0	−2.5	−4.3	−2.6	0.0
LU	−2.2	−1.8	−4.8	0.0	0.0	−4.0	−3.7	−5.0	−3.3	0.0
MT	−1.3	−0.7	−3.2	0.0	0.0	−3.1	−2.5	−4.9	−2.0	0.1
NL	−2.1	−1.9	−4.4	0.0	0.0	−3.4	−3.0	−5.3	−3.1	0.0
AT	−2.3	−2.4	−5.0	0.0	0.0	−3.8	−3.6	−4.4	−3.4	0.0
PT	−2.2	−2.2	−5.0	0.0	0.0	−3.9	−3.5	−4.8	−3.4	0.0
SI	−2.4	−2.6	−5.1	0.0	0.0	−3.8	−3.7	−4.8	−3.6	−0.1
SK	−2.9	−2.7	−6.0	0.0	0.0	−4.8	−4.3	−5.2	−4.3	−0.1
FI	−2.2	−1.9	−4.7	0.0	0.0	−3.7	−2.9	−4.4	−3.3	0.0
EA19	−2.2	−2.1	−4.8	0.0	0.0	−3.7	−3.1		−3.3	0.0
BG	−2.4	−2.1	−4.9	0.0	0.0	−3.8	−3.1	−4.8	−3.5	−0.1
CZ	−3.3	−3.5	−6.5	0.0	0.0	−4.9	−4.5	−5.4	−4.7	−0.2
DK	−2.0	−1.8	−4.4	0.0	0.0	−3.4	−2.8	−4.4	−3.1	0.0
HR	−2.0	−2.1	−4.3	0.0	0.0	−3.2	−3.0	−4.3	−3.0	0.0
HU	−2.7	−2.4	−5.7	0.0	0.0	−4.4	−3.9	−5.1	−4.0	0.0
PL	−2.6	−2.6	−5.4	0.0	0.0	−4.1	−3.6	−4.8	−3.9	−0.1
RO	−2.5	−2.7	−5.0	0.0	0.0	−3.6	−3.4	−4.4	−3.6	−0.1
SE	−2.0	−2.0	−4.4	0.0	0.0	−3.3	−2.9	−4.2	−3.0	0.0
UK	−1.8	−1.6	−3.9	0.0	0.0	−2.9	−2.3	−4.3	−2.6	0.0
EU28	−2.1	−2.0	−4.6	0.0	0.0	−3.6	−3.1		−3.2	0.0
US	−0.1	−0.2	−0.1	0.0	0.0	−0.1	−0.4		0.0	0.0
RoW	−0.1	−0.2	−0.1	0.0	0.0	−0.1	−0.8		−0.1	0.0

Table 5
Simulated long run effects of counterfactual non-Single Market.

	GDP	Consumption	Investment	Gov. Cons.	Gov. Invest.	Exports	Imports	Imports Intra-EU	Capital	Employment
BE	−18.0	−31.6	−32.0	0.0	0.0	−23.0	−29.8	−33.1	−25.9	−3.4
DE	−7.9	−14.3	−16.3	0.0	0.0	−13.6	−21.2	−25.1	−12.4	−1.0
EE	−14.9	−26.2	−27.1	0.0	0.0	−19.6	−25.3	−28.7	−21.5	−2.3
IE	−12.6	−22.9	−23.7	0.0	0.0	−17.2	−22.5	−26.1	−19.0	−1.9
EL	−5.9	−9.9	−13.6	0.0	0.0	−10.5	−17.0	−25.6	−9.9	−0.6
ES	−8.4	−13.7	−16.5	0.0	0.0	−14.2	−21.3	−27.9	−12.3	−1.0
FR	−7.1	−11.6	−15.2	0.0	0.0	−13.2	−20.3	−24.7	−11.2	−0.7
IT	−6.8	−11.1	−14.3	0.0	0.0	−12.9	−20.1	−26.2	−10.6	−0.7
CY	−9.5	−16.0	−20.0	0.0	0.0	−14.6	−21.8	−29.5	−15.3	−1.1
LV	−13.3	−23.2	−23.6	0.0	0.0	−18.0	−24.8	−32.3	−18.4	−1.7
LT	−11.2	−21.5	−22.4	0.0	0.0	−14.8	−21.0	−28.7	−17.8	−1.6
LU	−20.5	−35.2	−36.0	0.0	0.0	−24.4	−28.5	−29.9	−29.6	−3.8
MT	−13.3	−22.8	−26.4	0.0	0.0	−16.0	−21.1	−24.2	−21.5	−1.7
NL	−15.7	−29.5	−27.8	0.0	0.0	−19.8	−27.9	−34.4	−22.8	−2.3
AT	−11.8	−21.2	−22.9	0.0	0.0	−17.5	−25.6	−27.7	−17.8	−1.5
PT	−10.3	−17.5	−21.1	0.0	0.0	−16.6	−25.0	−29.6	−16.1	−1.3
SI	−15.3	−28.5	−27.7	0.0	0.0	−20.6	−28.9	−31.8	−22.1	−2.4
SK	−19.3	−33.0	−33.4	0.0	0.0	−24.9	−30.9	−32.8	−27.0	−4.0
FI	−7.7	−12.7	−15.8	0.0	0.0	−12.8	−18.4	−22.1	−11.7	−0.8
EA19	−9.0	−15.6	−17.9	0.0	0.0	−15.8	−23.0		−13.6	−1.1
BG	−12.6	−22.5	−22.4	0.0	0.0	−17.1	−23.0	−27.5	−17.7	−1.9
CZ	−18.5	−32.7	−30.7	0.0	0.0	−24.7	−32.3	−33.6	−24.4	−3.8
DK	−9.1	−16.1	−18.3	0.0	0.0	−14.2	−20.8	−25.8	−14.1	−1.1
HR	−9.1	−16.9	−18.0	0.0	0.0	−14.4	−23.1	−26.6	−13.7	−1.0
HU	−16.5	−29.2	−29.7	0.0	0.0	−22.0	−28.2	−29.8	−23.9	−3.2
PL	−10.6	−18.9	−20.4	0.0	0.0	−16.9	−25.1	−28.1	−15.7	−1.5
RO	−9.2	−17.5	−17.3	0.0	0.0	−15.1	−24.0	−26.8	−13.3	−1.2
SE	−7.7	−13.8	−15.7	0.0	0.0	−12.9	−20.2	−23.7	−11.8	−0.8
UK	−6.0	−9.9	−12.2	0.0	0.0	−10.5	−16.2	−23.3	−9.0	−0.4
EU28	−8.7	−15.1	−17.2	0.0	0.0	−15.3	−22.3		−13.0	−1.1
US	0.2	0.2	0.3	0.0	0.0	0.3	0.3		0.3	0.0
RoW	0.6	2.5	1.1	0.0	0.0	−6.2	4.0		1.2	0.2

Lower demand leads to lower tax revenues, and this more than offsets the extra revenue from tariffs. The increase in the government deficit forces an increase in taxes in order to stabilise government debt, and this has an additional negative impact on consumption.[7] There is a strong heterogeneity across countries. Overall GDP is about 8% lower in Germany and Spain, 7% lower in France and Italy. The effects are larger in some smaller and more open Member States, with an almost 16% decline in the Netherlands, 18% in Belgium, and 20% for Luxembourg. Greece, on the other hand, is relatively less affected, with GDP almost 6% lower. The Central and Eastern European Member States that joined in 2004 are ranked high on the list of countries most affected in this counterfactual disintegration scenario. On average, GDP is 9% lower in the euro area and 8.7% lower in the EU28. There are small positive effects in the US and the rest of the world due to some trade diversion effects. Again, lower GDP in the Member States is mostly a productivity effect, coming from lower capital accumulation.

5. Comparison to trade models

Our analysis can be compared to two other recently published studies that try to quantify the macroeconomic benefits of EU membership using Computable General Equilibrium (CGE) Trade models. Mayer et al. (2019) quantify the "Cost of Non-Europe" using modern versions of the gravity model to estimate the trade creation implied by the EU, and apply those to counterfactual exercises where the EU returns to a "normal", shallow type regional agreement, or reverts to WTO rules. They then calculate the trade-related welfare gains from membership of the EU, and losses of a Non-Europe. They abstract from dynamic gains from trade and do not separately include effects from competition, so their results can only be compared to our first scenario, as reported in Table 3. Although their methodology differs from ours, and the model used is also different, their calculated welfare effects are in a similar range, and the ranking of countries shows a remarkable resemblance to ours. For the EU as a whole, they report a 4.4% loss for a regional trade agreement and 5.5% for an MFN counterfactual, compared to the 6.6% GDP loss reported in Table 3. They examine more alternative specifications including unilateral exits and alternative estimation methods and elasticity assumptions.

In one aspect their results differ from ours and that is the estimated impact on trade. In their preferred simulation, based on the OLS estimator, the Single Market is found to have increased trade between EU members by 109% on average for goods and 58% for tradable services. However, based on the PPML estimator, which corrects for potential bias related to heteroscedasticity arising through log-linearisation and is better able to deal with zeros, the trade effects are reduced, although still very significantly positive. This estimator puts more weight on pairs of countries with large levels of trade and yields a total effect of EU trade integration of 55% for goods and 33% for services, which implies for a counterfactual of a reversal an average trade reduction of around 30–33%. One factor in which the models differ is the higher trade elasticity used in trade models. Mayer et al. use an elasticity of 5.03, taken from the preferred value reported in Head and Mayer (2014). The macro studies on which macromodels base their trade elasticities find generally much lower values, as these also capture a (lower) sensitivity to exchange rate changes. In the simulations used here, we have set the trade elasticity already higher than the standard setting, at 3. But the sensitivity analysis reported in Supplementary Annex Table A.2 shows that the effects under a

[7] Note that government consumption and (productive) government investment are kept fixed in real terms in this scenario, to avoid additional fiscal contraction effects.

higher trade elasticity of 5 gives larger trade effects (intra-EU imports fall by between 26–35%). It is difficult to reconcile the larger trade effects based on the OLS estimator with observed intra-EU and extra-EU trade data, as there is no strong evidence of much faster intra-EU15 trade growth. To the contrary, EU15 intra-EU15 imports increased by 40% between 1990 and 2000, while their extra-EU28 imports increased by 60% over the same period. It is possible that this gap could be explained by lower import prices of non-EU imports, which may have more than offset the effects from stronger trade integration within the EU, but it is also conceivable that the large OLS based trade effects reported in Mayer et al. are mostly driven by the Central and Eastern European Member States that joined in 2004.

Another study to which our estimates can be compared is Felbermayr et al. (2018). They carry out simulation experiments that are meant to shed light on the economic benefits arising from various steps of European integration (Single Market, but also Schengen and euro membership). The difference with the Mayer et al. paper is that their analysis is based on a larger disaggregated dataset of 50 goods and services sectors, but over a shorter sample 2000–14. They find income per capita effects from the Single Market dominate quantitatively, with statistically significant losses of between 2.2% up to 20% of the 2014 baseline, with a strong degree of heterogeneity across EU Member States. Their estimates suggest that membership in the Single Market has boosted goods trade by about 36%. In services trade, the trade creation effects is as high as 82%. Thus, while their estimated impact on goods trade is closer to our aggregate estimate, their estimated impact on trade in services is much higher, despite the fact that their estimated trade elasticity is −3.7. Welfare effects are similar to our results though, with a similar ranking between Member States.

Both these trade models show larger trade effects than our structural macroeconomic model, but very similar, and if anything somewhat lower output effects. We can only speculate about possible explanations for this. The general equilibrium effects in our macroeconomic model, with an explicit modelling of the government sector and with distortive taxation, may generate more destabilising effects from e.g. employment responses and investment, leading to a sharper drop in domestic demand. Higher labour taxes needed to stabilise the government debt-to-GDP ratio have a distortive effect on employment, which would not be the case if we assumed lump sum taxation or inelastic labour supply. Our results also depend on how government expenditure is modelled. If it is kept constant as share of GDP (as shown in the sensitivity analysis in Supplementary Table A.1 in the Annex) the required tax increase is smaller and the employment effect is also much reduced compared to Table 3. But in that case there is a sharp reduction in (productivity enhancing) government investment, which reduces potential output by more. Other differences may be related to the production structure in these trade models, which include labour and intermediate inputs, but it is not clear how the impact on capital is captured. In our scenarios there is a strong decline in investment and the fall in GDP is mainly driven by the decline in the capital stock, as employment effects are cushioned by the decline in wages. The presence of (constant) fixed costs in our model also magnifies the negative impact on profits as these costs weigh higher when output declines.

6. Concluding remarks

Almost three decades after the establishment of the Single Market it is worth having a fresh look at the macroeconomic benefits this has brought the Member States of the EU. The Single Market, though incomplete, has boosted trade flows within the EU through the elimination of trade tariffs and reduction in non-tariff barriers, and so raised output and domestic demand. The opening-up of domestic economies has also increased competition, reduced mark-ups and lowered

prices. The combined impact of these two channels is found to have raised EU GDP by 8–9% on average in the long run. At a time that the current multilateral trading system is under pressure, the European Single Market stands out as a great achievement.

The simulated impact is somewhat larger than the ex-ante estimates reported in the Cecchini report, and the estimates found in Mayer et al. (2019) and Felbermayr et al. (2018). One possible explanation is the stronger impact on capital accumulation (investment) found in structural macroeconomic models, but our assessment also includes the effects from mark-ups (competition effect), not just the effect of higher trade barriers, which the latter two studies focus on. It is estimated that the competition channel has added an additional 2% to the GDP effects from lower trade barriers.

Besides the scale and competition effects, there is a third channel through which trade can impact on productivity and that is linked to innovation. Higher trade openness increases market access and can induce more innovation, and stimulate cross-border spillovers from innovation. There is however no consensus on this. In work related to increased import competition from China, Autor, Dorn, Hanson, Pisano, and Shu (2016) find that the impact of the change in import exposure on the change in patents produced is strongly negative, with the accompanying reduction in innovation possibly negatively affecting economic growth in the longer run. The implication of this could be that lower import competition may actually raise innovation, although this is contradicted by the results from Bloom, Draca, and Reenen (2016) who find a positive impact of Chinese competition on innovation activities for a panel of European firms.

The macroeconomic benefits of the Single Market exceed the trade and competition effects highlighted here. The focus has been on free movement in goods and services, while we are silent about the gains from free movement of capital and persons. There is also a general recognition that the Single Market is incomplete and the European Commision has published its assessment on how the Single Market can be deepened (European Commission, 2018). This includes dealing with persistent challenges in products and services markets, but also further progress towards a digital Single Market, capital markets union and banking union. This paper has only given a snapshot of the macroeconomic benefits of the Single Market in goods and services, and this is only one part of the overall benefits of the European Union.

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Appendix A. Supplementary data

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