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# Regionalism vs. Multilateralism: assessing the impact of free trade agreements between EU and Asian Countries[*]

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**ABSTRACT**

In 2006 the EU decided to abandon its moratorium on negotiating new free trade agreements. Since then, numerous negotiations have been started. In particular, the EU joined in the scramble for preferential market access in Asia, starting bilateral negotiations both with individual countries, as in the case of India and South Korea, and with regional sub-groupings, such as the Association of Southeast Asian Nations (ASEAN).

In this paper, we use a computable general equilibrium (CGE) model to assess the effects of the possible agreements between the EU and the Asian countries. We want to evaluate the impact of the free trade agreements by themselves, their mutual compatibility as well as their relations with the larger agenda of multilateral trade liberalization. As a matter of fact, regional trade agreements are controversial in economics, not simply because of the classic (so-called 'Vinerian') view that they can sometimes reduce trade by diverting it, rather than creating it, but also because of the unresolved disagreements over when a regional trade agreement is likely to precede, rather than preclude, more global agreements.

Keywords: Protection, Commercial policy, GTAP model, International trade,
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## 1. Introduction

As long as the enthusiasm associated with the launch of the Doha Round in 2001 dissipated as these negotiations discontinued, a significant reconsideration of European trade policy is currently underway.

In 2006, the Communication of the European Commission on the EU external trade strategy encouraged further steps to pursue new Free Trade Agreements (FTA). In particular, due to the increasing importance of the Asian countries, the EU joined in the scramble for preferential market access in Asia, starting bilateral negotiations both with individual countries, as in the case of India and South Korea, and its regional grouping partners, namely the Association of Southeast Asian Nations (ASEAN).

The European Union (EU) signed a "motley assortment" (Baldwin, 2007) of unilateral, bilateral, preferential and plurilateral deals. In recent years, the proliferation of these agreements has been interpreted as a possible threat to the process of multilateral trade liberalization promoted under the GATT/WTO, leading to a large debate centred on "regionalism toward multilateralism" (Panagariya, 2000).

On the one hand, the number of member countries inside WTO has grown, reaching 152 member countries (plus 30 acceding countries) from almost 80 GATT contracting partners. On the other hand, the world has witnessed a veritable explosion of reciprocal preferential trade agreements (RTAs) in the past 15 years: of the 250 agreements notified to the General Agreement on Tariffs and Trade (GATT) and World Trade Organization (WTO) between 1947-2002, about half have been notified since 1995.

Particularly difficult to understand are the linkages between regionalism/bilateralism and multilateralism: the possible existence of a mutually supportive relationship between multilateralism and regionalism remains a moot point. As a matter of fact, one of the questions addressed in this paper is whether this tendency to reinforce RTAs is complementary to the multilateral liberalization process or it appears to diminish vitality to the multilateral negotiation process by absorbing energies and efforts. More specifically, we focus on the EU's negotiations with ASEAN, India and Korea, as well as the EU's involvement in the Doha Development Agenda. This broad set of cases sheds some light on long-standing debates in the field:

- what should be the EU's preferred strategy in international trade negotiations?

- what is the relative importance of different economic sectors in different possible agreements?

- how do the bilateral agreements interact with multilateral liberalization?

We use a computable general equilibrium (CGE) model, specifically the Global Trade Analysis Project (GTAP) one, to assess the effects of possible agreements between the EU and the Asian countries. We want to evaluate the impact of the free trade agreements by themselves, their mutual compatibility as well as their relations with the larger agenda of multilateral trade liberalization.

Firstly, we assess the consequences of each bilateral agreement for both participant and non-participant economies. Secondly, we consider all three possible agreements at the same time, to assess whether the effects of individual agreements are magnified or they tend to crowd out each other. Then, we simulate a stylized, but realistic, multilateral agreement to be compared and combined with the bilateral ones. Finally, we simulate a global free trade scenario as a benchmark to be used in the assessment of previous results. More specifically, we compare the outcomes of partial liberalizations, both bilateral and multilateral, with the free trade one, in terms of "structural convergence", that is, assessing the similarity in patterns of output and trade adjustments ensuing from different scenarios.

## 2. Bilateralism *vs* multilateralism: Trick or Treat?

The literature on economic integration is abundant and in rapid expansion. In this section, we refer to some selected contributions specifically related to the effects of bilateral and multilateral agreements.

First of all, we would like to clarify the concept of bilateralism we are going to use. While Lloyd (2002) employs the term bilateral to identify a "one to one" trade relation among two countries, we also use this term to identify a "one to many" relation as in the case of a country, such as India, dealing with a group of countries such as the EU; or a "many to many" relation, as in the case of the EU dealing with another group such as the ASEAN countries.

Bhagwati and Panagaria (1996) conclude that RTAs are mostly welfare reducing due to the large effect of trade diversion. In this contribution, they also refer to as "spaghetti-bowl" effect, which may arise due to the differential tariff rates for FTA member and non-member countries. Thus, the spokes or spaghetti strand may overlap in various directions turning out in a negative welfare effect. The literature explaining international trade, through the use of monopolistic competition models (Krugman, 1991), shows that Regional Trade Agreements can lead to an increase in external tariffs due to a non-cooperative behaviour. Similarly, i.e., when analysing the strategic interaction between bilateral agreements, trading blocs and free trade,. It turns out that when trade agreements lead to the creation of trade blocs equally sized, then the global welfare effect tends to be positive. However, when the trading blocs are of unequal size the result is the opposite, and Riezman (1998) found that bilateral agreement can even lead to a higher protection when trading blocs are initially almost the same size.

It is widely recognized that regional trade agreements are controversial in economics, not simply because of the classic (so-called 'Vinerian') view that they can sometimes reduce welfare by diverting trade, rather than creating it, but also because of the unresolved disagreements when a regional trade agreement is likely to precede, rather than preclude, more global agreements. Among the advocates of regionalism, Nordstrom (1995) finds that regional trade agreements provide an incentive to pursue multilateral trade liberalization, allowing small countries to more effectively deal with large trading blocs. With this view, the general conclusion is that increasing regionalism is not a threat to the multilateral trading system. Also the OECD (1995) appears to support the hypothesis that well-structured regional integration arrangements may be helpful for the strengthening of a multilateral approach in many respects. Regional arrangements can enhance the awareness of interdependence between trading partners, projecting (small) single countries in the international panorama and providing the acceptance of international rules.

### 3. The prospect of a EU RTAs with the Asian countries

Since the 1960s, the EU has negotiated numerous bilateral, regional and multilateral trade agreements granting both reciprocal and non-reciprocal trade preferences to a large number of countries. Due to the necessity of a common external representation, which is inherent in a customs union, trade was among the first policies delegated to supranational level. The progressive extension of the international trade agenda, dominated by the WTO issues, has repeatedly forced the EU to define a complex composition of trade policies which could allow much flexibility in the bilateral and multilateral relations with different progressive market access.

A distinctive element of the EU trade strategy was the adoption of a "Generalised System of Tariff Preferences", in 1971, that allowed the EU began to reduce or remove tariffs and quotas on its imports from developing countries. Under the current scheme, a special initiative called Everything But Arms (EBA), adopted by the Council in February 2001 (Regulation (EC) 416/2001) gives duty-free access to imports of all products from Least Developed Countries (LDCs) without any quantitative restrictions, except to arms and munitions.

However, in addition to those, the EU concludes bilateral agreements and develops specific trading policies with third countries. There are a number of agreements established with single countries and regions aiming at increasing the level of economic development and trade cooperation. The first bilateral trade agreements signed by EU was a Cooperation Agreement in mid 1970 with the Southern Mediterranean Countries (Algeria, Egypt, Lebanon, Syria later extended to Israel, Morocco and Tunisia) which became the Euro-Mediterranean Free Trade Agreement in 2002. Later, FTA has been signed with Mexico, South Africa and Chile whilst ongoing negotiations are with MERCOSUR, ASEAN and the Gulf Countries.

In this view, most of the above relations have not been reciprocal (see the South Africa and Mexico) leading to the so called "shallow integration".

EU trade relations have therefore a long tradition along EU policies. Due to the changes occurred in the international economic prospect, EU trade agreements have been progressed and sometimes evolved. This is the case of the Economic Partnership Agreements (EPAs), regional trade agreements between the European Union (EU) and African, Caribbean and Pacific countries (ACPs). Thirty-five countries in seven ACP regions signed up to EPAs in December 2007 to ensure that trade relationship between the EU and ACP will be in line with current WTO rules.

*Trade initiative with ASEAN, India and South Korea*

On April 23rd (2007) the European Commission adopted official negotiating mandates for new Free Trade Agreements (FTA) with the ASEAN[†] countries, India and South Korea.

The ASEAN[‡] countries cover a predominant key position in the Asia-Pacific region and due to its economic role in the world trading system ASEAN is considered one of the main partner for the European Union (Fig 1). In 2006 the EU bilateral trade relations with the ASEAN countries accounted for 5% of EU total trade Among the ten ASEAN countries those who play a crucial role for the agricultural sector are Indonesia (20% of total EU imports), Malaysia (17% of total EU imports) and Thailand (2% of total EU imports).

In 1980, the EU established a Cooperation Agreement and later on, in 2003, the Trans-Regional EU ASEAN Trade Initiative (TREATI) mostly focused on trade and investment promotion. Other issues have also been addressed inside this initiative (such as intellectual property rights and investments promotion), but the emphasis has been recently given to the cooperation on sanitary and phytosanitary standards in agro-food and fishery products, technical standards for electronics and on wood-based industries.

However, the first step to assess the potentiality of a free trade area between EU and the ASEAN countries took place in 2005 with the creation of an ad hoc "vision group" in charge of a preliminary evaluation on future initiates in the area, including the FTA issue. This initiative has been followed by a feasibility studies[§] about the economic relevance of a possible FTA. Previous estimates show that the impact of a FTA with the ASEAN countries would mostly benefit the latter by increasing its GDP

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[†] It is worth to recall that among the ASEAN countries Cambodia, Laos and Myanmar already benefit from the EBA agreement.

[‡] The ASEAN group of countries are: Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Burma/Myanmar, Philippines, Singapore, Thailand and Vietnam.

[§] CEPII - CIREM (2007).

by more that 2% in 2020. According to their results, this is due to the fact that EU is a more significant partner for the ASEAN rather than the reverse (CEPII-CIREM, 2007) whilst our conclusions show a different pattern (see paragraph 5).

The negotiating process between EU-ASEAN to establish a FTA started on 23 April 2007[**]. A Sustainability Impact Assessment, carried out by the Commission, will accompany the negotiating process. A Joint Committee has been and a work programme has been set-up: four negotiating rounds are scheduled in 2008.

EU is the India's largest trading partner. The EU is also India's largest source of foreign direct investment. However, India accounts for just 1.8% of total EU trade (Figure 1) and attracts only 1.3% of the EU's total investments.

In 2005, the EU and India adopted a Joint Action Plan which is considered as a first step toward a more liberalized environment with the aim of increasing bilateral trade and economic cooperation. The Council adopted a negotiating Directive for a Free Trade Agreement (FTA) with India on 23 April 2007 and negotiations were launched on 28/29 June 2007. The FTA would cover trade in goods and services but will also pay attention to other issues: non-tariff barriers, intellectual property rights, competition problems, intellectual property rights, rules and regulations.

South Korea occupies the eighth position among the most important EU trade partners, whilst the EU is the fourth largest South Korean trade partner. Bilateral trade between the EU and Korea has been growing steadily (Figure 2): in real terms, bilateral trade in merchandise has increased by over 35% in the last 4 years (Francois, 2007).

The agreement currently in place was established in 2001 (Framework Agreement on Trade and Co-operation) to deal with various issues such as, industry, environment as well as trade and investments.

According to a recent study (Francois, 2007) on the economic impact of a potential FTA between the EU and South Korea, the agreement would yield important gains for the two economies, and these would significantly increase if liberalization in services was included in the agreement.


## 4. Model, database and scenarios

Simulations have been carried out using the Global Trade Analysis Project (GTAP) model and its database, based on the latest release of version 7, providing a baseline with reference to the year 2004.

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[**] See DG Trade: http://ec.europa.eu/trade/issues/index_en.htm.

The GTAP model is a computable general equilibrium (CGE) model based on Input Output tables (IO) representing 58 activities and 105 countries.

In our version the database was aggregated in order to include 18 regions/countries and 34 sectors (tab.1). The product aggregation is as detailed as possible, taking into account the available estimates for the scale economies and the tariff equivalents in the services sector.

**Table 1: GTAP data accounts**

| Commodities and Activities | Label | Factors |
|---|---|---|
| Cereals | land | Land |
| Other crops | labour | Labour |
| Oil seeds | cap | |
| Dairy | natres | Natural resources |
| Meat sector | | |
| Chemical products | | **Regions** |
| Wood products | 1 | Asean |
| Plant fiber based | 2 | China |
| Rice | 3 | EU-27 |
| Sugar | 4 | Euromed |
| Fruit & vegetables | 5 | India |
| Beverage & tobacco | 6 | Japan |
| Other food | 7 | Korea |
| Fishing | 8 | Mercosur |
| Forestry | 9 | Country no WTO |
| Leather products | 10 | North America |
| Machinery | 11 | Oceania |
| Metal products | 12 | Other Asian countries |
| Mineral | 13 | Rest of Europe |
| Oil fats | 14 | Other south American countries |
| Motor vehicle | 15 | Turkey |
| Textile sector | 16 | South Africa |
| Other manufacturing, | 17 | Africa Sub-Saharan |
| Petrol products | 18 | Rest of the World |
| Wearing | | |
| Electronic products | | |
| Business services | | |
| Distribution | | |
| Finance services | | |
| Communication | | |
| Construction | | |
| Other services | | |
| Transport | | |
| Water | | |

Trade policy at the tariff line level implies a level of detail by far higher than any existing model can allow for: the EU tariff schedule, for example, includes more than 10,000 tariff lines. Therefore, in order to reach the consistency between the information on trade distortions and the model aggregation it is necessary to compute some kinds of average tariffs.

However, the quality of trade distortion data included has considerably improved compared to those in the previous release, due to the use of the MacMap-HS6[††]: a database including HS-6[‡‡] level details, providing consistent and exhaustive ad valorem equivalents (AVEs) of applied border protection across the world. This improvement allows considering applied/preferential tariffs rather than bound ones, and includes the AVEs of some NTBs (Bouët et al., 2005).

In this paper a number of changes have been introduced to the standard trade policy database. First of all, since in the actual release of Version 7 of the database the *ad valorem* equivalents are not completely revised, we used the final MacMap–HS6 for 2004, aggregating tariffs according to the "reference group" approach[§§]. Furthermore, other changes have been introduced into the model in order to update the baseline and to include those policy changes which were already decided in 2004, but not yet implemented, such as the completion of the EBA initiative and the Euromed agreements.

In order to provide a comprehensive assessment of market access, the database has been completed by drawing estimates from the literature on the level of protection in the service sector (Park, 2002). It is worth to recall that the baseline includes the abolition of the "Multifiber Agreement" through the phase out of the worldwide bilateral quota scheme for textile and clothing.

Finally, particular consideration was given to CAP, which has undergone significant modifications over this period, such as the introduction of a uniform decoupling premium for the all member states. Moreover, the 2004 and 2007 enlargements of the EU, and the corresponding extension of the CAP to 10 New Members was taken into account by removing import tariffs between the EU and the CEECs, and through the alignment of export and import subsidies or taxes.

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[††] Market Access Map (MAcMap) is a database developed jointly by ITC (UNCTAD-WTO, Geneva) and CEPII (Paris).

[‡‡] The HS was developed by the World Custom Organization (WCO). It was implemented in 1988 by an international convention. The HS is maintained by the WCO through the Harmonized System Committee. The United Nations (UN) Statistical Commission has adopted HS as the core classification for goods. HS-6 level means "at 6 digit level"; the term "digit" refers to the number of figures in the code which are used to define a product. While the digit number increases, the level of disaggregation also increases. Classification goes from 2 digits, which represent the "chapters" to 12 digits which represent the maximum available merchandise disaggregation.

[§§] Once the detailed tariff scenarios have been concluded and the new applied tariffs are determined, results have to be aggregated at the GTAP sectoral and regional level. The way tariffs are aggregated play a crucial role. The method we use, the "reference group" approach, tries to reduce the "endogeneity" problem between tariff and trade, while avoiding adopting too many assumptions. For this purpose, 5 reference groups of countries have been defined according to their GDP per capita, imports per capita and also exports per capita. Bilateral

The model closure suggested by Francois has been chosen (1998), to take into account economies of scale and monopolistic competition in the manufacturing and services sector.

The "Doha scenario", considered in this study, contains the following elements:

- A major difference exists between Agriculture and NAMA[***] sectors. In the former case both developing countries and LDCs have consolidated almost all their tariffs during the Uruguay round, well above applied rates. As far as industrial sector are concerned, the percentage of bound tariffs[†††] is around 80% for developing countries and 31% for LDCs. Again, the level of bound tariffs is higher than the ones applied, more for developing countries than for LDCs (Bchir et ali., 2005). According to the latest circulated proposals, before implementing the tariff-cutting formulas, the applied rates for unbound products are to be increased by 30%.

- For the NAMA sectors, the Swiss formula coefficient 10 for developed countries and for 20 developing was implemented[‡‡‡]. For agricultural products, we implement the G20 proposal[§§§] with a capping at 100 % for developed countries and at 150 % for developing countries.

- Special and Differential Treatment exempts LDCs from tariff cuts though they are asked to bind their tariffs. The same treatment is provided to Small and Vulnerable Economies[****]. A series of developing countries are not requested to liberalise their manufacturing sectors due to a low initial binding rate (the so-called "paragraph 6" countries[††††]): A final exception is that South Korea is treated as a developing country in the agriculture negotiations and as a developed one in the NAMA negotiations.

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applied tariffs are aggregated using the import trade of the "reference group" to which the import country belongs to.

[***] No-Agricultural Market Access

[†††] It is important to remember that WTO negotiations are on bound rather than applied tariffs. Bound tariff is the maximum tariff on an import to which commitments are made. This rate is legally binding under the WTO and applies on a most favoured nation (MFN) basis. Bound rates are enforceable under Article II of the GATT. If a WTO contracting party raises a tariff above the bound rate, the affected countries have the right to entail an equivalent value against the offending country's exports or, alternatively, to receive a compensation.

[‡‡‡] The Swiss formula, which is a non linear formula (meaning that higher tariff will be subject to deeper cuts) potentially generates significant tariff cuts and reduction in tariff peaks. The final level of cuts entailed by the formula depends on the coefficient used in the formula itself (the higher the coefficient, the lower the tariff cuts) and by the degree of flexibilities granted to developing countries.

[§§§] A tiered formula with inflexion points at 20, 50 and 75 percent, using average tariff cuts of 45, 55, 65 and 75 percent. For developing countries, the inflexion points are placed at 30, 80 and 130 percent and the average cuts at 25, 30, 35 and 40 percent. The G20 proposal in agriculture is an intermediate position between the more conservative EU proposal and the more demanding US proposal.

[****] Antigua and Barbuda, Barbados, Bolivia, Dominica, Dominican Republic, El Salvador, Fiji, Grenada, Guatemala, Honduras, Mauritius, Mongolia, Nicaragua, Papua New Guinea, Paraguay, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago.

[††††] Cameroon, Congo, Côte d'Ivoire, Cuba, Ghana, Kenya, Macao, Mauritius, Nigeria, Sri Lanka, Suriname, Zimbabwe.

- OECD countries provide duty free and quota free market access for 97%[‡‡‡‡] of LDCs exports, defined at the HS6 tariff line level. The exception is the EU, where the current commitment under the "Everything But Arms" initiative holds[§§§§].

Liberalisation only applies to WTO members; accordingly, Russia does not benefit from cuts in MFN rates.

About the simulations, seven scenarios have been implemented:

**S1:** refers to global free trade. All tariffs to trade imports and export subsidies are eliminated.

**S2:** represents the Doha scenario, without the possibility to introduce special and sensitive products. This may lead to a relevant overestimation of the liberalization impact. However, it should be noticed that the purpose of this scenario is not to provide a realistic assessment of the impact of the negotiations, rather to provide a stylized representation of a possible multilateral liberalization scenario to be compared with the bilateral ones.

**S3:** simulates bilateral free trade between the EU and ASEAN countries.

**S4:** simulates bilateral free trade between the EU and India.

**S5:** simulates bilateral free trade between EU and South Korea.

**S6:** scenarios S3-S4-S5 are simulated together.

**S7:** represents the Doha scenario, fully implemented, together with S6 scenario.

Finally, it is worth mentioning that all bilateral liberalization scenarios include not only the removal of tariffs on goods, but also the reduction of the protection in the service sector by half.


## 5. Results

*Welfare*

In table 1 we set out the results for four different scenarios: each bilateral agreement between the EU-27 and ASEAN, India and Korea and the three agreements together.

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[‡‡‡‡] The 3% of tariff lines, excluded from the initiative, are defined following the same political economic criteria adopted for "special" and " sensitive products" (see Jean et al, 2006).

[§§§§] This unilateral initiative towards LDCs provides free market access except for arms.

The EU-ASEAN FTA would benefit both partners, though the EU would reap most (70%) of the benefits. This is quite a surprising finding since ASEAN bilateral exports are larger than the EU ones. Actually, the ASEAN countries gain a lot from the terms of trade, since the increase in export prices more than compensate the increase in import prices; but they lose in terms of scale economies since the bilateral agreement leads them to specialize in some primary sector productions where they register significant increases in their exports towards the EU. The opposite is true for the EU that gets most of the benefits from the efficiency gains: the latter are much smaller in the ASEAN case, and this is rather unexpected considering the values of the original bilateral duties.

In addition we decompose the welfare impacts and have a closer look at the role played by liberalization in each major sector of the economy (agriculture, manufacture, services). Apparently, the ASEAN benefits from the liberalization in services and manufacture, while it would be better off if agriculture would be left out of the FTA. On the contrary, the primary sector liberalization is responsible for the majority (60%) of the overall EU benefits.

From the EU point of view, the FTA with Korea is the least convenient both in absolute and relative terms. Most of the benefits stem from terms of trade gains, namely higher export prices, while the product specialization plays a negative role since the EU increases production in sectors that are not characterized by scale economies. Moreover, the efficiency gains are much lower than in the other cases, notwithstanding the fact that the height of bilateral duties is rather similar.

In terms of sectoral liberalization, the Korean case is rather peculiar, since agriculture liberalization is paramount while benefits form services liberalization are much smaller. It is also worth emphasizing that in this scenario agriculture liberalization actually reduces the overall EU benefits.

Korea is the EU partner that would gain the most from an FTA either in absolute terms or as a percentage of bilateral flows. This is especially remarkable given that there would be a terms of trade loss both on the export and import side. On the contrary, there would be large benefits due to scale economies and efficiency gains. The former are due to shift in productions towards the textile industry; the latter are much larger than those registered by ASEAN and India notwithstanding the fact that the original duties towards the EU are not very different.

It should be noticed that this is the FTA with lowest negative impact with respect to the rest of the world.

The EU-INDIA FTA provides the most controversial welfare results, since one partner, India, would register an overall loss, while the EU would register the largest benefits either in absolute terms or as a percentage of bilateral trade. As a matter of fact, India would only benefit from the services liberalization, while the EU would mostly gain from the removal of duties on industrial goods.

The two sources of the Indian loss are: the negative terms of trade impact due to lower export prices and higher import prices; the production shift from manufactures (mostly machinery and chemicals) to agricultural sectors characterized by the lack of scale economies and driven by the surge in agricultural exports towards the EU. Moreover, the efficiency gains are somewhat limited notwithstanding the fact that bilateral duties are quite high.

Turning to the EU gains, the difference with respect to the other FTAs is explained by the larger terms of trade benefits due to higher export prices more than compensating higher import prices. On the contrary, both efficiency and scale economies gains are lower than in the EU-ASEAN FTA case.

Finally, we turn to the scenario combining all 3 FTAs. Apparently, EU benefits are much larger than any single FTA and even larger than the sum of the 3 agreements. In other words, it may be argued that EU FTAS are "super-additive" enjoying a sort of scale economies in the implementation of several FTAs at the same time. Apparently, this is also consistent with the strategy of the Commission to negotiate on different tables at the same time.

The opposite seems to hold in the case of the Asian countries, since their benefits (or losses) result to be slightly reduced. If the overall figures are similar to those resulting from the individual FTAs, the sources of these figures are quite different. In this scenario, services liberalization is responsible for most of the benefits accruing to Korea, while manufacture liberalization is responsible for most of the benefits accruing to ASEAN. On the other hand, none of the Asian countries should care much about agricultural liberalization, while this sector is responsible for most of the benefits accruing to the EU.

Last, we examine the impact of WTO scenario. For EU27 it represents a better solution, in terms of welfare, with respect to the other scenarios, i.e. single bilateral and all together. As consequence, for the EU27, the main effort should be focused on WTO agreement rather than on bilateral agreements.

*Output*

To assess the compatibility of trade regimes, we have decided to focus on a concept that Roland-Holst and van der Mensbrugghe (2001) term "structural congruence". By this, they mean similarity in the composition of real sectoral output within a country under two different policy regimes. For example, two trade liberalization scenarios will lead to different percentage changes in the vector of sectoral output. If these percent change vectors are a positive scalar multiple of one another, the two scenarios are structurally congruent. In other words, "the policies differ in their output composition effect only by a uniform (positive) aggregate growth factor" (Roland-Holst and van der Mensbrugghe 2001, p.29).

A lack of congruence would allow for negative scalar multiples. The basic logic of this is that two congruent trade regimes will only affect the level of growth, while incongruent policies can, on the other hand, expand and contract completely different activities.

As it was mentioned, advocates of regionalism argue that it can be an expedient and even a necessary step in the ultimate evolution to global free trade. If this was the case, a multilateral agreement for trade liberalization, such as the Doha Development Agenda, would be a congruent extension of bilateral agreements. Unfortunately, in a "second-best world" partial liberalization may have unexpected consequences. The induced sectoral adjustments and correspondence to the different scenarios have been simulated.

In Table 3, totals by column confirm the expectation that the multilateral liberalization scenario is more consistent with the free-trade "first best" than any bilateral agreement or combination of bilateral agreements. In a second-best setting, then, it is preferable to reduce some duties towards many countries rather than eliminating all of them towards a single country.

This is also confirmed by a comparison across bilateral agreements. The FTA including a group of countries – ASEAN – is more consistent with free trade than single countries free trade, such as India or, even worse, Korea. However, adding up bilateral FTAs is not necessarily a good idea: the sectoral adjustments implied by the 3 FTAs together are less similar to the free trade one than the EU-ASEAN FTA by itself.

The ranking of different possible partial liberalization scenarios is confirmed if we look at the number of sectors presenting a "sign reversal", i.e. increasing (reducing) output when the opposite actually happens in the free-trade scenario. There would be as much as 10 cases in the EU-Korea FTA, but only 3 in the WTO agreement scenario: the other experiments fall within this range.

When the sign of the output change is consistent with the free-trade scenario, one would expect that partial liberalization implied smaller adjustments (in absolute values). In point of fact, there are a few cases of "overshooting", i.e. partial liberalization moves outputs in the "right" direction but somewhat beyond the free-trade mark. In this respect, the ranking of the scenarios changes. As a matter of fact, the highest number of these cases (6) is registered with multilateral liberalization, while they are much less frequent in the bilateral scenarios (none in the case of the EU-KOREA FTA).

Looking at the different sectors, a few – rice, sugar and wearing – always present "double digits" differences with respect to free trade output changes. Other sectors, such as wood products, dairy and rice, present larger differences only in bilateral liberalization scenarios.

*Trade*

For trade, we look also at the results comparing, by a similarity index, the global free-trade structure, in terms of total trade, with the single free-trade agreement between the EU-27 and ASEAN, India and Korea and the WTO agreement. We apply the *Traded Similarity Index* (TSI) which is based on the absolute traded values (De Nardis & Traù, 1999; Grubel & Lloyd, 1975; Monti, 2003) and it is expressed as:

$$TSI = \left\{ 1 - \left[ \sum_i |X_{iA} - X_{iB}| / \sum_i (X_{iA} + X_{iB}) \right] \right\} * 100 \qquad [1]$$

where $X_{iA}$ and $X_{iB}$ are, respectively, the sum over all possible sources and destinations of EU export and import flows of item *i* (GTAP sectors) under global free-trade and under partial liberalization agreements (either bilateral or multilateral). The index varies between 0 and 100: in the former case similarity is null, in the latter the flows are identical (Figure 3, 4 and 5). Our goal is to highlight what are the sectors where the trade structure is more distant form the one resulting from global free trade.

Two major features emerge from the 3 graphs. First of all the sectors whose trade flows are more distorted are sugar, rice and dairy, along with meat, cereal, textile and fruit and vegetables: this is not a surprising since it well known that those are the most EU protected sectors. Secondly, the multilateral scenario lead to trade patterns that are significantly closed to the free trade one, since the TSI never fall below 80. on the other hand, the bilateral agreement barely move TSI closer to the free trade one and in some cases (e.g. rice into the EU-India FTA scenario) even in the "wrong" direction (e.g. further away from the free trade values). The general conclusion seem to be that bilateral free trade agreements are more a political issue than economic one.

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**Figure 1 – European total trade (imports + exports), in 2007, with some areas and country**
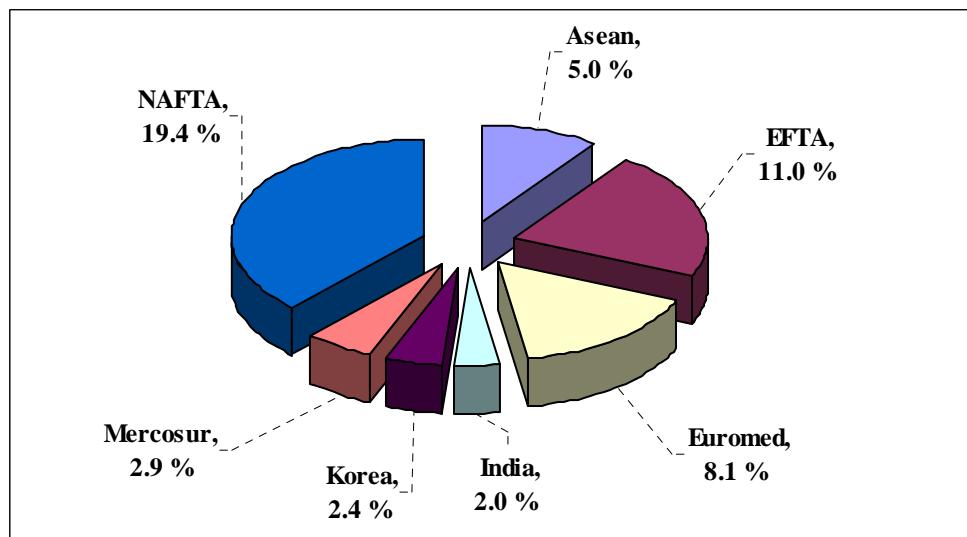


Source: Comtrade

**Figure 2 – Trade between European Union and South Korea, 2003 – 2007 (millions $)**
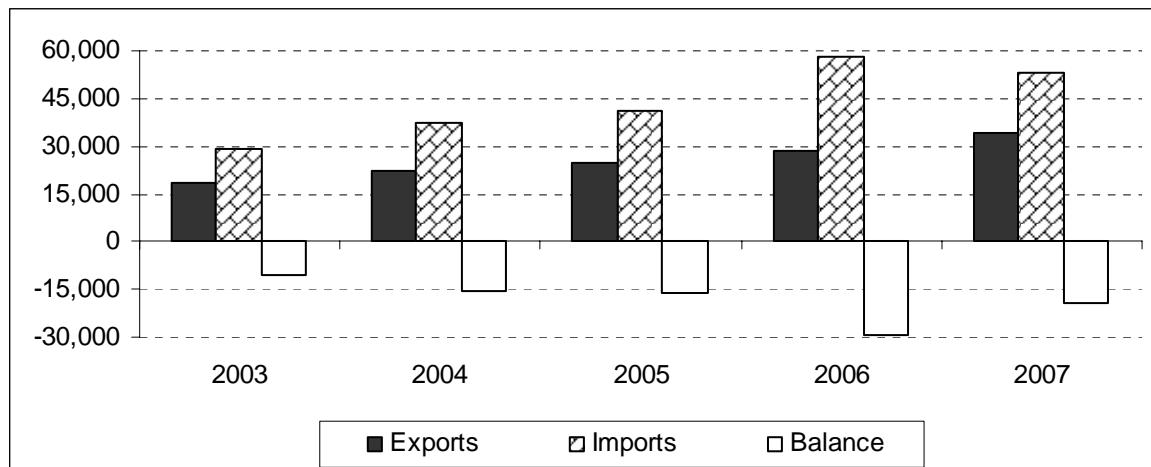


Source: Comtrade

**Table 1 – Free-trade agreements of EU27, impact on welfare and decomposition by sectors (million $)**

| | Agriculture | Manufacturing | Services | Total[1] |
|---|---|---|---|---|
| **Free-trade EU-Asean** | | | | |
| Asean | -1,481 | 1,466 | 1,983 | 2,181 |
| India | -15 | -115 | -47 | -185 |
| Korea | -130 | -181 | -29 | -341 |
| EU27 | 3,161 | 1,041 | 1,137 | 5,291 |
| Rest of the World* | -769 | -2,714 | -1,150 | -4,716 |
| **Free-trade EU-India** | | | | |
| Asean | -49 | -153 | -44 | -139 |
| India | -1,810 | -2,999 | 1,119 | -2,338 |
| Korea | 30 | -84 | -10 | 64 |
| EU27 | 1,765 | 6,940 | 781 | 7,317 |
| Rest of the World* | 28 | -2,245 | -613 | -2,837 |
| **Free-trade EU-Korea** | | | | |
| Asean | 49 | -12 | -13 | 25 |
| India | 10 | -29 | -6 | -25 |
| Korea | 1,377 | 1,324 | 220 | 2,923 |
| EU27 | -105 | 673 | 612 | 1,179 |
| Rest of the World* | 144 | -762 | -235 | -852 |
| **Free-trade EU with Asean, India, and Korea** | | | | |
| Asean | -88 | 1,963 | 20 | 2,100 |
| India | -2,028 | 68 | -37 | -2,002 |
| Korea | 72 | -298 | 2,686 | 2,454 |
| EU27 | 7,371 | 5,360 | 1,264 | 13,926 |
| Rest of the World* | -2,944 | -4,413 | -889 | -8,322 |
| **WTO agreement** | | | | |
| Asean | -878 | 7,899 | - | 7,300 |
| India | -491 | -2,919 | - | -834 |
| Korea | 2,725 | 6,674 | - | 9,920 |
| EU27 | 34,369 | 20,796 | - | 56,982 |
| Rest of the World* | 10,614 | 1,327 | - | 14,207 |

Source: our calculation on GTAP results

[1] Minerals are included in the total

* No WTO countries are not included

## Table 2 – Sectoral output change in EU27 due to a different scenarios (% change)

| | Free-trade | WTO | Bilateral agreements with WTO | 3 Bilateral agreements togheter | Bilateral agreement: with Asean | with India | with Korea |
|---|---|---|---|---|---|---|---|
| Beverage&tobacco | -3.6 | -4.1 | -3.9 | -0.1 | -0.1 | 0.0 | 0.0 |
| Cereals | -7.7 | -3.9 | -4.2 | -0.7 | -0.2 | -0.7 | 0.2 |
| Oil seeds | 4.5 | 2.3 | 2.2 | -0.2 | -0.2 | 0.0 | 0.0 |
| Chemical products | -1.7 | -2.1 | -2.1 | 0.1 | 0.1 | 0.1 | 0.0 |
| Dairy | -7.4 | -4.5 | -4.5 | -0.5 | -0.4 | -0.1 | 0.0 |
| Wood products | 16.2 | 13.3 | 13.0 | 0.0 | 0.8 | -0.4 | -0.2 |
| Plant fiber based | 6.2 | 2.8 | 3.5 | 0.4 | 0.0 | 0.4 | -0.1 |
| Leather products | 0.0 | 0.1 | 0.0 | -0.1 | -0.1 | 0.0 | 0.0 |
| Machinery | 0.3 | 0.0 | 0.0 | -0.1 | 0.0 | -0.1 | 0.0 |
| Meat sector | -3.0 | 0.5 | -2.4 | -4.8 | -4.9 | 0.0 | 0.2 |
| Metal products | 2.7 | 0.0 | 0.6 | 1.2 | 0.5 | 0.5 | 0.2 |
| Minerals | -8.1 | -4.6 | -5.5 | -1.9 | -0.3 | -1.8 | 0.2 |
| Motor vehicle | 2.2 | 1.3 | 1.7 | 0.7 | 0.3 | 0.4 | 0.0 |
| Oil fats | 1.4 | 1.0 | 2.2 | 2.7 | 0.1 | 2.6 | 0.0 |
| Other crops | 1.4 | 2.2 | 2.1 | 0.0 | 0.3 | 0.1 | -0.4 |
| Other food | -0.3 | 0.3 | 0.3 | -0.2 | -0.5 | 0.2 | 0.1 |
| Other manufacturing | -1.2 | -0.7 | -0.6 | 0.0 | 0.2 | -0.1 | 0.0 |
| Petrol products | -1.0 | -0.6 | -0.7 | -0.3 | -0.3 | -0.2 | 0.2 |
| Fishing | 0.0 | -0.6 | -0.6 | 0.1 | 0.1 | 0.1 | 0.0 |
| Forestry | 1.6 | 0.9 | 0.7 | -0.4 | 0.0 | -0.4 | 0.0 |
| Rice | -70.6 | -46.7 | -39.8 | -33.4 | -63.8 | -28.9 | 17.9 |
| Sugar | -37.7 | -23.0 | -23.4 | -3.9 | -3.0 | -1.6 | 0.1 |
| Textile sector | -18.9 | -12.6 | -13.8 | -3.0 | -1.3 | -1.0 | -0.7 |
| Fruit&vegetables | -5.8 | -2.6 | -2.7 | -0.4 | -0.4 | 0.0 | 0.0 |
| Wearing | -43.4 | -29.7 | -31.2 | -4.1 | -2.0 | -1.5 | -0.4 |
| Eletronic products | 2.28 | 0.87 | 0.84 | -0.02 | 0 | -0.01 | 0 |
| Business services | 0.6 | 0.4 | 0.3 | -0.1 | 0.0 | -0.1 | 0.0 |
| Distribution | 0.3 | 0.4 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Finance services | 0.9 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 |
| Comunication | 0.6 | 0.2 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Construction | -0.2 | 0.5 | 0.7 | 0.3 | 0.1 | 0.1 | 0.0 |
| Other services | 0.0 | 0.3 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 |
| Transport | 4.7 | 1.7 | 1.7 | 0.0 | 0.1 | -0.1 | 0.0 |
| Water | -0.5 | -0.3 | -0.3 | -0.1 | -0.1 | -0.1 | 0.0 |

Source: our calculation on GTAP results

**Table 3 – Absolute differences between free-trade and different scenarios in sectoral output change in EU27**

| | WTO | Bilateral agreements with WTO | 3 Bilateral agreements togheter | Bilateral agreement: | | |
| --- | --- | --- | --- | --- | --- | --- |
| | | | | *with Asean* | *with India* | *with Korea* |
| Beverage&tobacco | *0.4* | *0.2* | 3.5 | 3.6 | 3.6 | 3.6 |
| Cereals | 3.8 | 3.5 | 7.0 | 7.4 | 7.0 | **7.8** |
| Oil seeds | 2.1 | 2.3 | **4.7** | **4.7** | 4.5 | 4.5 |
| Chemical products | *0.5* | *0.5* | **1.8** | **1.7** | **1.7** | 1.6 |
| Dairy | 2.9 | 2.8 | 6.8 | 6.9 | 7.2 | 7.4 |
| Wood products | 2.9 | 3.2 | 16.1 | 15.4 | **16.6** | **16.4** |
| Plant fiber based | 3.4 | 2.7 | 5.8 | 6.2 | 5.8 | **6.3** |
| Leather products | *0.1* | 0.0 | *0.1* | 0.1 | 0.0 | 0.0 |
| Machinery | 0.3 | 0.3 | **0.4** | 0.3 | **0.4** | 0.3 |
| Meat sector | **3.5** | 0.6 | *1.8* | *1.9* | 3.0 | **3.2** |
| Metal products | 2.6 | 2.0 | 1.5 | 2.2 | 2.1 | 2.5 |
| Minerals | 3.5 | 2.6 | 6.2 | 7.8 | 6.3 | **8.3** |
| Motor vehicle | 0.8 | 0.5 | 1.5 | 1.9 | 1.8 | 2.2 |
| Oil fats | 0.5 | *0.8* | *1.3* | 1.4 | 1.2 | 1.4 |
| Other crops | *0.8* | *0.7* | 1.4 | 1.1 | 1.3 | **1.8** |
| Other food | **0.6** | **0.6** | 0.1 | *0.2* | **0.5** | **0.4** |
| Other manufacturing | 0.5 | 0.6 | 1.2 | **1.4** | 1.1 | 1.2 |
| Petrol products | 0.4 | 0.4 | 0.7 | 0.7 | 0.8 | **1.2** |
| Fishing | *0.6* | 0.6 | *0.1* | *0.1* | 0.0 | 0.1 |
| Forestry | 0.7 | 0.9 | **2.0** | 1.6 | **2.0** | 1.6 |
| Rice | 23.9 | 30.8 | 37.3 | 6.9 | 41.7 | **88.6** |
| Sugar | 14.7 | 14.3 | 33.8 | 34.8 | 36.2 | **37.8** |
| Textile sector | 6.3 | 5.1 | 15.9 | 17.6 | 17.9 | 18.2 |
| Fruit&vegetables | 3.2 | 3.1 | 5.4 | 5.4 | 5.8 | 5.8 |
| Wearing | 13.7 | 12.2 | 39.3 | 41.4 | 41.9 | 43.0 |
| Eletronic products | 1.4 | 1.4 | **2.3** | 2.3 | **2.3** | 2.3 |
| Business services | 0.2 | 0.3 | **0.7** | 0.6 | 0.6 | 0.6 |
| Distribution | 0.0 | 0.0 | 0.3 | 0.3 | 0.3 | 0.3 |
| Finance services | 0.8 | 0.8 | 0.8 | 0.9 | 0.9 | 0.9 |
| Comunication | 0.4 | 0.4 | 0.6 | 0.6 | 0.6 | 0.6 |
| Construction | *0.7* | *0.9* | *0.4* | **0.3** | **0.3** | 0.2 |
| Other services | *0.3* | *0.3* | 0.0 | 0.0 | 0.0 | 0.0 |
| Transport | 3.0 | 3.0 | 4.7 | 4.7 | **4.8** | 4.7 |
| Water | 0.3 | 0.2 | 0.4 | 0.4 | 0.4 | 0.5 |
| **TOTAL** | **100** | **99** | **206** | **183** | **221** | **275** |

**Figure 3 – Similarity on total trade by EU27 between free-trade trade structure and the scenario of bilateral free-trade with ASEAN, WTO agreement and 3 bilateral agreement scenario**
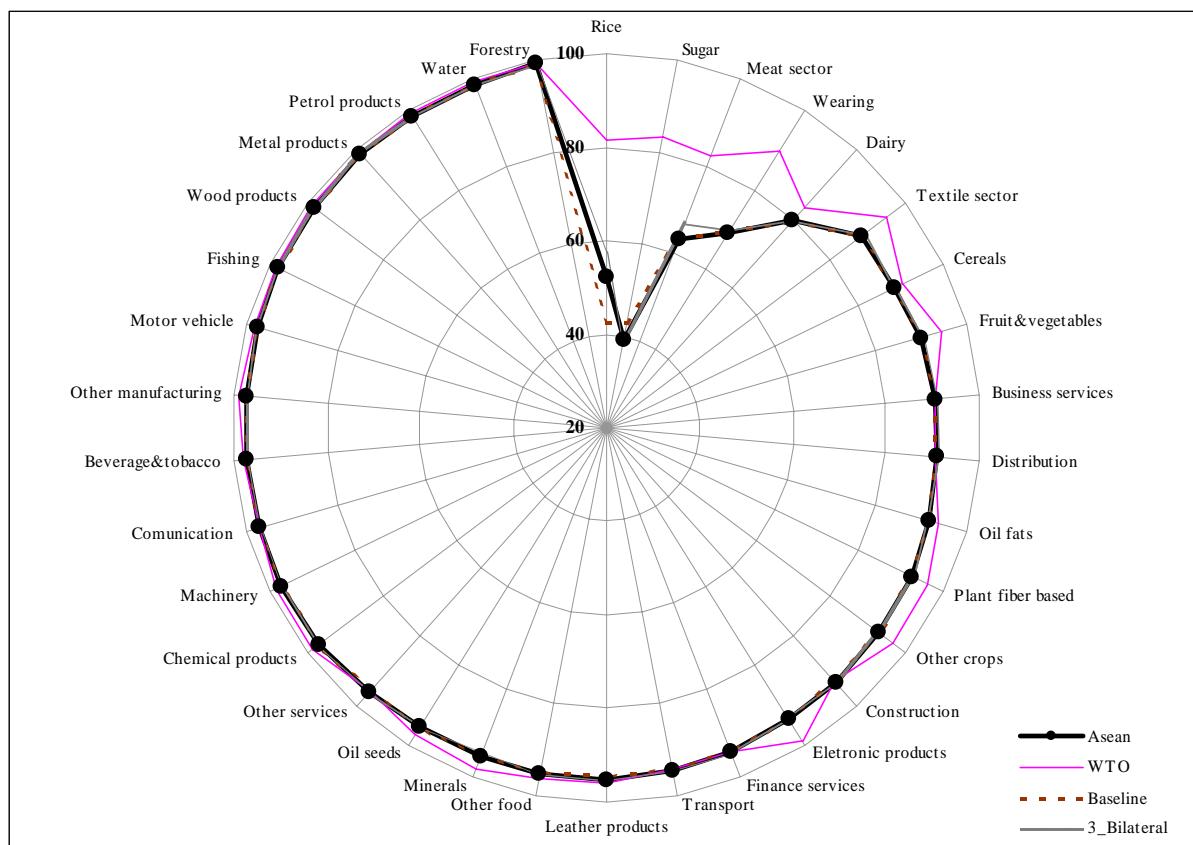


Source: our calculation on GTAP results

**Figure 4 – Similarity on total trade by EU27 between free-trade trade structure and the scenario of bilateral free-trade with India, WTO agreement and 3 bilateral agreement scenario**
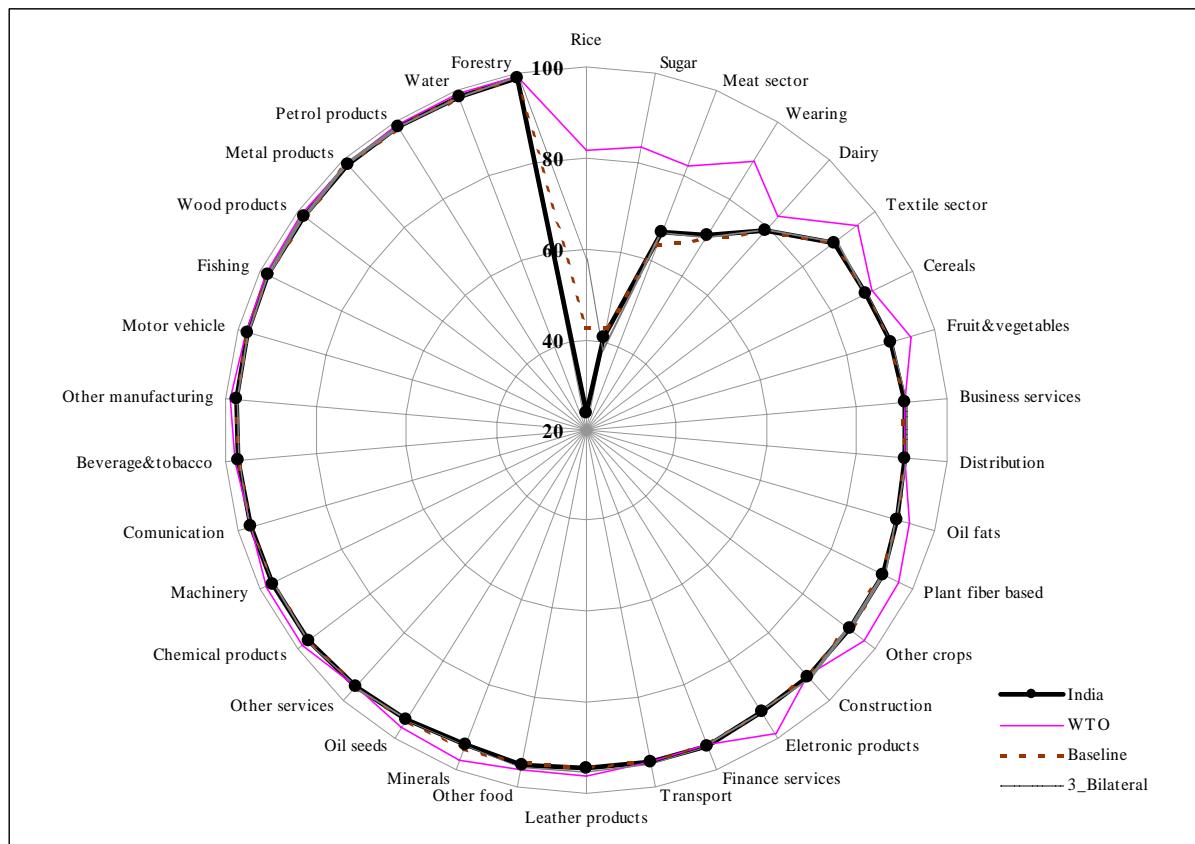


Source: our calculation on GTAP results

**Figure 5 – Similarity on total trade by EU27 between free-trade trade structure and the scenario of bilateral free-trade with Korea, WTO agreement and 3 bilateral agreement scenario**



Source: our calculation on GTAP results