

# **An innovative CGE assessment of the impact of the TTIP including multinationals and Foreign Direct Investment**

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## **Abstract**

The Transatlantic Trade and Investment Partnership (TTIP) is the largest agreement that has ever been negotiated with objectives going beyond trade itself. The partners are the EU and the US, which together account for around 40% of world trade and about a third of its GDP in 2014. It, therefore, seems to have the potential to affect world relationships. In this paper we focus on the economic impact for outsiders, the majority of which are developing and emerging countries. To that aim we use an innovative Computable General Equilibrium (CGE) with 10 regions (US, UE28, other advanced economies, China, India, Japan, South East Asia, Latin America, Middle East and Sub-Saharan Africa). We analyze in detail the weight in world GDP and trade of the 10 regions, as well as their productive, export and import structures in the initial situation. Then we simulate the impact of the TTIP, obtaining larger estimates than previous CGEs assessing its effects, due to our innovative inclusion of Foreign Direct Investment in the CGE model. We identify the sectors in which the trade and investment integration of the US and the EU would be stronger or weaker, as well as its overall impact. Our results suggest that the effects of the TTIP would be very small but negative for outsiders, with the exception of China, which remains unaffected. This is because the Chinese export structure is heavily specialized precisely in the manufacturing sectors in which integration of the EU and the US is weaker. Furthermore, we find that this pattern somehow prevails among the rest of Asiatic regions, on which the impact is nearly negligible. By contrast, the Middle East and Sub-Saharan Africa are slightly more negatively affected because their export specialization in agriculture, food, oil and mining is harmed after the TTIP. Latin America would also lose a little due to its strong manufacturing integration with the US and its export specialization. We also simulate the results of what could be called an “inclusive TTIP” (i.e., one avoiding third country discriminating rules and standards). With such an agreement all regions would gain, even all outsiders, while insiders would experience a more favorable impact than with the “standard TTIP”.

## 1. Introduction

The slow pace of the World Trade Organization (WTO) in attaining multiregional agreements has brought about a surge in regional and bilateral free trade agreements (Maggi, 2014). In some cases, such as in the recently agreed Trans Pacific Partnership (TPP) and ASEAN Community, regional negotiations are willing to extend their scope beyond the traditional component of tariffs. This is understandable in actual economies with the proliferation of Foreign Direct Investment (FDI) flows, trade in services, value chains and other modern elements related to trade. In fact, some scholars are suggesting that even the WTO should try to reach deeper trade agreements (Antràs and Staiger, 2012a, 2012b).

The Transatlantic Trade and Investment Partnership (TTIP), which is actually being negotiated, is also expected to be a modern trade agreement. Its potential impact has attracted considerable attention among policy makers, trade unions, consumers' associations, as well as in the press. However, most of the studies available have focused on its effects for advanced economies. In particular, for the partners directly involved in the agreement, namely, the EU and the US. Are there any potential effects for outsiders? Would they be negative or positive? How would they differ across the different areas of the globe?

In this paper, we provide an analysis of the impact of the TTIP by means of a Computable General Equilibrium (CGE) model. This methodology has become the most commonly used by economic institutions to try to quantify the impact of the TTIP (e.g., Francois et al., 2013; Fontagne et al., 2013). A general equilibrium perspective seems mandatory for this type of analysis. Trade agreements are expected to have an impact in all sectors of the economy because the reductions in tariffs and the different types of Non-Tariff Barriers (NTBs) they entail cover most services, manufacturing and agricultural sectors. In addition, it is necessary to take into account the economic interrelationships (i.e., backward and forward linkages) across sectors, as CGEs do.

We use an innovative CGE that, to the best of our knowledge, is the first one that introduces multinationals and FDI operating in imperfectly competitive sectors within a multiregional framework. Our model follows a literature of "FDI in services" (see Tarr, 2012 for an overview) in which the combination of the characteristics we have just mentioned had still not been achieved. This is of relevance for the analysis of modern trade agreements and even more in the case of the TTIP, since Europe and the US, are both home and host of the vast majority of FDI flows and stocks in the world. For the last year available, which is 2014, they accounted for 56% of the inward FDI stock of the world (35.2% being in the EU and 20.8% in the US) and 64.7% of the world outward FDI stock (40.3% being owned by the EU and 24.4% by the US)<sup>1</sup>. Indeed, we

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<sup>1</sup> The figures are authors' calculations based on the *World Investment Report* (UNCTAD, 2015).

find that the previous available estimations of the effects of the TTIP, may well have fallen short, precisely because they lack an analysis of multinationals and FDI.

Our model has ten regions (US-UE28-other advanced economies-China-India-Japan-South East Asia-Latin America-Middle East-SubSaharan Africa) and 21 sectors. We first analyze the import and export structure, as well as the production structure of all these areas. Then we run the reductions in barriers to trade and FDI that the TTIP would entail and analyze the differential patterns of adjustment across regions.

The rest of the paper is organized as follows. The next section introduces the content of the TTIP providing detailed data on the costs related to impediments to trade and investment between the US and UE. Section 3 describes the model, while section 4 explains the data used and the simulations. Section 5 presents the results, beginning with the microeconomic effects, followed by the macroeconomic ones and a sensitivity analysis. Section 6 offers the main conclusions. There are two final appendices with sectors and regions definitions.

## **2. The Transatlantic Trade and Investment Partnership (TTIP)**

In 2013 the US and Europe formally begun the negotiations of an ambitious trade and investment agreement. Politicians declared that their main purpose was to create jobs at both sides of the Atlantic. The TTIP is based on three major pillars: 1) Increasing *market access* for products and services by eliminating tariffs, reducing Non-Tariff Barriers (NTBs) and opening up government procurement practices, particularly, in some US States; 2) Streamlining *regulatory standards* in a process that somehow could be (in part) similar to the “mutual recognition of standards” that took place in the process of European integration; 3) Establishing a *set of rules* on elements relevant to trade nowadays, like intellectual property, labor regulations, environmental rules, FDI and the treatment of state owned enterprises.

The frontiers between the three different pillars sometimes can be blurred. Thus, the analyses of economists have focused on what the impact of lowering NTBs faced by trade flows would be, apart from the effects of tariffs elimination. The concept of NTBs ranges from differences in packaging and labelling procedures, voltage and other technical requirements, certificates related to health, the environment and security... and red tape. Technically, NTBs have been defined as: “all non-price and non-quantity restrictions on trade in goods, services and investment, at federal and state level. This includes border measures (customs procedures, etc.) as well as behind-the border measures flowing from domestic laws, regulations and practices’ (...). In other words, non-tariff measures and regulatory divergence are restrictions to trade in goods, services and investment at the federal or (member) state level” (Ecorys, 2009, p. xxxv). Exporters face regulatory divergences across both sides of the Atlantic. Some of them

are necessary requirements, but others have arisen due to sheer protectionism. Politicians have always asserted that the aim of the TTIP was to cut unnecessary red type and duplication of procedures for exporters, without jeopardizing the important objectives of safety, security and environmental protection.

The previous studies have found that the main driver of the positive impact of the TTIP both at the micro and macroeconomic level was the NTBs to trade. As happens with tariffs the largest the NTBs is, the greater the impact for the sector experiencing liberalization. In Francois et al. (2013) Europe would gain slightly more than the US after the TTIP, basically because its NTBs tend to be in general slightly lower than those of the US. Note that part of those NTBs included also the barriers to public procurement. The latter component was not the largest part but certainly a significant part of them (Francois et al., 2013). In this study we also find a major impact from NTBs faced by trade, but, as noted above, we expand the analysis to other non-tariff barriers, the ones faced by FDI in advanced services sectors.

The negotiations are still taking place, and based on previous experiences they may well take long (the TPP has taken five years). Therefore, economists not knowing what their exact final outcomes would be have analyzed the potential impact of the agreement assuming that it could end up being “ambitious” or “modest”. The two terms design whether the cuts in NTBs would be of 25% or 10%, respectively, of what we estimate their actual levels are. Note that the negotiations do not expect to eliminate NTBs by any means, even though they expect to eliminate tariffs completely. It is not reasonable to expect that all non-tariff barriers would disappear after the agreement.

We have different sources for tariffs but estimating NTBs is a much harder task, since it involves translating laws and regulations into costs’ estimations. The most commonly used assessment of bilateral trade related NTBs between EU and the US is the one undertaken by Ecorys (2009). Based on business services, Ecorys (2009) calculated indexes of trade restrictiveness as perceived by US and EU firms across a wide variety of products. Those indexes were cross checked against OECD (2016) services restrictiveness indicators and against Product Market Regulation indexes (Koske et al., 2015). The final indexes were used to represent a NTB variable in gravity models, which were also used to estimate the costs of production related to the barriers.

The first four columns of Table 1 offer the estimated cost reductions (over total costs) related to NTBs in trade flows, across 21 sectors in which the US, EU and the rest of regions in our model are split<sup>2</sup>. The columns with the label “ambitious” show a 25% reduction in the total costs that the barrier implies, while the ones labelled “modest” show a 10% reduction<sup>3</sup>. The next two columns of Table 1 refer to cost savings due to

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<sup>2</sup> It is precisely the data availability of NTBs related to trade what makes us split our regions in these 21 sectors. Appendix 2 presents the sectors’ mappings to several classifications.

<sup>3</sup> The reader can check that multiplying by 4 (10) the ambitious (modest) costs of NTBs for trade yields the total costs of these barriers displayed in Table 2 of Francois et al. (2013, p. 20), which stem, in turn, from Ecorys (2009). However, Francois et al. (2013) do not offer barriers for “Agriculture”, “Other manufacturing” and “Other services”. For those sectors we take the estimations used by the CEPII

the total elimination of tariffs. The estimations yield considerably larger savings in costs related to NTBs compared to the ones of tariffs. Note also that NTBs to trade in manufacturing tend to be higher than those of services. The next four columns display the “Barriers to FDI”, which are the main novelty of our analysis. The ambitious and modest cuts in costs of barriers to FDI between the US and Europe tend to be low, except in the business sectors and in air transport.

[TABLE 1 AROUND HERE]

Jafari and Tarr (2014) have recently estimated the barriers that foreign firms face when they enter markets abroad in advanced business services. Therefore, this latter source provides barriers to FDI, which is an important element of the TTIP. The data on costs related to barriers of FDI are a rather conservative reduction of those barriers. Ambitious and modest stand for 25% and 10% reductions in costs, respectively, as in the case of NTBs. Our 25% or 10% reductions are smaller than the usual 50% cuts that have been estimated in the few CGE models of “FDI in services”. Francois et al. (2013) have estimated the barriers faced by FDI between the US and Europe. However, that information is not publicly available. But they do mention, in Chapter 6, that a 25% reduction of barriers faced by FDI would be realistic. Indeed, they econometrically estimate the impact of that reduction. But, as they themselves recognize, the results are not comparable to what they obtain from their CGE for trade NTBs and tariffs, due to the different methodological approach. By contrast, in this paper the results obtained from the different components of the TTIP are fully comparable since they are all derived within the same CGE model.

### 3. The model

The current model extends the multiregional CGE of Balistreri et al. (2015) along several dimensions. The original Balistreri et al. (2015) is a step forward in a CGE literature of “FDI in services” which had been developed using single country models. In fact, the model is a successor of a number of recent papers beginning with the stylized model from Markusen et al. (2005). Further extensions led to applications to real economies, including the accession of Russia to the WTO (Rutherford and Tarr, 2008) and other integration of African and East European countries (e.g., Latorre, 2016). In those single country applications, the sectors with FDI, i.e. advanced business sectors, produce in a framework of Dixit-Stiglitz monopolistic competition. That implies that a growing number of foreign or national firms (and, therefore, of product varieties) leads to potential increases in both consumers’ welfare and producers’ productivity. The latter is due to the possibility of obtaining a quality adjusted unit of services at a reduced price when there are more varieties (i.e., more firms producing

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(Fontagne et al., 2013, p. 8), which are the same ones used in Francois and Machin (2014, p. 23). From this latter study, we also obtain the trade NTBs for “Other manufacturing” and “Other services”.

those services). This mechanism resembles the empirical evidence of FDI in services leading to higher productivity in other sectors of the economy using panel data and controlling for the endogeneity of FDI (e.g., Fernandes and Paunov, 2012; Arnold et al., 2008).

The Dixit-Stiglitz mechanism was present in manufacturing while it was absent in the FDI services sectors of the multiregional model of Balistreri et al. (2015). This model had, however, developed other important features related to trade, such as the possibility of trade diversion impacts due to its multiregional framework<sup>4</sup>. As noted above, we extend this latter model with two new features. First, while preserving the multiregional framework, we introduce the Dixit-Stiglitz monopolistic competition with endogenous productivity effects in the advanced services sectors with FDI. Second, we develop a steady state formulation following the specification of previous TTIP assessments (e.g., Francois et al., 2013), going beyond the static framework of Balistreri et al. (2015).

The operations of multinationals are an important element of modern trade agreements that have proved to be beyond the agenda of the multilaterals negotiations under the WTO. However, very few CGE models incorporate FDI flows accruing to foreign firms whose technology and cost structures differ from the ones of national firms. See Tarr (2012) and Latorre (2009) for a summary of the available models. For the provision of services, the physical presence of firms seems more important than in the case of manufacturing goods. The latter can cross borders more easily.

The Appendix presents a full description of the model. Its main characteristics can be briefly summarized as follows. As is common in the analysis of the TTIP the model has one representative consumer in each region whose income stems from the remuneration of all factors of production. Because the model aims at analyzing trade policies we use the common specification that it is private consumption the component which adjusts to the variations of income of the representative agent. Public consumption remains constant in real terms to avoid the distortions that its variation would produce.

The model has a rich set of taxes (on production and consumption) that vary according to the different sectors. It also includes tariffs and subsidies as well as the different types of NTBs displayed in Table 1. As is well known, NTBs bring about efficiency losses (“Samuelson type deadweight costs” and “sand in the wheels”) but may also generate rents to different agents in the economy. Ecorys (2009) estimated the share of rents and efficiency losses that were behind the NTBs between Europe and the US. On average, despite some variation across sectors, 60% of the costs of the NTBs were found to be efficiency losses, while 40% would create rents. Additionally, 2/3 of the rents are assigned to importer interests and 1/3 to exporter interests through import

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<sup>4</sup> Recently, Olesyuk (2015) has also introduced FDI in a framework of imperfectly competition, but FDI is modelled only in the region in which the analysis focuses, namely, Ukraine, while it is absent in the rest of regions in the model. Most notably, Olesyuk’s model includes heterogeneous firms in manufacturing in its multiregional framework.

tariffs and export taxes, respectively, also following Ecorys (2009). The 60% of efficiency losses are modelled as iceberg costs.

On the other hand, the model has three types of sectors: 1) Manufacturing sectors which operate in an imperfect competition framework (chemicals, electronics, automoviles, textiles and other manufacturing); 2) Imperfectly competitive advanced services sectors with multinationals and foreign direct investment (banking, insurance, business services, air and water transport and telecommunications); 3) Perfect competition sectors: agriculture and the rest of manufacturing and services sectors not included in the previous two groups of imperfectly competitive sectors. The imperfectly competitive sectors have a Dixit-Stiglitz monopolistic competition framework. Even though prices, costs and production vary among the different types of sectors all of them minimize costs.

In the imperfect competition sectors there are economies of scale. Product differentiation arises at the firm level following Krugman (1980) and Helpman and Krugman (1985). As a consequence, the number of firms (and products' varieties) will affect productivity and welfare. When there are more firms within the same industry they become more specialized and productivity will rise. The cost of using their products as intermediates in other sectors will go down as the number of firms goes up. Consumers also benefit from higher variety experiencing an increase in welfare. In the advanced services sectors there are two types of firms, namely, domestic and foreign firms. They produce with different technologies, in particular, foreign firms used imported inputs that are not available for domestic firms. This matches the findings that multinationals rely more intensively than domestic firms in the use of imported intermediates (e.g., Latorre 2012; 2013). Additionally, the model differentiates the impact of FDI flows according to the services' sector to which they accrue, which is in accordance with the fact that the impact of multinationals varies across sectors (Smarzinska, 2004; Zhou and Latorre, 2014a; 2014b). We also include the impact of profit repatriation that is assumed to be 50% in all the results we analyze. This issue is of importance according to previous evidence (Latorre et al., 2009; Gómez-Plana and Latorre, 2014).

In the perfect competition sectors firms produce with constant returns to scale. Products differ according to their country of origin. In other words, an Armington (1969) specification is used so that each region in the model produces a specific variety, which is an imperfect substitute for varieties coming from other regions. This Armington assumption grasps the empirical evidence that countries trade different varieties of the same good or service.

Finally, the model is a system of non-linear equations derived from microeconomic optimization following a dual approach (Dixit and Norman, 1980). Mathematically, it is formulated as a mixed complementarity problem (e.g., technical appendix of Markusen, 2002) although some of the equations resemble national accounts identities. The complete model is Latorre et al., (2015).

#### 4. Data Sources and simulations

Some of the data sources have already been detailed in the section explaining the costs reductions that the TTIP is expected to generate. The base data for the majority of micro and macroeconomic variables, as well as the input-output framework of the model come from the latest version of the GTAP Database (GTAP 9, Narayanan et al., 2015). This database is commonly used by CGE modellers. It reflects the world economy disaggregated in 57 sectors and 140 regions or countries. Using Gempack or GAMS software the data can be aggregated to obtain a number of regions and sectors appropriate to the topic to be analyzed. In our case, we use a ten region model of US-UE28-other advanced economies-China-India-Japan-South East Asia-Latin America-Middle East-SubSaharan Africa. As we mentioned above, the model has 21 sectors due to data availability of NTBs related to trade. We also model three different types of factors, namely, land, capital and labor.

GTAP9 resembles the world economy in 2011. Therefore we use IMF's (*World Economic Outlook*, 2015a) GDP<sup>5</sup> and unemployment rate projections, which are available till 2020. This year looks like a reasonable benchmark for the TTIP to have already been agreed and for having initiated the first phases of implementation. Therefore it will be our reference year for the simulations. Data on the sales of foreign multinationals across the different regions and sectors are from the US International Trade Commission Database (Fukui and Lakatos, 2012).

In Tables 2 and 3 we provide an overview of the productive and trade structure of the different regions. We present the percentage shares of the different sectors in GDP (Table 2) as well as in overall imports and exports (Table 3) in the year 2020. As has already been mentioned this is the year of reference for our simulations. The last column offers the shares in the world and the last rows some summarizing figures of the weight of "all manufactures", "all services" and a "total" of the 21 sectors.

[TABLE 2 AROUND HERE]

The first row of Table 2 shows that the weight of agriculture in the world is very limited (5.3% of total GDP). However, several of the regions considered exhibit quite large shares in this sector. The most extreme case is the one of Sub-Saharan Africa (19.4%), followed by India (18.9%), Southeast Asia (13.5%) and China (10.6%). In the same line, the world is a services society with a 62.6% share, which clearly prevails over the weight of manufactures (32.1%). Across all regions services do also prevail as the main source of GDP with the only exception of the Middle-East (46.9% of services versus 47.6% of manufactures). However, the overall weight of services varies considerably among them with the most developed areas, logically, being more specialized in them – Japan (76.9%), US (74.7%), EU (69.0%) and other advanced countries (67.8%)- and the

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<sup>5</sup> GDP projections were further revised for Spain and the US, with new estimations that appeared in June 2015 (IMF 2015b, 2015c).

least developed ones exhibiting the lowest shares –Sub-Saharan Africa (45.5%), China (46%), Southeast Asia (46.8%), Middle-East 46.9%) and India (54.7%). Latin America is close to the world average in services (62.1%).

Several individual sectors stand out due to their weight in world GDP. First, other services is the largest single sector accounting for 40.7% of world GDP, next comes other business (9.6%), construction (6.5%) and agriculture (5.3%), closely followed by other primary (5.1%) and finance (6.5%).

The structure of the GDP in the world and across regions contrasts sharply with the one of imports and exports, which appears in Table 3. Several points are worth noting from this table. Again the last column offers the importance of each sector in total world trade (exports and imports coincide, of course, in this column). World trade is clearly dominated by manufacturing products (82.6%), while the weight of services is 14.8% and agriculture would account for the remaining 2.7%. Even though the world is specialized in services, in terms of GDP, this is clearly not the case in trade. We see, however, that the EU stands out across regions with a larger share of trade in services sectors (22.3% and 22.1% of its exports and imports, respectively). Exports of services also account for an important share of total exports in the US (20%) and even more in India (23.7%), with less important shares in the import side of services in both areas (14.1% and 12.1% of their total imports, respectively). Other advanced countries also have more trade in services than other areas, although they are less specialized in them than the EU.

In 2020, chemicals accounts for the largest share in world trade (15.4%), followed by other primary (which includes oil) and other machinery with 14.5% and 14.1% shares, respectively. Electronics would be the next sector in importance with 8.5%.

[TABLE 3 AROUND HERE]

The last row of Table 3 shows the weight of total exports and imports of each region in world trade. We can see that the TTIP area accounts for the 18.7% and 12.7% of total exports from the EU and US, respectively (i.e., 31.4% of world exports). Their overall share is larger in imports, 17.9% in the EU and 17% in the US, which adds up to 34.9% of total world imports. This reveals the potential of the TTIP to have an important effect in world trade. We can observe that the trade specialization of the TTIP partners is rather similar. Both do rely heavily on imports from other primary, although in the case of the EU this force is more intense. Both are also specialized in imports and exports of chemicals and other machinery, and rely heavily on imports of electronics. Regarding services they are quite specialized in exports and imports of other services and also in business services. However, the weight of these two services sectors in trade, which accounts for the bulk of trade in services, is small compared to their weight in GDP.

The sectors we have just analyzed stand out as the main candidates to be heavily impacted by the TTIP. However, as we shall see, two extra elements will influence the evolution after the TTIP. They are the size of existing barriers in the TTIP partners and

their respective importance in the bilateral trade of the other TTIP partner (i.e, the quota shares in imports and exports between the TTIP areas). Let us analyze this latter point.

Tables 4 and 5 show the geographical quota shares in imports and exports of the TTIP partners. The US and the EU are very integrated in their trade flows, particularly in services. This trend is more intense in services from the US, in which the EU is by far the most important trade partner. Indeed the EU accounts for 39.6% and 40.2% of total US imports and exports in services, respectively. In imports from manufacturing from the US other areas such as other advanced countries, Latin America and China are more important sources than the EU, with shares of 21.7%, 17.9% and 16.1%, respectively. From the side of manufacturing exports, the US is also very heavily integrated with other advanced countries and Latin America with shares of 28.4% and 21.7%, which exceed the one of the EU (19.7%).

[TABLES 4 AND 5 AROUND HERE]

In the European side, the US is the main provider of imports in services (27.8%) and the second most important destination of its services exports (21.6%), after other advanced countries (24.9%). These US quota shares exceed by far the ones of manufacturing bilateral trade with the EU. Indeed, in manufacturing the most important trade partner for Europe is the Middle-East region (26.4% and 26.2% of its imports and exports, respectively). Next in importance are the other advanced countries with shares of 20.7% and 22.6% in EU manufacturing imports and exports, respectively. China also surpasses the weight of the US in manufacturing imports in the EU (18.5% versus 13.6%). But the US is a more important destination of EU exports than China (16.7% versus 13.0%).

These figures reveal that other advanced economies stand out in its integration with the TTIP area among outsiders. They are quite integrated with both areas of the TTIP in manufacturing and services sectors and from the import and export side. Latin America has stronger ties with the US than with the EU. They are, however, concentrated in manufacturing, where it is an important source and destination of US trade. The Middle-East region plays a prominent role in trade with the EU in services, and even more in manufacturing.

This analysis could suggest that the most influential effects of the TTIP would arise in services, in which the EU and the US are more integrated. We shall see, however, that because barriers to trade in services are smaller than in manufacturing and due to the lower production orientation of services to trade, compared to manufacturing, most of the impact takes place through the manufacturing sectors.

As we have already explained the TTIP is expected to lower the costs for firms of conducting trade or investment at the other side of the Atlantic. Therefore, there are three potential sources of cost savings, whose exact costs' reductions were displayed in Table 1. Let us briefly summarized how those components of the agreement will be labelled in the results we are about to analyze:

- 1) “NTBs”: in this simulation the US-EU bilateral trade related NTBs are lowered in all sectors simultaneously. The reductions in costs are exactly the ones displayed in the first four columns of Table 1. So, for example, in an ambitious simulation the European agricultural firms would save 14.20% of their total costs when they export to the other side of the Atlantic, while US agricultural firms would save 18.33%. In a modest simulation the reductions would be of 5.68% and 7.33%, respectively. The same idea would apply for reductions in the rest of sectors.
- 2) “Tariffs”: in this scenario there is a total elimination of US and EU bilateral tariffs, that, as is well known, only affects agricultural and manufacturing sectors. For example, in agriculture the savings of US firms would be 3.29% when they export to the EU, while all EU firms would save 1.68% when exporting to the US.
- 3) “FDI”: the barriers that foreign firms experience to operate at the other side of the Atlantic are reduced in this simulation. Note that these barriers affect the group of services that we have called “advanced services sectors” (i.e., not all services sectors). The largest reduction appear in business services, US multinationals could save 7.63% in their operations in the rest of the EU in the ambitious scenario.
- 4) “Total”: this simulation includes the simultaneous interaction of the three previous ones (i.e., of NTBs, tariffs and FDI together).

Our results will concentrate on the long term impact of an ambitious TTIP. For the macroeconomic outcomes, we also present the effects of a modest, as well as an ambitious TTIP. The reasons for this strategy will become clear later on.

## Results

### Sectoral results

Table 6 presents the impact on output (left), exports (center) and imports (right) for all sectors (rows) and regions (columns). The last rows further present the overall impact for manufacturing sectors (“all manufactures”), services (“all services”) and across all of the 21 sectors (“total”). All the results should be viewed as annual percentage changes after the agreement and due solely to the impact of the TTIP<sup>6</sup>. We estimate the “total” impact of the TTIP, which includes the effects of its three components (NTBs, tariffs and FDI) that we have just described in the previous section.

TABLE 6 AROUND HERE

Beginning with output there is an expansionary trend, which is similar in the EU and in the US (with an overall rise of 0.69% and 0.67%, respectively). The increase is larger,

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<sup>6</sup> Our model isolates the impact of the agreement, while in the real world, of course, other forces will be interacting simultaneously with it.

however, in European manufactures (0.73%) than in US manufactures (0.45%). The sectors which grow more in the EU are motor vehicles, textiles, food, insurance, finance and chemicals (in that order). All these sectors experience sizeable expansions in their exports in many cases coupled with less intense increase in imports. In general, the evolution of sectoral exports and imports can be understood by looking at the level of NTBs<sup>7</sup> and to the share of the other partner in trade. European exports grow more in sectors like food, textiles, finance, insurance, chemicals, other transport and motor vehicles (in that order). This can be explained by both the large pre-existing NTBs in the US (Table 1), coupled with a sizeable quota of the US in exports of these EU sectors (Table 4). In the case of textiles, the elimination of the high US tariff accounts for an important part of its evolution<sup>8</sup>.

With respect to EU imports, the largest increases are experienced in food and motor vehicles, which exhibit a combination of high NTBs and tariffs in the EU, as well as an important US quota share in European imports.

The rise in exports will tend to increase production while tougher competition from imports may reduce it. Our findings of the sectors that expand production most in the EU, match the ones in Francois et al. (2013)<sup>9</sup>.

While an expansionary trend prevails also in US manufacturing (0.45%) a few sectors reduce their output. Among the sectors contracting production stands out motor vehicles, also in accordance with the estimations of Francois et al. (2013). Note that in general the rise in exports of manufacturing surpasses by far the increase in imports (6.97% versus 4.52%). In line with our previous findings, the growth in exports is stronger in the sectors which exhibit relatively large European NTBs and European quotas in US exports. These are the case of other primary, other transport, communication, finance and other business. The European tariff in food, textiles and motor vehicles increase even more the important barriers to trade related to NTBs in these sectors. When the former are eliminated and the latter are reduced, the US increases considerably exports in these sectors.

On the import side, food, other transport, finance and insurance combine big EU quota shares with rather large NTBs in the US. This fact underlies their remarkable increase across US imports. Imports of chemicals and motor vehicles also rise intensively. This explains why even though they exhibit important increases in exports, they will end up reducing production. In other primary, the low increase in imports, despite the very high NTB, is due to the nearly negligible EU quota share.

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<sup>7</sup> For the few sectors in which tariffs remain high, such as food, textiles and motor vehicles, they also play a role.

<sup>8</sup> The strong increase in exports of other primary is related to the very low initial level of EU exports.

<sup>9</sup> However, Francois et al., (2013) do not have textiles as a separate sector. Furthermore, it is also important to note that they include 20% of direct spillovers in their results, while for the moment we do not. We will see the impact and explanation of those spillovers in the macroeconomic results.

Overall imports in services in the US rise by more than their overall exports (4.01% versus 2.46%). This does not bring about a decrease in production in those sectors, why not? The reason is that the impact of these trade effects is smaller than the impact of FDI in the US. Protection is higher in the barriers to FDI in the US compared to the one in the EU (Table 1). This is particularly clear in the sector of business services, which accounts for a very sizeable share in overall services. When this protection is lowered, production increases in the US, since productive capital can be installed there more easily. That is why overall production in services in the US grows more than in the EU (0.78% versus 0.68%, respectively).

Let us turn now to the impact for “outsiders” (i.e., the countries and regions that do not participate in the TTIP). We can see that across manufacturing there are reductions in exports in many sectors for all areas outside the TTIP. Indeed exports of “all manufactures” always fall for outsiders, although with different intensity. This outcome, is in turn, reflected in output which tends to follow the trend of exports (i.e., production experiences decreases or increases in the sectors in which exports go up or down, respectively). By contrast, the general pattern of exports from services is of increases. This is also shown in the expanding evolution of exports of “all services”, although production in these sectors looks less related to exports than in the manufacturing case. FDI plays a role in the evolution of this sector, in which, on the other hand, the amount of production devoted to exports is smaller and accordingly the push for production of exports is less important.

The pattern of exports followed by outsiders that we have just explained reflects the intensity of the resulting trade integration between Europe and the US after the TTIP. In order to show this Table 7 offers the impact of bilateral imports among the regions considered. The first part (on the left) presents EU imports in the different sectors coming from the areas that appear in the columns. The second part (on the right) offers the same results for US imports. At the bottom of the table, we can see the same summarizing measures that appeared in the previous tables, i.e. “all manufactures”, “all services” and the “total” comprising all sectors. EU total bilateral imports coming from the US would grow by 31.1% mostly driven by “all manufactures” with an increase of 42%, while the increase in “all services” is of 8.4%. On the other hand, “total” US bilateral imports coming from the EU would increase by 28.8%. Again, manufacturing would account for the bulk of the increase (35.9%), while services imports increase by 9.8%.

[TABLE 7 AROUND HERE]

Table 7 reflects that with the reduction in costs that the TTIP implies the EU and US would increase their bilateral imports very heavily across all sectors. Imports from the rest of regions tend to exhibit two contrasting patterns. Imports coming from areas outside the TTIP in manufacturing tend to decrease (with a few exceptions), while in services they tend to increase although very slightly. The decrease in manufacturing must be related to the fact that cost savings from the TTIP are larger in manufacturing

(which exhibit higher NTBs than services and additionally have tariffs, which are absent in services sectors). As a consequence, after the agreement imports coming from the partner at the other side of the Atlantic would become considerably cheaper compared to imports from other areas of the world. This results in very important increases in imports from the TTIP partner and reductions in imports from the rest of sources. By contrast, cost savings are more reduced in services and the bilateral increases in imports between the TTIP partners are less intense in these sectors than in manufacturing. There is even room for increases in services coming from areas outside the TTIP.

There are a few manufacturing sectors with an exceptional trend in which bilateral imports from areas outside the TTIP also increase. This pattern appears for European imports in textiles, wood and paper, other machinery, other manufacturing and for a few areas in electronics. In the case of imports going to the US the pattern also appears in the same sectors, excluding textiles. A closer look at the bilateral imports between the transatlantic areas in these few sectors reveals that their increases in bilateral imports are much more reduced than in the rest of manufacturing sectors. Indeed, if we look at the levels of existing NTBs and tariffs we find they are among the ones that are less “protected” (i.e., the trade barriers including both NTBs and tariffs are smaller). The extreme case would be other machinery, in which there are no NTBs at all and the tariffs are minimal. Because the initial barriers are so small then the TTIP would not make firms save many costs. That is why the increase in bilateral imports in these sectors is less intense than in the rest of manufacturing sectors and there is scope for imports from other areas, similarly to what happened in services.

The contrasts in the evolution of bilateral imports shown in Table 7 turn out to be very important for the evolution of total (not bilateral) sectoral exports from Table 6. In this latter table, we can see that across manufacturing “outsiders” increase exports precisely in the sectors in which the integration between the EU and US is weaker due to the smaller savings in costs. As mentioned above, the evolution of production of the “outsiders” seems to be quite related with their export performance. In other words, those sectors and areas outside the TTIP exporting more are the ones that tend to increase production. Although, this pattern is quite clear for manufacturing and less clear for services sectors, due to their weaker orientation to trade and the more important role of FDI.

Looking at the overall evolution of production (row “total” in Table 6) we find a slightly negative effect for the Middle-East region (-0.12%), followed by Sub-Saharan Africa (-0.10%) and other advanced and Latin America (both with -0.09%). The negative results would be much smaller for South East Asia (-0.04%) and even negligible for India and Japan (both with -0.02%). They would be absent for China, whose output remains unaffected (0.0%).

This differential impact on overall production across outsiders is the result of the interaction of several sources. On the one hand, in manufacturing production tends to be quite related to exports. Exports, in turn, will tend to increase (decrease) when the

export structure of the different areas is specialized in sectors in which the TTIP partners trade less (more) intensively. Chinese exports remain nearly constant in manufacturing (-0.1%) because, among the regions considered, it is the one that concentrates a higher amount of exports in the sectors that increase exports to the TTIP area (68.8% of exports<sup>10</sup>). On the opposite extreme, the Middle-East and Sub-Saharan Africa region concentrate the lowest shares of exports in the expanding sectors (6.1% and 3.7%, respectively) and, most importantly, these two regions also suffer from their strong specialization in exports of other primary, as well as agriculture and food. In the latter three sectors, the TTIP area becomes heavily integrated reducing exports coming from other regions. This explains why these two areas (Middle-East and Sub-Saharan Africa) suffer relatively larger overall output reductions compared to the rest of regions of -0.12% and -0.10%, respectively.

Other advanced countries are the area which is most integrated with both of the TTIP partners, as we saw in Tables 4 and 5. In manufacturing its exports will decrease because it is not specialized in the sectors which increase their exports to the TTIP. They account only for 31.8% of its overall exports. Other advanced countries increase services exports but this will not bring about an increase in production in them. This is because, their production is less oriented to trade (than the one of manufacturing) and they suffer, instead, from the contraction in manufacturing production. In other words, production in services of this area will go down, because downstream sectors (i.e., manufacturing sectors) are reducing production, dragging down production in services sectors<sup>11</sup>.

In Latin America the share of the sectors whose exports expand to the TTIP area is quite reduced (19.4% of total exports). As a result there is a decrease of its manufacturing exports. This will, in turn, contract manufacturing output which will also bring about a fall in services production due to their already mentioned input-output connections.

In general, we can see that manufacturing exports also fall in the rest of regions, which are concentrated in Asia, such as India, Japan and South East Asia. The decrease in exports from regions of Asia (including China) tends to be of smaller magnitude than in

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<sup>10</sup> The reader can check in Table 3 that the share in overall Chinese exports of the sectors textiles, wood, electronics, other machinery and other manufacturing add up to 68.8% (and to the percentages that will be quoted below for other areas). Recall that these sectors were the ones in which outsiders increased exports to the TTIP area, due to weaker trade integration of the TTIP partners in them.

<sup>11</sup> The sector of other services and, to a lesser extent, business services are much more oriented to the provision of intermediates for other sectors than to exports. Since these two sectors account for the bulk of services production, the latter will be very responsive to the negative evolution of manufacturing sectors. The percentage of production in other services devoted to intermediates going to manufacturing sectors versus the one exported are, respectively, as follows: EU (8.4 vs. 4.3), US (9.3 vs. 1.3), China (29.2 vs. 1.1), Japan (12.3 vs. 0.8), India (21.3 vs. 1.0), Latin America (13.9 vs. 1.4), other advanced (12.0 vs. 3.9), Southeast Asia (20 vs 4.3), Sub-Saharan Africa (25.2 vs. 2.3), Middle-East (18.4 vs. 3.0). For the sector of business services the same percentages are EU (24.3 vs. 12.0), US (16.7 vs. 4.9), China (34.3 vs. 2.4), Japan (20.6 vs. 1.8), Latin America (23.1 vs. 4.5), other advanced (19.0 vs. 10.9), Southeast Asia (18.4 vs 15.2), Sub-Saharan Africa (19.8 vs. 3.6), Middle-East (23.5 vs. 11.1). Only India exhibits an exceptional trade in business services with percentages of (12.3 vs. 30.3). We have omitted the percentages of intermediates going to other services sectors, which would dwarf even more the importance of exports as a destination of production in services sectors.

the regions outside Asia (i.e., other advanced economies, Latin America, Middle East and Sub-Saharan region). For Japan and South East Asia the weight in trade of the sectors expanding their exports to the TTIP is relatively high (44.4% and 36.9% of overall exports, respectively). It is smaller in India (29.3%), which explains why exports in manufacturing fall by more in this region. Another force reducing the negative impact for manufacturing exports in Asia would be their weaker integration with the TTIP area (with the exception of China), compared to other advanced economies, to the Middle East or to Latin America, as we saw in the geographical quota shares of Tables 4 and 5. Because the fall in exports in manufacturing is milder, so is the reduction in production. This also has the positive consequence that services production does not go down in this region. Overall output reductions are tiny for the Asiatic regions.

We turn now to the aggregate outcomes. We will see that the evolution of GDP closely follows the one of overall production we have just analyzed.

### **Aggregate outcomes**

Table 8 displays the evolution of three blocks of results on GDP, welfare (measured as equivalent variation) and wages for all the regions. On its left appear the results for the ambitious scenario, while on the right they are for a modest scenario. In both cases and for each block of results the rows cover the total impact of the TTIP (labelled “total”), whose outcomes have just been analyzed at the microeconomic level. The next rows present the isolated impact of the three main components of that total (namely, NTBs, tariffs and FDI). In the rows below a “total with spillovers” appears together with its two components (“direct spillovers” and “indirects spillovers”), which will be explained in short.

#### TABLE 8 AROUND HERE

A quick comparison between the right and the left part of this table shows that for the TTIP to have a certain impact on outsiders the agreement would need to be an ambitious one. Another important set of results from this table emanates precisely from the “total” impact of the TTIP in the ambitious scenario. The evolution of the “total” production we have derived across the different areas (last row at the right part of Table 6) runs parallel to the GDP outcomes we now see in Table 8. This implies that the findings again show that the impact is only slightly negative for outsiders. Furthermore, it is absent in China and very reduced in India, Japan and South East Asia, with GDP remaining nearly unaffected in these Asiatic regions. By contrast, the somewhat larger falls in GDP take place in MENA (-0.20%), Sub-Saharan Africa (-0.14%), followed by Other advanced economies (-0.12%) and Latin America (-0.09%), which are the regions experiencing relatively larger output contractions (in that order). On the other hand, the TTIP partners share a common GDP increase of 0.82%, which matches their output increases of 0.69% and 0.67% in the EU and US, respectively.

We can now see, that the element of the agreement that is more important is the reduction of NTBs. This force accounts for the largest effects. It is slightly more favorable to the EU (+0.48% GDP increase) than to the US (+0.36%). These results are in accordance with the previous evidence both in terms of the critical importance of NTBs in this agreement and with respect to the most beneficial outcomes for the EU. We can see, however, that in the case of a modest agreement, in which reductions in the NTBs are of 10% instead of 25%, the impact would be considerably reduced. The results also leave clear that tariffs' elimination play a very small role in the agreement. A final element, the impact of FDI in advanced services sectors, constitutes an important innovation in our modelling exercise. Interestingly, we find that this element would be most favorable to the American side of the agreement, contrasting with the outcome related to NTBs. In the case of FDI, lowering the larger barriers to FDI existing in the US would result in larger FDI flows of productive capital in services sectors. Again if the agreement reached only modest cuts in barriers faced by FDI, the positive outcomes for the TTIP area would be considerably more reduced. The other side of the coin, is that such an agreement would have an even smaller impact of outsiders.

Several of the considerations made for outsiders regarding GDP outcomes can also be applied to welfare results (i.e., the next block of results in Table 8). However, in terms of the TTIP partners, the more positive outcomes from FDI for the American side are now less sizeable. This has to do with the fact that all the results we have displayed include a 50% of profit repatriation of the rents generated by foreign companies. Therefore, comparing GDP, which was measured from the supply side, with a measure of welfare based on income variation, profit repatriation slightly harms the US indicators of income.

A final block of results at the bottom of Table 8 shows the evolution of wages. We find that wages of American workers would increase slightly more after the TTIP than wages of EU workers. Again the most favorable outcomes for the US arise from the FDI component neglected in previous analysis. Even with the presence of profit repatriation, American workers (and also European ones) would experience sizeable increase in wages.

Let us turn now to the analysis of a TTIP considering regulatory spillovers. In our modelling of spillovers we follow other authors (e.g., Francois et al., 2013 and Petri and Plummer, 2016) in estimating extra effects not covered at the previous microeconomic analysis<sup>12</sup>. The TTIP is to a great extent an agreement about streamlining of regulations and standards. Because the US and the EU constitute the world's biggest trading block, the TTIP could become a regulatory hegemon in the sense that other countries could adopt, at least partially, some of the standards agreed between the EU and the US. This

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<sup>12</sup> Francois et al. (2013, pp. 28-29) explain in detail the direct and indirect spillovers effects that we follow. Petri and Plumer (2016) also adopt spillover effects when they model the effects of the Trans Pacific Partnership.

would allow those third countries to export to the big markets of the US and EU using the same standards.

The “Total with spillovers” adds to the previous “total” impact of the TTIP two new components analyzed separately, “direct spillovers” and “indirect spillovers”. Following the literature with “direct spillovers” we model outsiders exporting to the EU and US saving 20% of the costs of the NTBs reductions agreed with the TTIP. This implies that from the cost reductions related to NTBs in trade displayed in Table 1, outsiders would reduce their costs in one fifth of the figures appearing in the first four columns. We also model “indirect spillovers”. In this latter simulation the TTIP area (i.e., both the US and the EU) gain by saving 10% of their costs (i.e., one tenth of the figures in the first four columns of Table 1) when they export to third countries. This should grasp the extra push for European and US trade if outsiders adopt at least partially some of their commonly agreed standards. An extra effect is also included in the “indirect spillovers”. This is that outsiders would also gain when trading among themselves because they would have also converged further on common standards, which would have become to a certain extent “global standards”. To gauge this latter effect, third countries would save 10% of the NTBs in their trade among them. In sum, the scenario “total spillovers” runs simultaneously the “total” (including the three components of NTBs, tariffs and FDI) together with the direct and indirect spillovers. Indeed, the results suggest that the “total” we have previously analyzed at the micro level and just studied at the macro level is the main force behind the results including spillover effects.

What changes with the introduction of spillovers? First, we find that all areas exhibit a tiny positive impact after the TTIP including regulatory spillovers (only Middle-East would remain with a -0.1% change in GDP, a -0.03% in welfare but with rising wages). Second, the TTIP partners gain considerably more in this scenario in which world trade increases more heavily than in the TTIP without spillovers. The results, therefore, point to the much larger gains for all if negotiations are done in an “inclusive” way (i.e., avoiding discriminatory rules and standards). The particular way to do this falls in the legal area, but our findings imply that politicians should consider this very seriously.

Another important finding from the regulatory spillovers is that their results are asymmetric compared to what we had obtained with a TTIP without spillovers. In other words, the regions that were previously less negatively affected (i.e., China and the other Asiatic countries and regions) seem to gain less with spillovers. By contrast, the regions that experienced mild but somewhat larger losses now benefit more. Thus, the Middle-East turns from a -0.20% GDP fall into a -0.01% change in GDP and Sub-Saharan Africa turns from -0.14% to a 0.06% increase. We can see that this positive impact is mostly concentrated in the direct spillovers, in which the largest cost savings of 20% take place. What happens is that with these larger savings the sectors of other primary, agriculture and food, which are critical in their export structure, turn to be more competitive expanding exports and output.

Other advanced countries and Latin America follow the Middle East and Sub-Saharan areas as winners, when spillovers are accounted for. Their positive evolution is related to the fact that the fall in output from manufacturing is smaller than with no spillovers. Manufacturing exports are increasing not only in the Middle East and Sub-Saharan Africa but also in Latin America and Other advanced countries. At the same time, exports from services sectors are also increasing by more in these areas. This will result in an expansion of services sectors, while they used to reduce output in the TTIP without regulatory spillovers. Higher competition in exports of manufacturing will slightly hurt Chinese manufacturing output, which gains relatively less with the spillovers. Furthermore, because India, Japan and East Asia are also highly specialized in manufacturing exports, this trend will also be relatively less beneficial for them.

## **Conclusions**

In this paper, we use a CGE model to analyze the TTIP. We study its impact for the partners involved in the agreement but also paying particular attention to the effects for outsiders. The model exhibits an important innovative feature in terms of CGE modelling, namely, the consideration of foreign multinationals and Foreign Direct Investment (FDI) flows in a multiregional framework within a climate of imperfect competition. This is of relevance since FDI is an essential part of the agreement and the TTIP concentrates the largest shares of FDI inward and outward stocks in the world.

Our results suggest that the introduction of FDI considerably increases the positive impact of the TTIP for the US and for the EU. Our estimations, therefore, surpass the previous ones obtained with CGE models (Francois et al., 2013 and Fontagne et al., 2013), being closer but still far from the very large impact derived by Felbermayr et al., (2013) using other methodologies. The effects for outsiders are very, very small, but negative with the exception of China. This country would not be a loser from the TTIP. Its export structure is specialized in a basket of products that would actually benefit from more exports to the TTIP areas after the agreement. This is also the case of the rest of regions in Asia (i.e., Japan, India and South East Asia). In these regions, the weight of the sectors which would increase exports to the TTIP area is larger than in the rest of areas considered (Middle-East, Sub-Saharan Africa, Latin America and other advanced countries). The latter regions could suffer more from the TTIP because of two main reasons. First, their trade is much more integrated with the TTIP partners. This is the case, in particular, of Other advanced economies which are very important trade partners for both the US and the EU. This pattern also applies to Latin America, which is very integrated with the US. The same can be said about the Middle-East region, which conducts a lot of trade with the EU and also, although less intensively, with the US. The proximity of these areas results in larger reductions in their manufacturing exports to the TTIP partners. A second reason of the relatively largest negative impact for these latter regions is that their export specialization relies more heavily than in the

Asiatic area in the type of goods in which the EU and US become more integrated (thus trading more with each other) after the TTIP. This second effect would also explain the negative impact for the Sub-Saharan region, whose specialization in agriculture, other primary and food would be particularly harmful after strong TTIP integration in these three sectors.

We have seen that the pattern of adjustment in manufacturing differs from the one in services. This is an interesting result, which is neglected in the studies focusing on manufacturing data and can be analyzed by means of a general equilibrium analysis. The TTIP is expected to affect more trade integration in manufacturing, because its barriers to trade, which include Non-Tariff Barriers (NTBs) and tariffs, are larger than in services. When the barriers are reduced, the EU and the US trade much more with each other “crowding out” imports coming from other areas outside the TTIP. This happens in a different degree across sectors, since they differ in the size of tariffs and NTBs at both sides of the Atlantic. In the sectors in which the barriers are relatively small, outsiders would still increase their exports to the TTIP area after the agreement. By contrast, in the sectors in which the barriers are relatively large, imports to TTIP from other areas are “crowded out”.

Our results suggest that the evolution of exports in manufacturing sectors is the key to the evolution in their production. However, services tend to be different, since their production is less oriented to trade than the one of manufacturing. Indeed, we find that for the TTIP, in particular, US services production increases heavily due to the evolution of FDI. Because the TTIP would reduce the barriers to FDI and these are larger in the US, productive capital would flow into US services thereby increasing their production heavily. Europe also increases services production after lowering barriers to FDI, there are also flows of productive capital accruing to the EU, but the process is less intense.

Services sectors in the rest of areas are very responsive to the evolution of their own manufacturing sectors. In those areas in which the production in manufacturing is falling more, due to lower exports (other advanced, Latin America, Middle East and Sub Saharan Africa) services do also contract. The main reason for this is that an important share of services production is of intermediates going to downstream manufacturing. This share in production is actually larger than the one that is exported. Therefore, the decrease in manufacturing production drags down production in services. In the Asian area manufacturing contracts less than in the area most integrated with the TTIP. As a result, services sectors do not contract and the impact of the TTIP is much more reduced, or even absent, as in China.

Finally, it seems that there is a way in which negotiations could be conducted so as to make the TTIP slightly beneficial for outsiders. Although this falls more in the area of particular legal aspects, politicians should in our view, based on the results we obtain, try to reach an “inclusive TTIP”. This implies avoiding discriminatory rules and regulations against outsiders. Our results point out that this would be good not only for

outsiders but also for the TTIP partners themselves. The effects in GDP, welfare and wages would be more beneficial for both insiders and outsiders if the TTIP becomes a regulatory hegemon, capable of setting global standards of trade.

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**Table 1.** Cost reductions related to Non-Tariff Barriers (NTBs), Tariffs and Barriers to FDI that the TTIP could facilitate.

	Transatlantic NTBs				Transatlantic Tariffs		Transatlantic barriers to FDI			
	Ambitious		Modest		100% elimination		Ambitious		Modest	
	In EU	In US	In EU	In US	In EU	In US	In EU	In US	In EU	In US
1. Agriculture	14.20	18.33	5.68	7.33	3.29	1.68				
2. Other primary	14.20	18.33	5.68	7.33	0.01	0.02				
3. Food	14.20	18.33	5.68	7.33	12.98	3.46				
4. Textiles	4.80	4.18	1.92	1.67	6.73	7.77				
5. Wood and paper	2.83	1.93	1.13	0.77	0.23	0.26				
6. Chemicals	3.40	4.78	1.36	1.91	2.06	1.48				
7. Metals	2.98	4.25	1.19	1.70	1.80	1.20				
8. Motor vehicles	6.38	6.70	2.55	2.68	7.89	0.81				
9. Other transport	4.70	4.78	1.88	1.91	1.18	0.28				
10. Electronics	3.20	3.68	1.28	1.47	0.56	0.37				
11. Other machinery	0.00	0.00	0.00	0.00	1.30	0.98				
12. Other manufactures	2.83	1.93	1.13	0.77	1.42	2.56				
13. Construction	1.15	0.63	0.46	0.25	0.00	0.00				
14. Water Transport	2.00	2.00	0.80	0.80	0.00	0.00	2.50	4.25	1.00	1.70
15. Air Transport	0.50	0.50	0.20	0.20	0.00	0.00	4.50	5.25	1.80	2.10
16. Communications	2.93	0.43	1.17	0.17	0.00	0.00	0.45	0.38	0.18	0.15
17. Finance	2.83	7.93	1.13	3.17	0.00	0.00	0.50	0.50	0.20	0.20
18. Insurance	2.70	4.78	1.08	1.91	0.00	0.00	2.75	3.00	1.10	1.20
19. Business services	3.73	0.98	1.49	0.39	0.00	0.00	7.63	10.00	3.05	4.00
20. Personal services	1.10	0.63	0.44	0.25	0.00	0.00				
21. Other services	1.10	0.63	0.44	0.25	0.00	0.00				
Average Manufactures	5.38	6.35	2.15	2.54						
Average Services	2.13	2.23	0.85	0.89						

Source: Ecorys (2009), Fontagne et al. (2013) and Francois and Machin (2014) for the NTBs; Narayanan et al. (2015) for the tariffs and Jafari and Tarr (2014) for barriers to FDI.

**Table 2.** GDP structure of the world and the different regions in 2020

	EU	US	China	Japan	India	Latin America	Other advanced	Southeast Asia	Sub-Saharan A.	Middle-East	World
1.Agriculture	2.0	1.4	10.6	1.4	18.9	6.3	2.2	13.5	19.4	5.5	5.3
2.Other primary	0.9	1.7	3.9	0.1	2.3	5.3	5.2	8.4	14.2	24.2	5.1
3.Food	3.2	1.9	2.6	2.2	3.1	4.4	1.9	5.2	4.9	3.4	2.9
4.Textiles	1.2	0.7	2.7	0.3	1.7	1.6	0.7	2.9	1.1	1.4	1.3
5.Wood and paper	2.3	2.4	1.6	1.3	0.7	1.6	1.7	1.7	1.2	0.8	1.8
6.Chemicals	3.5	2.8	5.0	2.3	2.8	3.6	3.1	4.8	1.6	3.3	3.4
7.Metals	2.8	1.9	4.9	2.5	2.2	2.5	2.8	2.1	2.7	2.6	2.8
8.Motor vehicles	1.6	0.9	1.6	1.6	0.6	1.4	1.1	1.2	0.6	0.8	1.2
9.Other transport	0.6	0.8	0.8	0.3	0.4	0.3	0.7	0.6	0.6	0.3	0.6
10.Electronics	0.8	0.5	2.4	1.7	0.3	1.2	2.5	2.1	0.4	0.6	1.2
11.Other machinery	4.2	3.6	5.6	3.2	1.7	1.7	3.1	2.1	1.2	1.8	3.4
12.Other manufactures	1.6	0.8	4.5	1.0	2.5	1.6	1.3	1.9	1.2	1.6	1.8
13.Construction	6.5	6.1	7.7	5.1	8.1	6.5	6.1	6.7	5.5	6.8	6.5
14.Water Transport	0.4	0.3	1.3	0.7	0.7	0.2	0.6	0.7	0.2	0.6	0.6
15.Air Transport	0.4	0.5	0.3	0.2	0.2	0.3	0.5	0.6	0.4	0.5	0.4
16.Communications	2.8	2.4	2.0	2.3	1.7	2.7	2.3	1.6	1.9	1.5	2.3
17.Finance	4.1	8.0	4.7	4.2	5.2	3.6	5.4	2.6	2.1	3.8	5.0
18.Insurance	1.3	1.9	0.5	1.6	1.1	0.9	1.3	0.6	2.1	0.3	1.2
19.Business services	15.7	10.4	5.4	11.3	5.2	7.9	11.9	3.3	6.1	5.2	9.6
20.Personal services	3.5	3.3	2.3	3.4	0.3	3.7	2.5	2.3	2.3	1.4	2.8
21.Other services	40.8	47.8	29.5	53.3	40.4	42.7	43.4	35.3	30.3	33.6	40.7
All manufactures	29.1	24.0	43.4	21.8	26.4	31.6	30.1	39.7	35.1	47.6	32.1
All services	69.0	74.7	46.0	76.9	54.7	62.1	67.8	46.8	45.5	46.9	62.6
Total share in the world	19.0	21.4	15.2	6.9	4.1	8.0	10.0	3.0	2.5	9.8	100.0

Source: Authors' estimations based on Narayanan et al. (2015) and IMF (2015a; 2015b; 2015c) projections.

**Table 3.** Export and Import structure of the world and the different regions in 2020.

	EU		US		China		Japan		India		Latin America		Other advanced		Southeast Asia		Sub-Saharan A.		Middle-East		World
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Trade								
1.Agriculture	1.2	2.4	5.2	1.6	0.9	4.2	0.2	2.9	3.9	1.5	9.5	2.4	2.2	1.8	3.2	3.5	6.1	3.0	1.1	4.0	2.7
2.Other primary	1.1	17.5	1.5	13.4	0.3	23.0	0.1	24.7	4.8	33.6	22.4	3.4	11.3	12.0	12.1	6.9	60.3	4.2	58.2	1.7	14.5
3.Food	4.3	2.8	4.1	3.4	2.0	2.4	0.5	5.8	5.7	2.2	10.3	3.6	3.1	3.7	10.5	4.6	2.2	9.7	1.2	6.6	3.8
4.Textiles	2.6	6.3	1.2	5.5	15.9	2.2	1.3	5.3	10.4	1.4	2.4	5.1	2.3	3.7	10.5	5.6	1.0	5.0	2.7	6.3	4.7
5.Wood and paper	3.0	1.8	2.8	2.9	3.8	2.3	0.9	2.5	0.6	1.2	2.4	2.4	2.3	2.7	3.5	1.9	0.8	2.2	0.6	2.8	2.3
6.Chemicals	17.7	14.4	22.0	13.5	10.7	15.2	15.3	13.8	23.2	12.3	8.0	24.7	16.6	15.8	13.3	18.9	2.8	18.2	15.5	14.4	15.4
7.Metals	6.9	6.4	6.4	5.7	7.6	7.4	9.7	5.3	5.7	15.6	10.8	6.2	10.2	10.3	5.0	10.8	13.9	5.7	4.8	7.6	7.7
8.Motor vehicles	9.1	2.7	6.7	8.5	2.1	4.7	17.2	2.0	2.2	1.4	7.1	8.2	5.0	6.1	2.3	3.6	1.6	7.0	1.0	9.1	5.6
9.Other transport	3.8	2.9	5.1	2.0	2.2	1.4	2.5	1.2	1.2	1.4	1.2	3.8	2.9	2.5	0.7	3.7	0.3	6.5	0.4	2.8	2.5
10.Electronics	3.3	7.2	5.2	11.4	23.3	10.8	10.2	8.5	1.6	4.7	6.0	7.7	11.3	8.2	15.4	11.7	0.1	3.7	0.4	4.8	8.5
11.Other machinery	19.9	10.1	17.3	13.8	19.4	17.4	29.7	10.1	4.9	10.0	7.8	18.9	14.2	14.5	8.2	15.8	1.1	14.1	1.5	17.0	14.1
12.Other manufactures	2.7	2.7	2.1	4.0	6.4	0.9	2.3	1.9	11.8	2.4	0.9	2.1	1.8	3.2	2.4	1.9	0.7	2.7	0.9	4.1	2.7
13.Construction	1.2	0.8	0.4	0.1	0.3	0.3	1.4	1.2	0.3	0.2	0.2	0.2	0.6	0.3	0.5	0.7	0.1	1.4	0.4	2.0	0.6
14.Water Transport	1.2	0.8	0.0	0.1	0.1	0.1	0.4	1.3	0.6	0.6	0.9	0.7	0.5	1.1	0.7	0.4	0.4	0.4	0.5	0.3	0.5
15.Air Transport	2.7	2.1	1.7	1.6	0.3	0.5	1.0	1.8	0.4	0.9	1.0	1.6	1.4	1.7	2.1	1.0	1.4	1.9	1.4	1.3	1.5
16.Communications	0.4	0.8	0.2	0.2	0.1	0.2	0.1	0.2	0.8	0.2	0.4	0.1	0.3	0.4	0.6	0.3	0.5	0.3	0.7	0.4	0.4
17.Finance	1.5	2.2	2.0	1.1	0.1	0.2	0.6	0.9	0.8	1.3	0.4	0.2	1.5	0.7	0.3	0.3	0.4	0.2	0.5	1.0	1.0
18.Insurance	1.2	0.4	1.1	1.4	0.1	0.6	0.4	0.5	0.8	0.5	0.5	0.4	0.8	0.4	0.3	0.4	0.4	0.4	0.3	0.7	0.6
19.Business services	7.4	6.8	5.3	4.0	1.2	1.5	2.2	4.6	16.1	5.3	2.7	2.6	4.7	4.0	2.1	3.8	1.4	5.8	2.7	4.7	4.3
20.Personal services	1.4	1.2	1.9	0.6	0.3	0.4	0.3	0.8	0.2	0.4	0.9	1.1	0.7	1.2	0.9	0.8	0.8	0.9	0.5	1.2	0.9
21.Other services	7.6	7.6	7.9	5.2	2.7	4.5	3.7	4.4	4.1	2.7	4.4	4.7	6.4	5.8	5.5	3.6	3.8	6.9	4.9	7.1	5.6
All manufactures	75.5	75.5	74.9	84.3	94.0	87.8	91.1	82.4	72.4	86.5	79.3	86.3	81.6	82.8	84.4	85.9	84.9	80.2	87.5	79.2	82.6
All services	23.3	22.1	20.0	14.1	5.1	8.0	8.8	14.7	23.7	12.1	11.2	11.3	16.3	15.4	12.5	10.6	9.0	16.8	11.4	16.8	14.8
Total share in the world	18.4	17.5	12.5	17.1	13.7	14.9	6.0	5.4	2.6	5.1	6.9	5.9	17.6	15.5	5.7	5.2	3.1	3.1	13.4	10.3	100.0

Source: Authors' estimations based on Narayanan et al. (2015) and IMF (2015a; 2015b; 2015c) projections.

**Table 4.** Geographical quotas in EU trade of the rest of regions in 2020.

	US		China		Japan		India		Latin America		Other advanced		Southeast Asia		Sub-Saharan A.		Middle-East	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
1.Agriculture	5.0	9.6	8.6	4.4	1.4	0.1	0.9	3.0	2.9	33.2	19.9	12.7	1.4	5.6	8.9	15.6	50.9	15.9
2.Other primary	4.1	1.4	11.5	0.2	0.4	0.0	42.4	0.2	2.8	6.1	16.9	18.1	2.1	0.4	6.4	10.4	13.3	63.1
3.Food	16.4	8.6	5.6	7.3	4.9	0.3	0.7	2.6	5.2	27.4	24.6	21.1	3.7	13.3	9.2	8.3	29.6	10.9
4.Textiles	12.8	1.7	9.0	41.7	4.4	0.5	1.6	8.5	4.5	1.7	29.2	6.0	2.9	17.7	3.0	1.3	32.8	20.9
5.Wood and paper	10.0	14.0	10.3	33.2	3.3	0.8	2.9	0.9	5.5	9.6	29.9	19.3	2.9	8.0	4.8	3.3	30.4	11.0
6.Chemicals	23.1	25.9	7.7	8.0	3.9	3.6	2.2	4.6	7.4	3.7	23.4	22.6	2.2	3.5	5.5	1.1	24.7	27.0
7.Metals	11.1	12.9	13.7	14.4	1.7	3.5	6.9	2.2	5.3	7.2	29.5	32.8	2.5	1.8	3.6	5.3	25.8	19.9
8.Motor vehicles	16.1	15.4	21.0	6.5	3.3	21.5	1.6	3.6	6.2	9.5	18.7	16.6	1.5	3.3	5.1	3.8	26.4	19.8
9.Other transport	22.5	40.9	13.4	12.0	1.6	5.4	2.6	1.1	8.4	4.1	20.3	28.9	6.3	2.8	4.4	0.9	20.4	3.9
10.Electronics	10.3	8.6	12.0	52.2	1.8	4.6	4.2	0.5	4.1	1.7	26.8	20.4	6.8	8.6	6.3	0.1	27.6	3.2
11.Other machinery	15.4	21.5	18.0	28.0	2.2	10.5	4.4	1.5	7.5	2.2	18.8	24.6	3.0	3.8	4.9	1.1	25.8	6.8
12.Other manufactures	22.7	14.1	5.4	46.4	2.7	3.1	3.5	6.3	4.6	1.5	30.3	14.8	2.3	5.8	4.8	1.3	23.7	6.7
13.Construction	2.9	9.3	7.3	13.2	10.5	19.7	2.4	2.3	1.7	3.9	7.9	22.8	7.4	8.4	9.3	1.1	50.6	19.4
14.Water Transport	1.5	2.4	0.3	2.0	13.2	4.9	7.6	2.9	13.3	19.8	48.3	32.5	5.3	12.4	2.7	3.4	7.8	19.7
15.Air Transport	23.7	24.2	3.5	2.9	4.3	4.1	6.0	0.8	9.9	6.6	26.9	23.2	5.5	12.2	6.3	4.9	13.9	21.1
16.Communications	23.7	23.3	1.4	2.6	2.7	0.7	3.4	3.6	8.2	9.1	23.4	16.6	7.9	10.5	6.2	4.3	23.1	29.2
17.Finance	37.7	46.5	1.8	0.5	3.9	2.7	5.9	2.1	5.1	2.9	23.4	35.3	3.0	1.7	2.4	1.2	16.8	7.0
18.Insurance	50.1	42.3	6.8	2.7	2.0	2.8	4.2	2.4	6.7	8.3	10.7	18.7	3.9	6.6	3.9	3.0	11.7	13.1
19.Business services	13.9	28.8	6.2	4.1	5.2	3.1	7.6	11.6	7.2	5.3	27.2	29.0	7.2	4.4	6.8	1.3	18.6	12.4
20.Personal services	15.6	32.4	2.5	4.6	4.0	1.3	2.6	1.1	11.8	10.0	26.7	22.7	8.3	10.6	5.2	3.6	23.3	13.7
21.Other services	21.0	23.1	10.8	8.5	2.8	4.1	3.0	1.9	7.5	6.9	21.7	22.8	5.4	9.3	6.0	2.8	21.7	20.8
All manufactures	16.7	13.6	13.0	18.5	3.0	4.2	3.8	2.6	6.4	5.1	22.6	20.7	3.0	4.9	5.3	3.9	26.2	26.4
All services	21.6	27.8	6.3	4.9	4.3	3.4	5.3	5.0	7.9	6.7	24.9	26.1	5.9	7.4	5.6	2.5	18.2	16.4
Total	17.8	16.7	11.3	15.1	3.3	3.9	4.1	3.2	6.8	6.2	23.2	21.8	3.7	5.5	5.4	3.9	24.5	23.8

Source: Authors' estimations based on Narayanan et al. (2015) and IMF (2015a; 2015b; 2015c) projections.

**Table 5.** Geographical quotas in US trade of the rest of regions in 2020.

	EU		China		Japan		India		Latin America		Other advanced		Southeast Asia		Sub-Saharan A.		Middle-East	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
1.Agriculture	6.4	4.3	28.9	3.6	9.4	0.2	0.8	2.8	15.7	57.7	17.5	18.8	5.6	6.3	4.9	4.6	1.8	10.7
2.Other primary	23.7	0.4	12.2	0.2	5.2	0.0	2.8	0.0	16.9	23.5	26.6	19.0	0.6	0.4	0.4	23.1	33.4	11.7
3.Food	8.4	22.7	8.9	7.3	11.3	0.9	0.5	2.9	24.1	23.3	29.8	26.9	5.0	13.1	2.6	1.0	1.8	9.5
4.Textiles	12.5	6.3	10.3	41.8	2.7	0.5	1.2	5.6	41.9	12.3	21.9	6.8	3.0	19.8	1.5	0.8	6.0	5.0
5.Wood and paper	12.7	11.0	19.7	34.4	3.9	1.1	2.6	0.5	21.4	13.8	30.2	31.6	2.6	6.8	1.4	0.3	0.5	5.6
6.Chemicals	24.3	32.6	8.4	9.6	3.9	4.2	2.2	3.2	28.7	12.9	22.3	25.4	1.9	3.2	2.5	0.8	7.9	5.9
7.Metals	18.8	14.4	11.3	14.0	2.2	3.9	3.6	1.6	17.6	24.9	33.1	30.7	3.9	1.9	1.7	3.2	5.4	7.9
8.Motor vehicles	8.9	18.6	8.3	4.0	1.2	18.4	0.4	0.4	21.6	24.8	43.0	31.8	1.6	0.4	4.1	1.2	0.4	10.8
9.Other transport	33.6	45.0	11.5	6.8	5.2	10.0	1.4	2.1	8.1	7.7	25.2	25.9	4.3	0.9	2.1	0.3	1.3	8.7
10.Electronics	16.9	3.2	15.1	51.7	5.7	3.4	1.9	0.2	16.6	16.8	27.4	16.5	11.4	8.2	0.8	0.0	0.1	4.3
11.Other machinery	18.1	24.0	11.5	24.5	4.0	11.5	2.0	0.9	20.0	17.8	30.2	17.8	3.3	3.0	2.5	0.2	0.4	8.4
12.Other manufactures	25.9	16.8	8.5	39.7	3.5	2.5	7.9	9.0	13.5	5.9	31.3	19.0	2.2	3.8	1.7	1.4	1.8	5.4
13.Construction	24.5	26.3	1.9	8.7	21.2	18.7	0.4	0.3	1.1	1.4	4.4	18.2	4.3	6.3	5.5	1.0	19.0	36.8
14.Water Transport	19.7	18.3	2.6	10.3	8.2	1.8	3.4	2.5	7.1	6.5	27.9	20.2	2.5	12.2	3.1	2.4	25.9	25.5
15.Air Transport	40.7	44.2	2.8	3.2	12.3	4.5	1.6	0.3	8.7	4.5	18.1	22.1	3.8	7.6	3.3	2.7	10.9	8.7
16.Communications	44.9	39.8	6.2	4.4	3.2	2.2	3.6	5.8	3.5	5.9	23.8	19.7	3.0	4.7	2.0	2.4	15.0	9.8
17.Finance	53.6	60.4	1.9	1.1	6.3	5.5	4.6	1.6	3.5	3.1	18.1	21.5	1.6	0.9	1.5	0.6	5.3	9.0
18.Insurance	27.8	60.9	6.0	0.5	9.8	2.4	3.0	0.5	9.3	3.0	24.4	25.0	3.7	1.6	3.4	0.9	5.1	12.7
19.Business services	49.0	29.5	2.9	4.9	11.2	3.3	5.1	20.4	2.5	4.7	11.9	26.3	3.2	1.8	3.5	0.8	8.2	10.8
20.Personal services	30.1	39.4	4.8	6.7	8.2	3.1	4.1	0.1	6.5	13.9	28.5	21.6	2.7	5.3	3.1	3.7	6.2	12.1
21.Other services	32.1	33.4	4.3	4.8	5.7	3.0	3.4	2.4	6.2	8.1	23.4	27.2	2.4	4.9	4.3	2.8	13.5	18.1
All manufactures	19.7	16.1	10.6	20.2	4.2	5.6	2.1	1.8	21.7	17.9	28.4	21.7	3.4	4.6	2.3	4.3	7.7	7.6
All services	40.2	39.6	3.7	3.9	8.1	3.4	3.9	6.6	5.2	5.9	19.7	25.1	2.7	3.7	3.4	1.9	9.9	13.1
Total	23.6	19.5	9.9	17.5	5.4	5.2	2.4	2.6	17.7	16.7	25.9	22.2	3.4	4.5	2.7	4.0	8.0	9.0

Source: Authors' estimations based on Narayanan et al. (2015) and IMF (2015a; 2015b; 2015c) projections.

**Table 6.** Long term impact on Output, Exports and Imports of an ambitious TTIP agreement (% changes with respect to the initial data)

	Output										Exports										Imports									
	EU	US	CHN	IND	JPN	LAC	MEN	OAC	SEA	SSA	EU	US	CHN	IND	JPN	LAC	MEN	OAC	SEA	SSA	EU	US	CHN	IND	JPN	LAC	MEN	OAC	SEA	SSA
1.Agriculture	0.05	1.43	-0.06	-0.04	-0.05	-0.39	-0.22	-0.45	-0.29	-0.15	4.34	5.03	-0.89	-0.73	-0.69	-0.53	-0.36	-0.09	-0.44	8.08	2.54	-0.03	0.10	-0.06	-1.06	-0.61	-0.78	-0.57	-0.56	
2.Other primary	0.86	3.47	-0.19	-0.41	-0.51	-0.26	-0.41	-0.80	-0.18	-0.61	19.13	66.36	-1.33	-0.74	-0.90	-0.60	-0.68	-1.30	-0.30	-0.72	1.15	0.45	0.12	-0.04	-0.12	-0.41	-0.79	-0.08	0.13	-0.01
3.Food	1.21	0.71	-0.11	-0.15	-0.08	-0.58	-0.27	-1.04	-0.63	-0.20	15.55	16.86	-3.24	-2.48	-3.55	-3.37	-1.56	-5.08	-2.23	-2.44	16.38	9.14	0.04	0.11	0.03	-0.65	-0.41	-0.42	-0.33	-0.24
4.Textiles	1.26	-0.53	0.08	0.14	0.08	0.10	0.34	0.25	0.23	0.25	12.00	15.71	0.12	0.40	0.07	-0.27	1.43	2.00	0.30	1.18	4.52	5.17	-0.20	-0.13	-0.05	-0.70	-0.55	-0.35	0.02	-0.47
5.Wood and paper	0.55	0.58	0.11	0.06	0.02	0.25	0.17	0.27	0.36	0.13	0.50	0.56	0.55	0.39	0.26	1.29	1.19	0.96	0.82	1.19	3.60	2.10	-0.08	-0.10	-0.02	-0.88	-0.51	-0.42	-0.17	-0.41
6.Chemicals	0.92	-0.48	-0.11	-0.13	-0.15	0.02	-0.08	-0.12	-0.04	-0.01	8.26	6.83	-0.65	-0.54	-0.41	-0.82	-0.16	-0.38	-0.17	-0.39	7.53	10.54	0.11	-0.04	-0.04	-0.43	-0.30	-0.21	-0.04	-0.16
7.Metals	0.32	0.41	0.01	-0.03	-0.06	0.15	0.24	0.05	0.19	0.32	3.43	4.86	-0.36	-0.24	-0.14	-0.20	0.43	-0.17	0.22	0.45	4.78	3.19	0.00	0.01	-0.02	-0.55	-0.46	-0.18	0.03	-0.21
8.Motor vehicles	1.35	-0.73	-0.09	-0.13	-0.35	-0.19	-0.07	-0.33	-0.08	-0.07	7.22	7.67	-0.74	-0.65	-0.61	-0.92	-0.23	-0.82	-0.26	-0.57	14.91	6.97	0.12	0.13	-0.21	-0.55	-0.28	-0.42	-0.09	-0.24
9.Other transport	-0.78	3.39	-0.39	-0.42	-1.98	-1.31	-0.43	-2.25	-0.65	-0.29	7.56	12.64	-2.79	-4.09	-4.26	-5.19	-3.51	-4.25	-3.89	-5.55	12.44	8.81	-0.22	-0.04	-0.74	-0.49	-0.42	-0.74	-0.20	-0.26
10.Electronics	0.08	0.59	0.09	0.08	0.05	0.47	0.27	0.26	0.25	0.28	3.42	4.90	0.12	-0.09	0.09	0.91	0.40	0.29	0.24	0.48	2.64	1.84	0.08	-0.03	-0.02	-0.19	-0.48	-0.06	0.11	-0.39
11.Other machinery	0.26	0.04	0.15	0.14	0.34	0.96	0.46	0.74	0.68	0.38	0.41	-0.23	0.67	0.64	0.50	1.49	1.63	0.90	0.96	1.61	2.89	2.21	-0.13	-0.15	-0.04	-0.40	0.51	-0.25	0.04	-0.42
12.Other manufactures	0.78	-0.28	0.07	0.05	0.04	0.12	0.13	0.30	0.21	0.15	4.86	5.93	0.44	0.04	0.15	1.45	1.07	0.82	0.62	1.38	5.34	5.04	-0.41	-0.29	-0.23	-1.26	-0.80	-0.57	-0.29	-0.74
13.Construction	0.80	1.04	0.00	-0.01	0.00	-0.15	-0.21	-0.17	-0.05	-0.23	-0.56	-0.35	0.37	0.50	0.31	0.83	1.02	0.63	0.65	0.73	1.42	1.69	-0.04	-0.08	-0.10	-0.32	-0.48	-0.36	-0.20	-0.40
14.Water Transport	0.73	0.88	0.21	0.52	0.55	0.25	0.16	0.55	0.09	0.07	0.29	0.09	-0.12	-0.05	-0.12	0.30	0.31	0.22	0.16	0.25	0.21	1.86	0.18	0.17	0.38	0.00	-0.20	0.21	0.05	-0.02
15.Air Transport	1.04	0.69	0.13	-0.13	0.07	0.00	0.02	0.14	0.04	-0.05	2.06	2.51	-0.26	-0.25	-0.31	0.09	0.12	0.02	-0.04	0.06	1.40	3.31	0.31	0.33	0.22	0.08	-0.07	0.15	0.25	0.09
16.Communications	0.95	0.95	0.02	0.05	0.00	-0.08	-0.15	-0.10	0.02	-0.08	-0.03	5.22	0.06	0.40	-0.07	0.54	0.71	0.43	0.57	0.57	1.34	1.59	0.04	0.01	0.05	-0.13	-0.45	-0.20	-0.14	-0.25
17.Finance	1.16	0.78	0.01	0.02	0.02	-0.08	-0.16	-0.06	-0.01	-0.16	10.19	3.71	-0.14	0.36	0.50	0.49	0.73	0.73	0.47	0.45	3.20	14.59	-0.09	-0.11	-0.38	-0.16	-0.51	-0.40	0.08	-0.19
18.Insurance	1.46	0.52	0.00	0.00	-0.01	-0.07	-0.10	-0.15	-0.04	-0.08	8.97	0.49	-0.40	-0.22	-0.69	-0.17	-0.21	-0.60	-0.27	-0.09	3.77	7.35	0.11	0.05	-0.64	-0.86	-0.51	-1.02	-0.34	-0.80
19.Business services	0.45	1.20	0.02	0.13	0.02	-0.05	0.00	-0.04	0.10	-0.02	1.35	6.58	0.09	0.19	-0.03	0.49	0.54	0.46	0.37	0.44	4.68	3.98	-0.26	-0.26	-0.71	-0.55	-0.82	-0.68	-0.43	-0.67
20.Personal services	0.78	0.82	0.02	0.05	-0.01	-0.06	-0.13	-0.03	0.06	-0.08	-0.28	0.64	0.33	0.45	0.20	1.03	1.05	0.84	0.83	0.95	2.19	1.31	0.00	-0.09	-0.12	-0.37	-0.47	-0.35	-0.20	-0.38
21.Other services	0.65	0.69	0.01	0.02	-0.01	-0.07	-0.11	-0.06	0.01	-0.03	-0.06	0.05	0.41	0.44	0.30	1.01	1.08	0.81	0.78	0.96	1.70	1.47	-0.02	-0.15	-0.10	-0.41	-0.55	-0.44	-0.23	-0.36
All manufactures	0.73	0.45	0.00	-0.05	-0.06	-0.07	-0.14	-0.13	-0.03	-0.14	5.52	6.97	-0.01	-0.41	-0.15	-0.61	-0.40	-0.42	-0.14	-0.48	5.03	4.52	0.03	-0.05	-0.08	-0.48	-0.45	-0.25	-0.01	-0.29
All services	0.68	0.78	0.02	0.03	0.01	-0.06	-0.10	-0.04	0.02	-0.04	1.74	2.46	0.23	0.22	0.09	0.66	0.73	0.54	0.50	0.62	2.75	4.01	-0.03	-0.13	-0.24	-0.35	-0.57	-0.39	-0.24	-0.42
Total	0.69	0.67	0.00	-0.02	-0.02	-0.09	-0.12	-0.09	-0.04	-0.10	4.62	5.97	-0.01	-0.27	-0.13	-0.46	-0.27	-0.27	-0.06	-0.38	4.60	4.42	0.02	-0.05	-0.10	-0.48	-0.48	-0.28	-0.06	-0.32

Source: Authors' estimations.

Note: LAC stands for Latin America, OAC for other advanced countries, SEA for Southeast Asia, SSA for Sub-Saharan Africa and MEN for Middle-East and north of Africa.

**Table 7.** Long term impact on bilateral imports in the EU and in the US of an ambitious TTIP agreement (% changes with respect to the initial data)

	EU bilateral imports									US bilateral imports								
	US	CHN	JPN	IND	LAC	OAC	SEA	SSA	MEN	EU	CHN	JPN	IND	LAC	OAC	SEA	SSA	MEN
1.Agriculture	98.2	-1.9	-2.0	-1.9	-1.3	-1.5	-1.3	-1.3	-1.3	108.6	-2.5	-2.5	-2.4	-1.9	-2.1	-1.8	-1.8	-1.8
2.Other primary	291.4	-3.8	-3.9	-3.8	-3.0	-3.3	-3.4	-3.0	-2.9	504.9	-2.0	-2.1	-1.9	-1.1	-1.5	-1.5	-1.2	-1.1
3.Food	211.3	-2.3	-2.4	-2.3	-1.7	-2.0	-1.9	-1.7	-1.8	97.8	-16.9	-17.0	-16.9	-16.5	-16.7	-16.6	-16.5	-16.5
4.Textiles	126.6	2.4	2.4	2.4	3.3	2.5	2.5	3.0	2.6	111.8	-2.0	-2.1	-2.0	-1.2	-1.9	-1.9	-1.5	-1.8
5.Wood and paper	17.4	1.1	1.1	1.2	1.8	1.5	1.5	1.7	1.7	11.8	0.8	0.8	0.9	1.5	1.2	1.3	1.5	1.4
6.Chemicals	31.2	-1.0	-1.0	-0.9	-0.6	-0.7	-0.7	-0.6	-0.6	36.2	-1.9	-1.8	-1.8	-1.4	-1.6	-1.6	-1.5	-1.4
7.Metals	35.3	-0.1	-0.1	0.0	0.6	0.3	0.3	0.6	0.6	38.1	-2.8	-2.9	-2.8	-2.2	-2.5	-2.5	-2.2	-2.2
8.Motor vehicles	99.6	-0.7	-0.6	-0.7	-0.2	-0.4	-0.5	-0.3	-0.2	45.0	-1.8	-1.7	-1.8	-1.3	-1.5	-1.6	-1.4	-1.3
9.Other transport	42.4	-8.6	-8.7	-8.5	-7.9	-8.3	-8.2	-7.9	-7.8	32.4	-10.5	-10.6	-10.4	-9.8	-10.2	-10.1	-9.8	-9.7
10.Electronics	34.1	-0.4	-0.4	-0.3	0.0	-0.2	-0.2	0.3	0.3	38.4	0.7	0.7	0.8	1.1	0.9	0.9	1.4	1.4
11.Other machinery	8.9	1.1	1.0	1.1	1.8	1.4	1.4	1.8	1.9	6.7	0.8	0.7	0.8	1.5	1.1	1.1	1.5	1.6
12.Other manufactures	29.6	1.2	1.2	1.3	2.0	1.5	1.5	1.9	1.9	25.7	0.9	0.9	1.0	1.6	1.2	1.2	1.6	1.6
13.Construction	3.3	1.1	1.0	1.1	1.5	1.4	1.3	1.4	1.5	2.8	1.3	1.3	1.4	1.8	1.6	1.6	1.7	1.7
14.Water Transport	6.9	0.0	0.0	0.1	0.4	0.2	0.2	0.3	0.4	10.1	0.2	0.2	0.2	0.5	0.4	0.4	0.5	0.5
15.Air Transport	5.9	-0.2	-0.2	-0.2	0.1	0.0	0.0	0.1	0.1	7.5	0.0	-0.1	0.0	0.3	0.2	0.2	0.3	0.3
16.Communications	7.8	0.5	0.5	0.6	0.9	0.8	0.8	0.9	0.9	2.3	1.2	1.1	1.2			1.4	1.5	1.5
17.Finance	6.6	0.6	0.5	0.6	1.0	0.8	0.8	0.9	1.0	23.1	1.3	1.2	1.3	1.7	1.5	1.5	1.6	1.7
18.Insurance	7.9	0.1	0.1	0.1	0.5	0.4	0.4	0.5	0.5	14.1	-1.8	-1.9	-1.8	-1.4	-1.6	-1.6	-1.5	-1.4
19.Business services	16.2	0.5	0.4	0.5	0.8	0.7	0.7	0.8	0.8	13.3	0.2	0.2	0.3	0.6	0.5	0.5	0.6	0.6
20.Personal services	3.9	1.1	1.0	1.1	1.6	1.4	1.4	1.6	1.6	2.1	0.8	0.7	0.8	1.3	1.1	1.0	1.3	1.2
21.Other services	3.2	1.0	0.9	1.0	1.5	1.3	1.2	1.5	1.5	2.4	0.9	0.9	1.0	1.5	1.3	1.2	1.4	1.4
All manufactures	42.0	0.4	-0.3	0.2	-1.1	-1.0	0.5	-1.8	-1.5	35.9	-0.4	-1.2	-2.2	-1.3	-1.8	-2.3	-1.3	-1.3
All services	8.4	0.7	0.6	0.5	1.0	0.8	0.8	1.0	1.0	9.8	0.6	0.4	0.4	1.0	0.7	0.7	1.0	0.9
Total	31.1	0.4	-0.2	0.3	-0.6	-0.5	0.5	-1.4	-1.1	28.8	-0.4	-1.0	-1.2	-1.3	-1.4	-1.9	-1.2	-0.9

Source: Authors' estimations.

Note: See note in Table 6.

**Table 8.** . Long term impact on GDP, Welfare and Wages of an ambitious and a modest TTIP agreement (% changes with respect to the initial data)

	Ambitious										Modest									
	EU	US	CHN	IND	JPN	LAC	MEN	OAC	SEA	SSA	EU	US	CHN	IND	JPN	LAC	MEN	OAC	SEA	SSA
	GDP										GDP									
Total	0.82	0.82	0.00	0.00	-0.01	-0.09	-0.20	-0.12	-0.05	-0.14	0.34	0.33	0.00	0.00	-0.01	-0.03	-0.05	-0.04	-0.02	-0.03
NTBs	0.48	0.36	0.01	0.00	0.00	-0.09	-0.21	-0.10	-0.04	-0.16	0.17	0.12	0.00	0.00	0.00	-0.03	-0.05	-0.03	-0.01	-0.04
Tariffs	0.07	0.07	-0.01	0.00	-0.01	-0.01	0.00	-0.01	-0.01	0.01	0.07	0.07	-0.01	0.00	-0.01	-0.01	0.00	-0.01	-0.01	0.01
FDI	0.25	0.37	0.00	-0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.09	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total with spillovers	1.07	0.93	0.04	0.04	0.02	0.02	-0.01	0.04	0.01	0.06	0.44	0.37	0.01	0.02	0.00	0.01	0.02	0.02	0.00	0.05
Indirect spillovers	0.05	0.03	0.03	0.03	0.02	0.02	0.04	0.05	0.02	0.04	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01
Direct spillovers	0.21	0.09	0.02	0.01	0.01	0.09	0.13	0.11	0.04	0.15	0.08	0.04	0.01	0.00	0.01	0.04	0.05	0.04	0.02	0.06
	Welfare										Welfare									
Total	1.10	0.87	0.01	0.03	-0.02	-0.11	-0.30	-0.15	-0.06	-0.14	0.44	0.35	0.00	0.02	-0.02	-0.04	-0.09	-0.07	-0.03	-0.03
NTBs	0.64	0.36	0.01	0.03	-0.01	-0.10	-0.30	-0.12	-0.05	-0.15	0.23	0.12	0.00	0.01	-0.01	-0.03	-0.08	-0.04	-0.02	-0.04
Tariffs	0.08	0.06	-0.01	0.02	-0.01	-0.01	-0.02	-0.02	-0.01	0.01	0.08	0.06	-0.01	0.02	-0.01	-0.01	-0.02	-0.02	-0.01	0.01
FDI	0.36	0.43	0.00	-0.03	0.00	0.01	0.03	0.00	0.01	0.01	0.13	0.15	0.00	-0.01	0.00	0.00	0.01	0.00	0.00	0.00
Total with spillovers	1.43	1.02	0.07	0.05	0.01	0.01	-0.03	0.05	0.02	0.07	0.58	0.41	0.02	0.03	0.00	0.01	0.01	0.01	0.00	0.05
Indirect spillovers	0.07	0.03	0.04	0.06	0.01	0.02	0.04	0.06	0.02	0.04	0.03	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.01	0.02
Direct spillovers	0.29	0.13	0.03	-0.03	0.02	0.10	0.20	0.14	0.06	0.15	0.11	0.05	0.01	-0.01	0.01	0.04	0.08	0.06	0.02	0.06
	Wages										Wages									
Total	0.71	0.80	0.01	0.01	0.00	-0.09	-0.14	-0.09	-0.05	-0.10	0.32	0.34	0.00	0.01	0.00	-0.04	-0.04	-0.04	-0.02	-0.03
NTBs	0.41	0.34	0.01	0.02	0.01	-0.08	-0.14	-0.07	-0.04	-0.11	0.14	0.12	0.00	0.00	0.00	-0.02	-0.04	-0.02	-0.01	-0.03
Tariffs	0.09	0.09	0.00	0.01	-0.01	-0.01	0.00	-0.01	-0.01	0.00	0.09	0.09	0.00	0.01	-0.01	-0.01	0.00	-0.01	-0.01	0.00
FDI	0.18	0.34	0.00	-0.02	0.00	0.01	0.01	0.00	0.00	0.01	0.07	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total with spillovers	0.97	0.95	0.05	0.06	0.04	0.03	0.04	0.07	0.02	0.08	0.42	0.40	0.02	0.03	0.01	0.01	0.03	0.03	0.01	0.04
Indirect spillovers	0.05	0.03	0.02	0.03	0.02	0.02	0.04	0.05	0.02	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01
Direct spillovers	0.22	0.13	0.01	0.02	0.02	0.10	0.13	0.10	0.05	0.13	0.09	0.05	0.01	0.01	0.01	0.04	0.05	0.04	0.02	0.05

Source: Authors' estimations.

Note: See note in Table 6.

## Appendix 1. Mapping of model regions.

Latin America and the Caribbean (Latin America, LAC)	Middle East, North Africa, Afghanistan and Pakistan (Middle-East, MEN)	Sub-Saharan Africa (Sub-Saharan A., SSA)	Emerging and Developing Asia (Southeast Asia, SEA)	Other advanced countries (OAC)
Antigua and Barbuda	Afghanistan	Angola	Bangladesh	Australia
Argentina	Algeria	Benin	Bhutan	Hong Kong SAR
The Bahamas	Bahrain	Botswana	Brunei Darussalam	Iceland
Barbados	Djibouti	Burkina Faso	Cambodia	Israel
Belize	Egypt	Burundi	Fiji	Korea
Bolivia	Iran	Cameroon	Indonesia	New Zealand
Brazil	Iraq	Cabo Verde	Kiribati	Norway
Chile	Jordan	Central African Republic	Lao P.D.R.	Singapore
Colombia	Kuwait	Chad	Malaysia	San Marino
Costa Rica	Lebanon	Comoros	Maldives	Switzerland
Dominica	Libya	Dem. Rep. of the Congo	Marshall Islands	Taiwan Province of China
Dominican Republic	Mauritania	Republic of Congo	Micronesia	
Ecuador	Morocco	Côte d'Ivoire	Mongolia	
El Salvador	Oman	Equatorial Guinea	Myanmar	
Grenada	Pakistan	Eritrea	Nepal	
Guatemala	Qatar	Ethiopia	Palau	
Guyana	Saudi Arabia	Gabon	Papua New Guinea	
Haiti	Sudan <sup>1</sup>	The Gambia	Philippines	
Honduras	Syria <sup>2</sup>	Ghana	Samoa	
Jamaica	Tunisia	Guinea	Solomon Islands	
Mexico	United Arab Emirates	Guinea-Bissau	Sri Lanka	
Nicaragua	Yemen	Kenya	Thailand	
Panama		Lesotho	Timor-Leste	
Paraguay		Liberia	Tonga	
Peru		Madagascar	Tuvalu	
St. Kitts and Nevis		Malawi	Vanuatu	
St. Lucia		Mali	Vietnam	
St. Vincent & the Grenadines		Mauritius		
Suriname		Mozambique		
Trinidad and Tobago		Namibia		
Uruguay		Niger		
Venezuela		Nigeria		
		Rwanda		
		São Tomé and Príncipe		
		Senegal		
		Seychelles		
		Sierra Leone		
		South Africa		
		South Sudan		
		Swaziland		
		Tanzania		
		Togo		
		Uganda		
		Zambia		
		Zimbabwe		

Note: the classification follows the one of the IMF *World Economic Outlook*.

## Appendix 2. Mapping of model sectors to Nace Rev 2 and Isic Rev 3.1

Sectors	Nace Rev 2	Isic Rev 3.1
1.Agriculture	A Agriculture, forestry and fishery products	ISIC 01-05
2.Other primary	B Mining and quarrying	ISIC 10-14
3.Food	C10 Manufacture of food products	ISIC 15-16
	C11 Manufacture of beverages	
	C12 Manufacture of tobacco products	
4.Textiles	C13 Manufacture of textiles	ISIC 17-19
	C14 Manufacture of wearing apparel	
	C15 Manufacture of leather and related products	
5.Wood and paper	C16 Manufacture of wood and of products of wood, cork, straw and plaiting materials, except	ISIC 20-22
	C17 Manufacture of paper and paper products	
	C18 Printing and reproduction of recorded media	
12.Other manufactures	C19 Manufacture of coke and refined petroleum products	ISIC 24-25
	C20 Manufacture of chemicals and chemical products	
	C21 Manufacture of basic pharmaceutical products and pharmaceutical preparations	
6.Chemicals	C22 Manufacture of rubber and plastic products	ISIC 24-25
	C23 Manufacture of other non-metallic mineral products	
12. Other manufactures	C24 Manufacture of basic metals	ISIC 27-28
7.Metals	C25 Manufacture of fabricated metal products, except machinery and equipment	
10.Electronics	C26 Manufacture of computer, electronic and optical products	ISIC 30, 32
	C27 Manufacture of electrical equipment	
11. Other machinery	C28 Manufacture of machinery and equipment n.e.c.	ISIC 29, 31, 33
8. Motor vehicles	C29 Manufacture of motor vehicles, trailers and semi-trailers	ISIC 34
9.Other transport	C30 Manufacture of other transport equipment	ISIC 35
12. Other manufactures	C31 Manufacture of furniture	ISIC 23, 26
12. Other manufactures	C32 Other manufacturing	ISIC 23, 26
11. Other machinery	C33 Repair and installation of machinery and equipment	ISIC 40,41,50,51,52,63,75,80,85,90
	D Electricity, gas, steam and air conditioning supply	
	D35 Electricity, gas, steam and air conditioning supply	
	E Water supply; sewerage, waste management and remediation activities	
	E36 Water collection, treatment and supply	
	E37 Sewerage	
	E38 Waste collection, treatment and disposal activities; materials recovery	
13. Construction	E39 Remediation activities and other waste management services	ISIC 45
	F Construction	
	F41 Construction of buildings	
	F42 Civil engineering	
21. Other services	F43 Specialised construction activities	ISIC 40,41,50,51,52,63,75,80,85,90
	G Wholesale and retail trade; repair of motor vehicles and motorcycles	
	G45 Wholesale and retail trade and repair of motor vehicles and motorcycles	
	G454 Sale, maintenance and repair of motorcycles and related parts and accessories	
	G47 Retail trade, except of motor vehicles and motorcycles	
	H Transportation and storage	
14. Water Transport	H49 Land transport and transport via pipelines	ISIC 61
	H50 Water transport	
15. Air Transport	H51 Air transport	ISIC 62
21. Other services	H52 Warehousing and support activities for transportation	ISIC 40,41,50,51,52,63,75,80,85,90
16. Communications	H53 Postal and courier activities	ISIC 70-74
21. Other services	I55 Accommodation	ISIC 40,41,50,51,52,63,75,80,85,90
21. Other services	I56 Food and beverage service activities	ISIC 40,41,50,51,52,63,75,80,85,90
19. Business services	J582 Software publishing	ISIC 91-93
20. Personal services	J59 Motion picture, video and television programme production, sound recording and music p	ISIC 91-93
	J60 Programming and broadcasting activities	
16. Communications	J61 Telecommunications	ISIC 70-74
19. Business services	J62 Computer programming, consultancy and related activities	ISIC 91-93
	J63 Information service activities	
17. Finance	K64 Financial service activities, except insurance and pension funding	ISIC 65,67
18. Insurance	K65 Insurance, reinsurance and pension funding, except compulsory social security	ISIC 66
17. Finance	K66 Activities auxiliary to financial services and insurance activities	ISIC 65,67
19. Business services	L68 Real estate activities	ISIC 91-93
	M69 Legal and accounting activities	
	M70 Activities of head offices; management consultancy activities	
	M71 Architectural and engineering activities; technical testing and analysis	
	M72 Scientific research and development	
	M73 Advertising and market research	
	M74 Other professional, scientific and technical activities	
	M75 Veterinary activities	
	N77 Rental and leasing activities	
N78 Employment activities		
21. Other services	N79 Travel agency, tour operator reservation service and related activities	ISIC 40,41,50,51,52,63,75,80,85,90
19. Business services	N80 Security and investigation activities	ISIC 91-93
	N81 Services to buildings and landscape activities	
	N82 Office administrative, office support and other business support activities	
21. Other services	O - Public administration and defence; compulsory social security	ISIC 40,41,50,51,52,63,75,80,85,90
	P - Education	
	Q - Human health and social work activities	
20. Personal services	R - Arts, entertainment and recreation	ISIC 91-93
	S - Other services activities	
	S95 Repair of computers and personal and household goods	
	T - Activities of households as employers; undifferentiated goods and services, producing acti	